

## *Comparative Effectiveness Review*

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Number XXX [to be provided by AHRQ]

# **Comparative Effectiveness of Pain Management Interventions for Hip Fracture**

### **Prepared for:**

Agency for Healthcare Research and Quality  
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# Appendix A. Expert Panel and Peer Reviewers

## Technical Expert Panel

In designing the study questions and methodology, the UAEPC consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Due to these differences in opinion, the study questions, design, and/or methodologic approaches do not necessarily represent the views of individual technical and content experts.

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## Peer Reviewers

Peer reviewer comments on a preliminary draft of this report were considered by the UAEPC in preparation of the final report. The synthesis presented in this report does not necessarily represent the views of individual reviewers.

<b>Peer Reviewer</b>	<b>Affiliations/Location</b>
To be added for the Final Report	

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**Table B-1. MEDLINE® - Ovid Version**

<p>OvidSP_UI02.01.02.102 1950 to July Week 1 2009</p>	<p>Searched: 09Jul09 Results: 1061</p>
<p>1. exp Pain/ 2. exp "anesthesia and analgesia"/or exp analgesia/ 3. ((an?esthet\$ or an?esthesia) adj4 (regional\$ or local\$ or general or spinal or epidural)).mp. 4. (block or analges*).mp. 5. or/2-4 6. exp Therapeutics/or exp "Outcome Assessment (Health Care)"/or exp "Length of Stay"/or "Quality of Life"/or "functional outcome".ti,ab. 7. ((pain* or discomfort* or ache* or aching or sore* or suffer*) adj3 (assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life")).mp. 8. exp Pain/rt, th, us, rh, dh, su, pc, dt 9. pain postoperative/pc, th 10. Pain Measurement/ 11. or/7-10 12. exp Hip Fractures/rh, nu, th, dt, dh 13. exp Hip Fractures/</p>	<p>14. ((intertrochanter* or petrochanter* or subtrochanter* or extracapsular or petrochant* or trochant* or hip or femoral neck) adj4 (hemiarthroplasty or fracture*)).mp. 15. ("neck of femur" adj4 fractur*).mp. 16. or/13-15 17. 5 and 16 18. 11 and 16 19. 1 and 16 20. 6 and 12 21. or/17-20 22. exp Arthroplasty, Replacement, Hip/ 23. THA.mp. 24. total hip*.mp. 25. or/22-24 26. 21 not 25 27. (pediatric* or child or children* or adolesc* or young or youth* or pregnan*).ti,ab,jw,kw,sh. 28. animals/or exp neoplasms/or case reports/or editorials/or exp Emergency Service, Hospital/ 29. or/27-28 30. 26 not 29 31. limit 30 to yr="1990 - 2009"</p>

**Table B-2. AMED (Allied and Complementary Medicine), Global Health and International Pharmaceutical Abstracts (IPAB) – Ovid Version**

OvidSP_UI02.01.02.102		Searched: 10Jul09
<b>Database</b>	<b>Dates Available</b>	<b>Results</b>
AMED	1985 to July 2009	340
Global Health	1910 to June 2009	157
IPAB	1970 to June 2009	95
<p>1. exp Pain/                  2. exp "anesthesia and analgesia"/or exp "Nerve Block"/or exp "anesthesiological techniques"/or exp "analgesic, antiinflammatory, antirheumatic and antigout agents"/or exp "agents interacting with transmitter, hormone or drug receptors"/                  3. (block or analges*).mp.                  4. (Therapy or therapeutics or "disease management" or "quality of life" or treatment or "outcome assessment" or "length of stay" or "functional outcome" or rehabilitation or traction or acupunct* or acupress* or stimulation or "continuous passive motion").ti,cw,cc,bt,id,hw,sh.                  5. exp Pain Assessment/or exp Pain Measurement/                  6. ((pain* or discomfort* or ache* or aching or sore* or suffer*) adj3 (assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life")).mp.                  7. or/1-6</p> <p>8. "fracture, hip"/or hip fracture/or hip fractures/or acetabulum fracture/or femur intertrochanteric fracture/or femur neck fracture/or femur pertrochanteric fracture/or exp femur subtrochanteric fracture/or femur trochanteric fracture/                  9. ((intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or femoral neck or "neck of femur") adj4 fracture*).mp.                  10. ("neck of femur" adj4 fractur*).mp.                  11. or/8-1012. 7 and 11                  13. (THA or total hip*).mp. or exp "Arthroplasty, Replacement, Hip"/                  14. (neoplasm* or cancer* or carcinoma* or lymphoma or sarcoma* or Emergency).ti,de,cw,cc,bt,id,hw,sh.                  15. case report.ti,de,cw,cc,bt,id,hw,sh.                  16. (pediatric* or child or children* or adolesc* or young or youth* or pregnan*).ti,ab,hw,de,cw,cc,tt,ed,sh.                  17. or/13-16                  18. 12 not 17                  19. limit 18 to yr="1990 -Current"                  20. remove duplicates from 19</p>		

**Table B-3. BIOSIS Previews® – Institute for Scientific Information – Thomson Reuters**

1926 to 2009	Results: 206
Searched: 14Jul09	
# 3 #2 AND #1	
Databases=PREVIEWS Timespan=1990-2009	
# 2 TS=(intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") SAME TS=(fracture*) AND Taxa Notes=(Humans)	
# 1 TS=(pain* or discomfort* or ache* or aching or sore* or suffer*) SAME TS=(assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life") AND Taxa Notes=(Humans)	

**Table B-4. CINAHL® (Cumulative Index to Nursing & Allied Health Literature), Academic Search Complete, Health Source: Nursing/Academic Edition – Ebsco Version**

1937 to 2009 (CINAHL) 1985 to 2009 (Academic Search Elite) Searched: 13Jul09	Results: 189
<p>S11 S10 and S3  S10 (S9 or S8 or S7 or S6 or S5 or S4)  S9 ( safe or safety ) or ( adverse w1 effect* or adverse w1 event* or "side effect*" ) or ( harm* or contraindicat* or contra-indicat* )  S8 ( cohort or observation* or control* or prospectiv* or volunteer* or "case-series" or "time-series" or "case-comparison" or "case-referent" or "cross-sectional" or risk* or efficacy )  S7 ( singl* w10 blind* or singl* w10 mask* or doubl* w10 blind* or doubl* w10 mask* or trebl* w10 blind* or trebl* w10 mask* or cross-over or placebo* or control* or random* or factorial or sham* or clin* w10 trial* intervention* w10 trial* or compar* w10 trial* or experiment* w10 trial* or preventive w10 trial* or therapeutic w10 trial* )  S6 ( clin* w25 trial* or random* )  S5 PT clinical trial  S4 ( (MH "Random Assignment") or (MH "Random Sample") or (MH "Crossover Design") or (MH "Clinical Trials+") or (MH "Double-Blind Studies") or (MH "Single-Blind Studies") or (MH "Comparative Studies") or (MH "Control Group") or (MH "Factorial Design") or (MH "Quasi-Experimental Studies") or (MH "Experimental Studies") or (MH "One-Shot Case Study") or (MH "Study Design") or (MH "Placebos") or (MH "Clinical Nursing Research") or (MH "Clinical Research") or (MH "Community Trials") or (MH "Pretest-Postt ...  S3 S2 not S1 Limiters - Exclude MEDLINE records  S2 (MH "Hip Fractures") and ( pain* or "drug therapy" or pharmacological OR "quality of life" OR acupunct* OR accupress* OR traction OR "electrical stimulation" OR "passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges* ) Limiters - Exclude MEDLINE records  S1 TI ( neoplasm* or cancer* or carcinoma* or lymphoma or sarcoma* or "total hip" or "THA" or arthroplasty or replacement ) or TI case report* or TI ( pediatric* or child or children* or adolesc* or young or youth* or pregnan* ) Limiters - Exclude MEDLINE records</p>	

**Table B-5. Cochrane Complementary Medicine Trials Register and CAMPAIN (Complementary and Alternative Medicine and Pain Database) Grant Number R24-AT001293 from the National Center for Complementary and Alternative Medicine (NCCAM)**

Searched: 23Jul09	Results: 263
ID	Search
#1	(SR-SYMPT)
#2	(hip OR "neck of femur" or "femoral neck" or extracapsular or intracapsular or intertrochanter* or petrochanter* or petrochant* or trochant*):ti,ab,kw
#3	(#1 AND #2)
#4	"total hip arthroplasty" OR replacement:ti
#5	(osteoarthr* OR cancer* or knee or carcinoma or sarcoma):ti
#6	MeSH descriptor Arthroplasty, Replacement, Hip explode all trees
#7	(child* or pediatric):ti,ab,kw
#8	(#4 OR #5 OR #6 OR #7)
#9	(#3 AND NOT #8)

**Table B-6. Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects) – Wiley Version**

OvidSP_UI02.01.02.102 3rd Quarter 2009	Searched: 27Jul09 Results: 36
#1 (hip OR "neck of femur" or "femoral neck" or extracapsular or intracapsular or intertrochanter* or	

petrochanter\* or petrochant\* or trochant\*):ti,ab,kw  
 #2 (osteoarthr\* OR cancer\* or knee or carcinoma or sarcoma or "total hip arthroplasty" OR replacement):ti  
 #3 MeSH descriptor Arthroplasty, Replacement, Hip explode all trees  
 #4 (child\* or pediatric):ti,ab,kw  
 #5 (#2 OR #3 OR #4)  
 #6 ((an?esthet\$ or an?esthesia) near/4 (regional\$ or local\$ or general or spinal or epidural)) in Cochrane Reviews and Other Reviews  
 #7 (block or analges\*) in Cochrane Reviews and Other Reviews  
 #8 (pain\* or discomfort\* or ache\* or aching or suffer\*) NEAR/3 (assess\* or relief or reliev\* or reduc\* or treat\* or manage\* or control\* or experience\* or medicat\* or duration or evaluat\* or alleviat\* or level or score\* or subjective or felt or prevent\* or duration or outcome\* or heal or healing or therap\* or recover\* or "quality of life") in Cochrane Reviews and Other Reviews  
 #9 (#6 OR #7 OR #8)  
 #10 (#1 AND #8)  
 #11 (#10 AND NOT #5)

**Table B-7. EBM Reviews - Cochrane Central Register of Controlled Trials – Ovid Version**

OvidSP_UI02.01.02.102 2nd Quarter 2009	Searched: 09Jul09 Results: 263
<p>1. exp Pain/          2. exp Postoperative pain/          3. exp "anesthesia and analgesia"/or exp "Nerve Block"/or exp "anesthesiological techniques"/or exp "analgesic, antiinflammatory, antirheumatic and antigout agents"/or exp "agents interacting with transmitter, hormone or drug receptors"/          4. (block or analges*).mp.          5. exp Therapy/or exp therapeutics/or disease management/or exp "quality of life"/or exp treatment outcome/or exp "outcome assessment"/or "length of stay"/or "functional outcome".ti,ab.          6. exp Pain Assessment/or exp Pain Measurement/          7. ((pain* or discomfort* or ache* or aching or sore* or suffer*) adj3 (assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life")).mp.          8. or/1-7</p>	<p>9. exp hip fracture/or exp hip fractures/or exp acetabulum fracture/or exp femur intertrochanteric fracture/or exp femur neck fracture/or exp femur petrochanteric fracture/or exp femur subtrochanteric fracture/or exp femur trochanteric fracture/          10. ((intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or femoral neck) adj4 fracture*).mp.          11. ("neck of femur" adj4 fractur*).mp.          12. or/9-11          13. 8 and 12          14. (THA or total hip*).mp. or exp "Arthroplasty, Replacement, Hip"/          15. exp neoplasms/or exp Emergency Service, Hospital/          16. (pediatric* or child or children* or adolesc* or young or youth* or pregnan*).ti,ab,hw,jn.          17. or/14-16          18. 13 not 17          19. limit 18 to yr="1990 -Current"</p>

**Table B-8. EMBASE – Ovid Version**

<p>OvidSP_UI02.01.02.102 1980 to 2009 Week 28</p>	<p>Searched: 10Jul09 Results: 1179</p>
<p>1. exp Pain/ 2. exp Postoperative pain/ 3. (pain* or discomfort* or ache* or aching or sore* or suffer*).mp. 4. or/1-3 5. exp "Nerve Block"/or exp "anesthesiological techniques"/or exp "analgesic, antiinflammatory, antirheumatic and antigout agents"/or exp "agents interacting with transmitter, hormone or drug receptors"/ 6. (block or analges*).mp. 7. exp Therapy/or disease management/or exp "quality of life"/or exp treatment outcome/or exp outcome assessment/or "length of stay"/or "functional outcome".ti,ab. 8. or/5-7 9. 4 and 8 10. exp Pain/dt, rh, pc, th, dm, rt, su, dr 11. exp Pain Assessment/ 12. ((pain* or discomfort* or ache* or aching or sore* or suffer*) adj3 (assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life")).mp. 13. or/10-12 14. 9 or 13 15. exp hip fracture/dm, th, rh, dt 16. exp femur neck fracture/dm, th, rh, dt 17. or/15-16</p>	<p>18. exp hip fracture/or exp acetabulum fracture/or exp femur intertrochanteric fracture/or exp femur neck fracture/or exp femur pertrochanteric fracture/or exp femur subtrochanteric fracture/or exp femur trochanteric fracture/ 19. ((intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or femoral neck) adj4 fracture*).mp. 20. ("neck of femur" adj4 fractur*).mp. 21. or/18-20 22. 14 and 21 23. (4 or 8) and 17 24. or/22-23 25. exp "Total Hip Prosthesis"/ 26. THA.mp. 27. total hip*.mp. 28. or/25-27 29. 24 not 28 30. limit 29 to (embryo or infant or child or preschool child &lt;1 to 6 years&gt; or school child &lt;7 to 12 years&gt; or adolescent &lt;13 to 17 years&gt;) 31. (pediatric* or child or children* or adolesc* or young or youth* or pregnan*).ti,ab,hw,jx. 32. "nonhuman"/or exp neoplasm/or cancer.hw. or case report/or emergency.af. 33. 29 not (30 or 31 or 32) 34. limit 33 to yr="1990 - 2009" 35. limit 34 to (article or conference paper or proceeding or report or "review")</p>

**Table B-9. Global Health Library – World Health Organization**

<p>Searched: 28Jul09</p>	<p>Results: 110</p>
<p>(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") AND fractur* AND (pain* or heal or healing or therap* or recover* or "quality of life" or rehabilitat* or "drug therapy" or pharmacological OR acupunct* OR acupress* OR traction OR "electrical stimulation" OR "passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges*) AND NOT (child* or adolesc* or young or youth or pediatric* or cancer* or replace* or "total hip arthroplasty" or nail or screw or "case reports" or osteoporosis)</p>	

**Table B-10. Pascal – Ovid Version**

OvidSP_UI02.01.02.102 1987 to Jan Week 4 2010	Searched: 03Feb10 Results: 169
<p>1. exp Pain/ 2. exp "anesthesia and analgesia"/or exp "Nerve Block"/or exp "anesthesiological techniques"/or exp "analgesic, antiinflammatory, antirheumatic and antigout agents"/or exp "agents interacting with transmitter, hormone or drug receptors"/ 3. (block or analges*).mp. 4. exp Pain Assessment/or exp Pain Measurement/ 5. ((pain* or discomfort* or ache* or aching or sore* or suffer*) adj3 (assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life")).mp. 6. or/1-5 7. "fracture, hip"/or hip fracture/or hip fractures/or acetabulum fracture/or femur intertrochanteric fracture/or femur neck fracture/or femur pertrochanteric fracture/or exp femur subtrochanteric fracture/or femur trochanteric fracture/</p>	<p>8. ((intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or femoral neck) adj4 fracture*).mp. 9. ("neck of femur" adj4 fractur*).mp. 10. or/7-9 11. 6 and 10 12. (THA or total hip*).mp. or exp "Arthroplasty, Replacement, Hip"/ 13. (neoplasm* or cancer* or carcinoma* or lymphoma or sarcoma* or Emergency).ti,de,cw,cc,bt,id,hw,sh. 14. case report.ti,de,cw,cc,bt,id,hw,sh. 15. (pediatric* or child or children* or adolesc* or young or youth* or pregnan*).ti,ab,hw,de,cw,cc,tt,ed,sh. 16. or/12-15 17. 11 not 16 18. limit 17 to yr="1990 -Current" 19. remove duplicates from 18</p>

**Table B-11. PEDro – The Physiotherapy Evidence Database**

1929 to 2009 Searched: 14Jul09	Results: 256 of which 33 were selected
<p>Problem: pain Body part: thigh or hip Published since 1990</p>	

**Table B-12. ProQuest® Dissertations and Theses - Full Text**

1637 to 2009 Searched: 24Jul09	Results: 43
<p>(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") AND (fracture*) AND (pain* or "quality of life" or traction or "physical therapy" or acupunct* OR acupress* OR traction OR "electrical stimulation") AND NOT (child* or adolesc* or young or youth or pediatric* or cancer* or replace* or "total hip arthroplasty")</p> <p>Look for terms in: Citation and abstract; Publication type: All publication types</p> <p>(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") AND (fracture*) AND ("passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges*) AND NOT (child* or adolesc* or young or youth or pediatric* or cancer* or replace* or "total hip arthroplasty")</p> <p>Look for terms in: Citation and abstract; Publication type: All publication types</p>	

**Table B-13. Scopus® - Elsevier B.V.**

1990 to July 2009	Searched: 13Jul09 Results: 900
<p>((((TITLE(pain*) OR KEY(pain*)) AND SUBJAREA(mult OR agri OR bioc OR immu OR neur OR phar OR mult OR medi OR nurs OR vete OR dent OR heal OR mult OR arts OR busi OR deci OR econ OR psyc OR soci) AND PUBYEAR AFT 1989) AND ((TITLE-ABS-KEY(assess* OR relief OR reliev* OR reduc* OR treat* OR manage* OR control* OR experience* OR medicat* OR duration OR evaluat* OR alleviat* OR level OR score* OR subjective OR felt OR prevent* OR duration OR outcome* OR heal OR healing OR therap* OR recover*) OR TITLE-ABS-KEY("quality of life" OR acupunct* OR accupress* OR traction OR "electrical stimulation" OR "passive motion")) AND SUBJAREA(mult OR agri OR bioc OR immu OR neur OR phar OR mult OR medi OR nurs OR vete OR dent OR heal OR mult OR arts OR busi OR deci OR econ OR psyc OR soci) AND PUBYEAR AFT 1989)) AND NOT ((TITLE-ABS-KEY("total hip replacement" OR "total hip arthroplasty" OR "THA") OR TITLE-ABS-KEY(cancer* OR carcinoma* OR neoplasm* OR pediatric* OR children* OR adolesc* OR "case report")) AND SUBJAREA(mult OR agri OR bioc OR immu OR neur OR phar OR mult OR medi OR nurs OR vete OR dent OR heal OR mult OR arts OR busi OR deci OR econ OR psyc OR soci) AND PUBYEAR AFT 1989)) AND (TITLE-ABS-KEY((hip* OR femur* OR femoral* OR trochant* OR pertrochant* OR intertrochant* OR subtrochant* OR intracapsular* OR extracapsular*) AND fractur*) AND SUBJAREA(mult OR agri OR bioc OR immu OR neur OR phar OR mult OR medi OR nurs OR vete OR dent OR heal OR mult OR arts OR busi OR deci OR econ OR psyc OR soci) AND PUBYEAR AFT 1989)) AND NOT (TITLE(diagnos* OR predictive OR accurac* OR specificity OR probability OR likelihood OR screen* OR test* OR "risk factors")) AND (EXCLUDE(DOCTYPE, "no") OR EXCLUDE(DOCTYPE, "sh") OR EXCLUDE(DOCTYPE, "ed")) AND (EXCLUDE(SUBJAREA, "BIOC") OR EXCLUDE(SUBJAREA, "VETE") OR EXCLUDE(SUBJAREA, "ENGI") OR EXCLUDE(SUBJAREA, "DENT") OR EXCLUDE(SUBJAREA, "CENG") OR EXCLUDE(SUBJAREA, "ENVI") OR EXCLUDE(SUBJAREA, "ECON") OR EXCLUDE(SUBJAREA, "COMP") OR EXCLUDE(SUBJAREA,</p>	

**Table B-14. Web of Science® – Institute for Scientific Information – Thomson Reuters**

1900 to 2009 Searched: 14Jul09	Results: 596
<p># 4 #2 AND #1 Refined by: [excluding] Subject Areas=( PEDIATRICS OR VETERINARY SCIENCES ) Databases=SCI-EXPANDED, SSCI Timespan=1990-2009 # 3 #2 AND #1 # 2 TS=(intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") SAME TS=(fracture*) # 1 TS=(pain* or discomfort* or ache* or aching or sore* or suffer*) SAME TS=(assess* or relief or reliev* or reduc* or treat* or manage* or control* or experience* or medicat* or duration or evaluat* or alleviat* or level or score* or subjective or felt or prevent* or duration or outcome* or heal or healing or therap* or recover* or "quality of life")</p>	

**Table B-15. TOXLINE – ProQuest**

<p>1998 to 2009 Searched: 29Jul09</p>	<p>Results: 74</p>
<p>(TI=(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or "femoral neck") or DE=(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or "femoral neck") or AB=(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or "femoral neck")) and DE=fractur* and (DE=(pain* or heal or healing or therap* or recover* or "quality of life" or rehabilitat* or "drug therapy" or pharmacological OR acupunct* OR acupress* OR traction OR "electrical stimulation" OR "passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges*) or AB=(pain* or heal or healing or therap* or recover* or "quality of life" or rehabilitat* or "drug therapy" or pharmacological OR acupunct* OR acupress* OR traction OR "electrical stimulation" OR "passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges*) or TI=(pain* or heal or healing or therap* or recover* or "quality of life" or rehabilitat* or "drug therapy" or pharmacological OR acupunct* OR acupress* OR traction OR "electrical stimulation" OR "passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges*)) not (DE=(child* or adolesc* or young or youth or pediatric* or cancer* or neoplasm* or carcinoma or anemia or alendronate or replace* or osteoporosis or "total hip arthroplasty" or "hip fractures: prevention control" or "hip fractures: epidemiology" OR"Hip Fractures: chemically induced"))</p>	

## Conference Proceedings

**Table B-16. Conference Papers Index – ProQuest**

1982 to 2009 Searched: 24Jul09	Results: 97
<p>TI=(hip or intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") and DE=(pain* or heal or healing or therap* or recover* or "quality of life" or rehabilitat* or "drug therapy" or pharmacological OR acupunct* OR acupress* OR traction OR "electrical stimulation" OR "passive motion" or morphine OR acetaminophen or paracetamol or tylenol or anesth* or analges* ) not TI=(child* or adolesc* or young or youth or pediatric* or cancer* or replace* or "total hip arthroplasty") Limits: 1990-2009</p>	

**Table B-17. OCLC Papers First – OCLC FirstSearch**

Searched: 24Jul09	Results: 12
<p>(((((ti: hip or ti: intertrochanter* or ti: petrochanter* or ti: subtrochanter* or ti: intracapsular or ti: extracapsular or ti: petrochant* or ti: trochant* or ti: hip or ti: femoral w neck)) and kw: pain*) and (kw: heal or kw: healing or kw: therap* or kw: recover* or kw: quality w1 life or kw: rehabilitat* or kw: drug w therapy or kw: pharmacological OR kw: acupunct* OR kw: acupress* OR kw: traction OR kw: electrical w stimulation OR kw: passive w motion or kw: morphine OR kw: acetaminophen or kw: paracetamol or kw: tylenol or kw: anesth* or kw: analges*) and yr: 1990-2009) not (ti: replacement or ti: total w hip) and yr: 1990-2009</p>	

**Table B-18. ScienceDirect Tables of Contents**

Searched: 28Jul09	Results: 24
<p>Regional Anesthesia and Pain Medicine Pain Management Nursing Acute Pain European Journal of Pain Journal of Pain and Symptom Management Techniques in Regional Anesthesia and Pain Management Anesthesiology Clinics Pain</p> <p>Searched tables of contents using the strategy below for the journals listed above: pub-date &gt; 1989 and TITLE-ABSTR-KEY((intertrochanter* or petrochanter* or subtrochanter* or intracapsular or extracapsular or petrochant* or trochant* or hip or "femoral neck") AND fractur*) and SRCTITLEPLUS(pain)</p>	

**Table B-19. Conference proceedings hand searched**

Searched: 28Jul09	
American Geriatric Society (AGS)	2005-2009
American Physical Therapy Association (APTA)	2005-2009
American Society of Regional Anesthesia and Pain Medicine (ASRA)	2007-2009
European Society of Regional Anesthesia (ESRA)	2005-2009
European Society of Anesthesiology (ESA)	2008-2009
International Anesthesia Research Society (IARS)	2005-2009

## Trials Registers

**Table B-20. ClinicalStudyResults.org**

Searched: 03Sep09	Results: 0
Searched by Indication Word hip fracture	Searched by Study Indication/Disease: Hip Fracture Recovery; Pain, Postoperative; Pain, Postsurgical

**Table B-21. ClinicalTrials.Gov – National Institutes of Health**

Searched: 27Jul09	Results: 33
Pain* AND ( hip OR intertrochanter* OR petrochanter* OR subtrochanter* OR intracapsular OR extracapsular OR petrochant* OR trochant* OR femoral neck ) AND fracture*	

**Table B-22. Current Controlled Trials – Biomed Central**

*Excluding Leukaemia Research Fund and ClinicalTrials.gov*

Searched: 03Sep09	Results: 17
Pain* AND (hip OR intertrochanter* OR petrochanter* OR subtrochanter* OR intracapsular OR extracapsular OR petrochant* OR trochant* OR femoral neck) AND fracture*	

**Table B-23. ICTRP Search Portal – World Health Organization**

Searched: 03Sep09	Results: 199
(hip OR intertrochanter* OR petrochanter* OR subtrochanter* OR intracapsular OR extracapsular OR petrochant* OR trochant* OR femoral neck) AND fracture*	
ALL studies (not restricted to Recruiting)	

**Table B-24. IFPMA Clinical Trials Portal - International Federation of Pharmaceutical Manufacturers & Associations**

Searched: 04Sep09	Results: 37
(hip OR intertrochanter* OR petrochanter* OR subtrochanter* OR intracapsular OR extracapsular OR petrochant* OR trochant* OR femoral neck) AND fracture*	

**Table B-25. UMIN-CTR Clinical Trials – University Hospital Medical Information Network**

Searched: 04Sep09	Results: 7
"hip fracture" "femoral neck"	

# Appendix C. Sample Data Extraction and Quality Assessment Form

## *Comparative Effectiveness of Pain Management Interventions for Hip Fracture*

Refid:

Study Name:

Reviewer's name:

Study Demographics:

<i>Publication type</i>		<i>Study design</i>	
<i>Type of hospital</i>		<i>Country</i>	
<i>Number of centers (n)</i>	( )	<i>Study period (month and year)</i>	to
<i>Main inclusion criteria</i>		<i>Main exclusion criteria</i>	
<i>Financial support</i>		<i>Reported outcomes of interest to this review</i>	<p><b>Primary outcomes:</b></p> <input type="checkbox"/> Acute pain <input type="checkbox"/> Chronic pain <p><b>Secondary outcomes:</b></p> <input type="checkbox"/> Mortality <input type="checkbox"/> Functional status <input type="checkbox"/> Pain medication use; change in type and quantity <p><b>Adverse events:</b></p> <input type="checkbox"/> AE related to the pain management interventions <input type="checkbox"/> Mental status <input type="checkbox"/> Health-related QoL <input type="checkbox"/> Quality of sleep in hospital <input type="checkbox"/> Ability to participate in rehabilitation <input type="checkbox"/> Return to prefracture place of residence <input type="checkbox"/> Length of stay for acute hospitalization, skilled nursing facility, subacute care facility <input type="checkbox"/> Health service utilization

Reviewer's Comments:

**Patient Baseline Demographics:**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
<b>Classification</b>				
<b>Type of intervention</b>				
<b>Dosage</b>				
<b>Dosage Intervals</b>				
<b>Age (yr)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Body weight (Kg)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Height (cm)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>BMI (Kg/ m<sup>2</sup>)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Gender</b>				
<i>Females: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>Males: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<b>Pre-fracture residence</b>				
<i>Community: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>Institutional: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<b>Type of fractures</b>				
<i>Femoral neck: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>Intertrochanteric: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>Proximal femur: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<b>Side of fracture</b>				
<i>Right: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>Left: n (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<b>ASA Class</b>				
<i>ASA I (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>ASA II (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>ASA III (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<i>ASA IV (%)</i>	/ ( %)	/ ( %)	/ ( %)	/ ( %)
<b>Timing of intervention</b>				

<b>Time from fall to ER arrival (hr)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Time from ER arrival to surgery (hr)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Time from fall to surgery (hr)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Type of surgery</b>				
<b>Type of anesthesia</b>				
<i>Epidural</i>	/	/	/	/
	( %)	( %)	( %)	( %)
<i>Spinal</i>	/	/	/	/
	( %)	( %)	( %)	( %)
<i>General</i>	/	/	/	/
	( %)	( %)	( %)	( %)
<b>Duration of surgery (hr)</b>				
<i>Mean ± SD</i>	±	±	±	±
<i>Range</i>	( - )	( - )	( - )	( - )
<b>Baseline pain score</b>	<i>Scale name [ ]</i>			
<i>Mean ± SD</i>	±	±	±	±
	(n = )	(n = )	(n = )	(n = )
<i>Range</i>	( - )	( - )	( - )	( - )

Reviewer's Comments:

**Data available on subpopulations:**

	<i>Describe</i>	<i>Outcomes available</i>
<i>Sex</i>		
<i>Age</i>		
<i>Race</i>		
<i>Marital status</i>		
<i>Co-morbidities</i>		
<i>Body mass index</i>		
<i>Pre-fracture functional status</i>		
<i>Family distress</i>		

Reviewer's Comments:

**NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE  
CASE CONTROL STUDIES**

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

**Selection**

- 1) Is the case definition adequate?
  - a) yes, with independent validation \*
  - b) yes, eg record linkage or based on self reports
  - c) no description
- 2) Representativeness of the cases
  - a) consecutive or obviously representative series of cases \*
  - b) potential for selection biases or not stated
- 3) Selection of Controls
  - a) community controls \*
  - b) hospital controls
  - c) no description
- 4) Definition of Controls
  - a) no history of disease (endpoint) \*
  - b) no description of source

**Comparability**

- 1) Comparability of cases and controls on the basis of the design or analysis \*
  - a) study controls for \_\_\_\_\_ \* (Select the most important factor.)
  - b) study controls for any additional factor (This criteria could be modified to indicate specific control for a second important factor.)

**Exposure**

- 1) Ascertainment of exposure
  - a) secure record (eg surgical records) \*
  - b) structured interview where blind to case/control status \*
  - c) interview not blinded to case/control status
  - d) written self report or medical record only
  - e) no description
- 2) Same method of ascertainment for cases and controls
  - a) yes \*
  - b) no
- 3) Non-Response rate
  - a) same rate for both groups \*
  - b) non respondents described
  - c) rate different and no designation

**NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE  
COHORT STUDIES**

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

**Selection**

- 1) Representativeness of the exposed cohort
  - a) truly representative of the average \_\_\_\_\_ (describe) in the community \*
  - b) somewhat representative of the average \_\_\_\_\_ in the community \*
  - c) selected group of users eg nurses, volunteers d) no description of the derivation of the cohort
- 2) Selection of the non exposed cohort
  - a) drawn from the same community as the exposed cohort \*
  - b) drawn from a different source
  - c) no description of the derivation of the non exposed cohort
- 3) Ascertainment of exposure
  - a) secure record (eg surgical records) \*
  - b) structured interview \*
  - c) written self report
  - d) no description
- 4) Demonstration that outcome of interest was not present at start of study
  - a) yes \*
  - b) no

**Comparability**

- 1) Comparability of cohorts on the basis of the design or analysis
  - a) study controls for \_\_\_\_\_ (select the most important factor) \*
  - b) study controls for any additional factor \* (This criteria could be modified to indicate specific control for a second important factor.)

**Outcome**

- 1) Assessment of outcome
  - a) independent blind assessment \*
  - b) record linkage \*
  - c) self report
  - d) no description
- 2) Was follow-up long enough for outcomes to occur
  - a) yes (select an adequate follow up period for outcome of interest) \*
  - b) no
- 3) Adequacy of follow up of cohorts
  - a) complete follow up -all subjects accounted for \*
  - b) subjects lost to follow up unlikely to introduce bias -small number lost -> \_\_\_\_ % (select an adequate %) follow up, or description provided of those lost) \*
  - c) follow up rate < \_\_\_\_% (select an adequate %) and no description of those lost
  - d) no statement

**RISK OF BIAS (ROB)  
RANDOMIZED CONTROLLED TRIALS**

<i>Item</i>	<i>Judgment</i>	<i>Description</i>
<i>Adequate sequence generation?</i>		
<i>Allocation concealment?</i>		
<i>Blinding?</i>		
<i>Incomplete outcome data addressed?</i>		
<i>Free of selective reporting?</i>		
<i>Free of other bias?</i>		

Primary outcome measures:		Intervention (1)	Intervention (2)	Intervention (3)	Intervention (4)
<i>Acute pain</i> <i>(% change from baseline)</i>					
<i>Maximal pain relief</i> <i>Mean ± SD</i> <i>Range</i>	% ± (n = ) ( - )				
<i>Time to max pain relief</i> <i>Mean ± SD</i> <i>Range</i>	% ± (n = ) ( - )				
<i>Pain at rest</i> <i>Mean ± SD</i> <i>Range</i>	% ± (n = ) ( - )				
<i>Pain on movement</i> <i>Mean ± SD</i> <i>Range</i>	% ± (n = ) ( - )				
<i>Acute pain</i> <i>(post-treatment means)</i>					
<i>Maximal pain relief</i> <i>Mean ± SD</i> <i>Range</i>	± (n = ) ( - )				
<i>Time to max pain relief</i> <i>Mean ± SD</i> <i>Range</i>	± (n = ) ( - )				
<i>Pain at rest</i> <i>Mean ± SD</i> <i>Range</i>	± (n = ) ( - )				
<i>Pain on movement</i> <i>Mean ± SD</i> <i>Range</i>	± (n = ) ( - )				

<b>Is there acute pain?</b>	/	/	/	/	/
Day 1	/	/	/	/	/
Day 2	/	/	/	/	/
Day ≥7 – 30	/	/	/	/	/
Pain at rest	/	/	/	/	/
Pain on movement	/	/	/	/	/
<b>Scale name /</b>					
<b>Chronic pain</b> (% change from baseline)	% ± (n = )				
Maximal pain relief	( - )	( - )	( - )	( - )	( - )
Mean ± SD					
Range					
Time to max pain relief	% ± (n = )				
Mean ± SD	( - )	( - )	( - )	( - )	( - )
Range					
Pain at rest	% ± (n = )				
Mean ± SD	( - )	( - )	( - )	( - )	( - )
Range					
Pain on movement	% ± (n = )				
Mean ± SD	( - )	( - )	( - )	( - )	( - )
Range					
<b>Scale name /</b>					
<b>Chronic pain</b> (post-treatment means)	± (n = )				
Maximal pain relief	( - )	( - )	( - )	( - )	( - )
Mean ± SD					
Range					
Time to max pain relief	± (n = )				
Mean ± SD	( - )	( - )	( - )	( - )	( - )
Range					
Pain at rest	± (n = )				
Mean ± SD	( - )	( - )	( - )	( - )	( - )
Range					
Pain on movement	± (n = )				
Mean ± SD	( - )	( - )	( - )	( - )	( - )
Range					

Range	( - )	( - )	( - )	( - )
Is there chronic pain?	/	/	/	/
Pain is present	/	/	/	/
Pain at rest	/	/	/	/
Pain on movement	/	/	/	/

Reviewer's Comments:

Secondary outcome measures:

	Intervention (1)	Intervention (2)	Intervention (3)	Intervention (4)
Mortality (30 days)	/	/	/	/
Mortality (1-year)	/	/	/	/
Functional status (describe)				
Additional pain medication	/	/	/	/
Another medication used				
Time interval before use				
Mean $\pm$ SD	( $\pm$ (n = ) )			
Range	( - )	( - )	( - )	( - )
Type and Quantity of additional pain medication	Type: Quantity:	Type: Quantity:	Type: Quantity:	Type: Quantity:
Change in type (explain)				

Reviewer's Comments:

Adverse events related to the pain management intervention:

	Intervention (1)	Intervention (2)	Intervention (3)	Intervention (4)
Any adverse event	/	/	/	/
Incidence of pressure sores	/	/	/	/
Peroneal palsy	/	/	/	/
Allergic reactions	/	/	/	/
Respiratory distress	/	/	/	/
Damage to surrounding structures	/	/	/	/
GI symptoms	/	/	/	/
Bleeding	/	/	/	/
Infection at site of injection	/	/	/	/

	<i>Intervention (1)</i>	<i>Intervention (2)</i>	<i>Intervention (3)</i>	<i>Intervention (4)</i>
<i>Length of stay at skilled nursing facility</i>	± (n = ) ( - )			
<i>Length of stay at sub-acute care facility</i>	± (n = ) ( - )			
<i>Other health service utilization (describe)</i>				

**Reviewer's Comments:**

**Reviewer's Overall Comments:**

# Appendix D. Excluded Studies

## Publication type/study design

1. Ahmed T, Ullah H. Paramedian technique of spinal anaesthesia in elderly patients for hip fracture surgery. *J Coll Physicians Surg Pak* 2007;17(3):184.
1. Ahsan-ul-Haq M, Amin S, Javaid S. Paramedian technique of spinal anesthesia in elderly patients for hip fracture surgery. *J Coll Physicians Surg Pak* 2005;15(3):160-1.
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4. Barre J, Lefort P, Payen M. Locoregional anesthesia for injuries of the lower limbs. *Cah Anesthesiol* 1996;44(3):197-201. (Fre).
5. Biboulet P, Vacher E, Deschodt J, et al. Continuous spinal anesthesia: does low-dose plain or hyperbaric bupivacaine allow the performance of hip surgery in the elderly? *Reg Anesth* 1993;18(3):170-5.
6. Boenigk K, Vloka JD, Hadžić A. Lower extremity nerve blocks: an update. *Progr Anesthesiol* 2001;15(13):231-44.
7. Bozdogan N, Caliskan E, Turkoz R. Combination of regional anesthetic blocks for femoropopliteal bypass surgery. *J Cardiothorac Vasc Anesth* 2009;23(3):442.
8. Bryson GL. Waiting for hip fracture repair: do outcomes and patients suffer? *Can J Anaesth* 2008;55(3):135-9.
9. Byrd J, Chern KY. Hip pain: non-operative treatment of ACL injury. *Med Sci Sports Exerc* 1995;27(5 Suppl):S198.
10. Cai XZ, Chen XZ, Yan SG. Cemented hemiarthroplasty confers less pain and better mobility than uncemented hemiarthroplasty. *Clin Orthop Relat Res* 2009;467(2):582-4.
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13. Christmas C. Medical care of the hip fracture patient. *CLIN GERIATR* 2006;14(4):40-5.
14. Coe AJ, Revanas B. Is crystalloid preloading useful in spinal anaesthesia in the elderly? *Anaesthesia* 1990;45(3):241-3.
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17. Cuvillon P, Ripart J, Lalourcey L, et al. The continuous femoral nerve block catheter for postoperative analgesia: bacterial colonization, infectious rate and adverse effects. *Anesth Analg* 2001;93(4):1045-9.
18. Daban JL, De Saint Maurice GP, Batjom E, et al. Postoperative myocardial damages are a key issue in patients' outcome after hip fracture. *AGE AGEING* 2009;38(4):488-9.
19. Davies AJ. Dosage volume or concentration? *Anaesthesia* 1990;45(5):414.
20. Davis FM, Frampton C, Wells JE. Anaesthesia and outcome of surgery for fractured neck of femur. *Br J Anaesth* 1990;64(3):403-4.
21. De Visme V, Buggy D. Peripheral blocks of the lower limb for repair of fractured neck of femur. *Br J Anaesth* 1998;81(3):483-4.
22. Denny NM, Selander DE. Continuous spinal anaesthesia. *Br J Anaesth* 1998;81(4):590-7.
23. Di Lorenzo L. Cervical and trochanteric hip fractures: different stories and different outcomes? *Eur J Phys Rehabil Med* 2008;44(3):367-8.
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32. Foss NB, Kristensen MT, Kristensen BB, et al. Physiotherapy in fast track rehabilitation with epidural analgesia in hip fracture patients. *Reg Anesth Pain Med* 2003;28(Suppl 1):14.
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## Appendix E. Description of Included Studies

**Table E-1. Pharmacologic Analgesia**

Study	Study characteristics	Interventions	Inclusion/Exclusion criteria
Apostolopoulos 2006 <sup>41</sup>	Study design: RCT Study period: Jan-03 to Jul-04 Type of hospital: General hospital Country: Switzerland Financial support: NR	Intervention #1: Classification: IV analgesia Intervention: Parecoxib IV Dosage: 40mg Intervals: Every 12hrs  Intervention #2: Classification: IM analgesia Intervention: Diclofenac IM; Pethidine IM Dosage: 75mg; NR Intervals: Every 12hrs; on demand	Main inclusion criteria: Pts operated for fracture of hip joint  Main exclusion criteria: NR
Baker 2004 <sup>42</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: Financial support provided by institutional and/or departmental sources	Intervention #1: Classification: Intrathecal analgesia Intervention: Clonidine (Isotonic) Dosage: 150ug Intervals: Single administration  Intervention #2: Classification: Intrathecal analgesia Intervention: Clonidine (Hypertonic) Dosage: 150ug Intervals: Single administration	Main inclusion criteria: Elderly pts undergoing surgery after traumatic hip fractures under general anesthesia  Main exclusion criteria: Contraindications to spinal anesthesia, unable to understand study protocol, severe deformities of spine, history of untreated hypertensive disease, or receiving treatment with $\beta$ -adrenergic blockers
Poitevin 1999 <sup>53</sup>	Study design: Randomized controlled trials Study period: Not reported to Not reported Type of hospital: University hospital Country: Argentina Financial support: Not reported	Intervention #1: Classification: Analgesia Intervention: Lysine clonixinate Dosage: 125mg Intervals: every 8 hr  Intervention #2: Classification: Analgesia Intervention: Metamizole Dosage: 400mg Intervals: every 8 hr	Main inclusion criteria: Patients aged 50-85 years old; <3 days since trauma leading to hip fracture; undergoing surgery  Main exclusion criteria: Patients with allergies to investigational drug; GI problems; psychiatric disorders; any other use of anti-inflammatory analgesic drugs

IM = intramuscular; IV = intravenous; NR = not reported; RCT = randomized controlled trial

**Table E-2. Anesthesia**

<b>Study</b>	<b>Study characteristics</b>	<b>Interventions</b>	<b>Inclusion/Exclusion criteria</b>
Adams 1990 <sup>54</sup>	Study design: Randomized controlled trials Study period: Not reported to Not reported Type of hospital: University hospital Country: Germany Financial support:	Intervention #1: Classification: Spinal anesthesia Intervention: Bupivacaine 0.5%/Mepivacaine 4% Dosage: Not reported Intervals: Not reported  Intervention #2: Classification: General anesthesia Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: age 60+, proximal hip fracture  Main exclusion criteria: Patients who insisted on a specific type of anesthesia or who were not eligible for the anesthesia types used in the study
Alonso Chico 2003 <sup>55</sup>	Study design: Randomized controlled trials Study period: Not reported to Not reported Type of hospital: University hospital Country: Spain Financial support: Not reported	Intervention #1: Classification: Spinal anesthesia Intervention: Bupivacaine 0.5%/ Fenantyl Dosage: 5mg/15ug Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia Intervention: Bupivacaine 0.5% Dosage: 7.5mg Intervals: Single administration	Main inclusion criteria: Patients aged >75 years; ASA II-III; pro-trochanteric fracture  Main exclusion criteria: Patients with contraindications to subarachnoid anesthesia or uncontrolled cardiac; respiratory; or neurologic disease
Ben-David 2000 <sup>56</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: Israel Financial support: Financial support provided by institutional and/or departmental sources	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Bupivacaine/Fentanyl Dosage: 4mg/20ug Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine Dosage: 10mg Intervals: Single administration	Main inclusion criteria: Pts >70yr presenting for open surgical repair of hip fracture  Main exclusion criteria: NR

ASA = American Society of Anesthesiology; IM = intramuscular; IV = intravenous; NR = not reported; RCT = randomized controlled trial

**Table E-2. Anesthesia (continued)**

Casati 2003 <sup>57</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Italy Financial support: NR	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: 7.5mg Intervals: Single administration  Intervention #2: Classification: General anesthesia Intervention: None Dosage: NA Intervals: NA	Main inclusion criteria: Pts ASA II-III undergoing hemiarthroplasty for repair of fractured femur  Main exclusion criteria: Contraindications to spinal anesthesia or laryngeal mask placement, severe cardiovascular or pulmonary disease, or psychiatric pathology
Danelli 2008 <sup>58</sup>	Study design: RCT Study period: May-06 to Jul-06 Type of hospital: University hospital Country: Italy Financial support: NR	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Levobupivacaine 0.5% Dosage: 15mg Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Levobupivacaine 0.75% Dosage: 15mg Intervals: Single administration	Main inclusion criteria: ASA I-III; >18 yrs  Main exclusion criteria: Unable to understand, cooperate, or communicate with investigators, any contraindication to spinal anesthesia, or had a known history of hypersensitivity to local anesthetics
Favarel-Garrigues 1996 <sup>59</sup>	Study design: RCT Study period: Sep-92 to Apr-94 Type of hospital: University hospital Country: France Financial support: NR	Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: Bolus: Bupivacaine 5mg (1ml); Maintenance: Bupivacaine 2.5mg (0.5ml) Intervals: Single administration; Continuous administration on demand  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: Based on age and ht (15mg between 70 and 79 yr and/or >170 cm height, 12.5mg between 80 and 90 yr and/or between 150 and 170 cm, 10mg >90 yr and/or <150 cm) Intervals: Single administration	Main inclusion criteria: Pts ≥ 70 yrs, ASA I-III, undergoing hip fracture surgery  Main exclusion criteria: Pts did not accept regional anesthesia, or had contraindications for spinal anesthesia, or severely altered mental status

**Table E-2. Anesthesia (continued)**

<p>Hooda 2006<sup>60</sup></p>	<p>Study design: RCT          Study period: NR          Type of hospital: University hospital          Country: India          Financial support: NR</p>	<p>Intervention #1:          Classification: Spinal anesthesia (single)          Intervention: Bupivacaine 0.5%/Fentanyl          Dosage: 4mg (0.8ml)/20mg (0.4ml)          Intervals: Single administration</p> <p>Intervention #2:          Classification: Spinal anesthesia (single)          Intervention: Bupivacaine 0.5%/Fentanyl          Dosage: 5mg (1.0ml)/20mg (0.4ml)          Intervals: Single administration</p> <p>Intervention #3:          Classification: Spinal anesthesia (single)          Intervention: Bupivacaine 0.5%/Fentanyl          Dosage: 6mg (1.2ml)/20mg (0.4ml)          Intervals: Single administration</p>	<p>Main inclusion criteria: Pts of either sex, ≥60 yrs, scheduled to undergo open surgical repair of hip fractures</p> <p>Main exclusion criteria: &lt;60 yrs, ASA III or more, contraindications to spinal anesthesia (e.g., peripheral neuropathy, coagulopathy, spinal deformity, infection at the injection site), or known hypersensitivity to amide local anesthetics or fentanyl</p>
<p>Juelsgaard 1998<sup>61</sup></p>	<p>Study design: RCT          Study period: NR          Type of hospital: University hospital          Country: Denmark          Financial support: NR</p>	<p>Intervention #1:          Classification: Spinal anesthesia (incremental)          Intervention: Bupivacaine 0.5%          Dosage: 1.6ml          Intervals: Incremental dosage</p> <p>Intervention #2:          Classification: Spinal anesthesia (single)          Intervention: Bupivacaine 0.5%          Dosage: 2.5ml          Intervals: Single administration</p> <p>Intervention #3:          Classification: General anesthesia          Intervention: Fentanyl          Dosage: Bolus: 1-2ug per kg/Maintenance: 25-50ug          Intervals: Single administration/Continuous administration (on demand)</p>	<p>Main inclusion criteria: Pts with known CAD scheduled for osteosynthesis of a femoral neck fracture</p> <p>Main exclusion criteria: Uncooperative pts, recent myocardial infarction, unstable angina pectoris, significant aortic stenosis, or contraindication to spinal anesthesia, or had factors that adversely affect the quality of the Holter analysis or had failure of monitoring for 36hrs</p>

**Table E-2. Anesthesia (continued)**

Klimscha 1995 <sup>62</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: NR	<p>Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% plus clonidine Dosage: 1ml bupivacaine/1ml Clonidine Intervals: Continuous administration (3 repetitive doses)</p> <p>Intervention #2: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: 10ml bupivacaine Intervals: Continuous administration (3 repetitive doses)</p> <p>Intervention #3: Classification: Epidural anesthesia (continuous) Intervention: Bupivacaine 0.5%/clonidine Dosage: 10ml bupivacaine/1ml Clonidine Intervals: Continuous administration (3 repetitive doses)</p> <p>Intervention #4: Classification: Epidural anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: 10ml bupivacaine Intervals: Continuous administration (3 repetitive doses)</p>	<p>Main inclusion criteria: Elderly pts undergoing hip surgery after traumatic fractures</p> <p>Main exclusion criteria: Pts with usual contraindications to spinal or epidural anesthesia, had senile dementia and those with severe deformities of the spinal column</p>
Krobot 2006 <sup>63</sup>	Study design: NRCT Study period: NR Type of hospital: General hospital Country: Croatia Financial support: NR	<p>Intervention #1: Classification: Spinal anesthesia (single) Intervention: Levobupivacaine/Fentanyl Dosage: 7.5mg/0.01mg Intervals: Single administration</p> <p>Intervention #2: Classification: Spinal anesthesia (single) Intervention: Levobupivacaine Dosage: 10mg Intervals: Single administration</p>	<p>Main inclusion criteria: Elderly pts undergoing hip fracture repair</p> <p>Main exclusion criteria: NR</p>

**Table E-2. Anesthesia (continued)**

Kwan 1997 <sup>64</sup>	Study design: RCT Study period: Jul-95 to Dec-95 Type of hospital: General hospital Country: Hong Kong Financial support: NR	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5%/Morphine Dosage: 2.2ml/0.2mg Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: 2.2ml Intervals: Single administration	Main inclusion criteria: Pts, ASA I-IV, scheduled for emergency surgery for a fractured hip  Main exclusion criteria: Pts who had contraindications to regional anesthesia, or an allergy to the study drugs (bupivacaine, morphine)
Labaille 1992 <sup>65</sup>	Study design: Prospective cohort study Study period: NR Type of hospital: General hospital Country: France Financial support: NR	Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.125%/Bupivacaine 0.125% Dosage: Bolus: 3ml/Maintenance: 1ml Intervals: Single administration/Continuous administration (on demand)  Intervention #2: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5%/Bupivacaine 0.5% Dosage: Bolus: 3ml/Maintenance: 1ml Intervals: Single administration/Continuous administration (on demand)	Main inclusion criteria: Pts, ASA I-II, aged 70-97 yrs old without any known CVD who were scheduled for repair of femoral neck or trochanteric fracture under spinal anesthesia  Main exclusion criteria: NR

**Table E-2. Anesthesia (continued)**

Malek 2004 <sup>66</sup>	<p>Study design: RCT            Study period: NR            Type of hospital: University hospital            Country: Czech Republic            Financial support: Financial support provided by institutional and/or departmental sources</p>	<p>Intervention #1:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine 0.5%/Fentanyl            Dosage: 3ml/50ug            Intervals: Single administration</p> <p>Intervention #2:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine 0.5%/Sufentanil            Dosage: 3ml/5ug            Intervals: Single administration</p> <p>Intervention #3:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine 0.5%            Dosage: 3ml            Intervals: Single administration</p>	<p>Main inclusion criteria: Pts scheduled to be operated on for hip fracture</p> <p>Main exclusion criteria: Pts with known allergy to opiates, common contraindications of spinal anesthesia and inability to perform dural puncture in L3—L4 or L2—L3 vertebral interspaces</p>
Martyr 2001 <sup>67</sup>	<p>Study design: RCT            Study period: NR            Type of hospital: General hospital            Country: Australia            Financial support: Financial support provided by institutional and/or departmental sources</p>	<p>Intervention #1:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine/Fentanyl            Dosage: 7.5mg/20ug            Intervals: Single administration</p> <p>Intervention #2:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine            Dosage: 12.5mg            Intervals: Single administration</p>	<p>Main inclusion criteria: Pts with a fractured neck of femur requiring internal fixation with a Richards pin and plate</p> <p>Main exclusion criteria: NR</p>
Martyr 2005 <sup>68</sup>	<p>Study design: RCT            Study period: NR            Type of hospital: General hospital            Country: Australia            Financial support: Financial support provided by institutional and/or departmental sources</p>	<p>Intervention #1:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine/Fentanyl            Dosage: 9.0mg/20ug            Intervals: Single administration</p> <p>Intervention #2:            Classification: Spinal anesthesia (single)            Intervention: Bupivacaine            Dosage: 11.0mg            Intervals: Single administration</p>	<p>Main inclusion criteria: &gt;70 yrs with fractured neck of femur requiring internal fixation with a DHS or hemiarthroplasty and &lt; 70 kg estimated body weight</p> <p>Main exclusion criteria: NR</p>

**Table E-2. Anesthesia (continued)**

Maurette 1993 <sup>69</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: France Financial support: NR	<p>Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bolus: lidocaine 1.6%/meperidine 1%; Maintenance: lidocaine 1.6% Dosage: NA/4ml (200mg); NA Intervals: Continuous administration</p> <p>Intervention #2: Classification: Spinal anesthesia (continuous) Intervention: Bolus: lidocaine 1.6%; Maintenance: lidocaine 1.6% Dosage: NA Intervals: Continuous administration</p>	<p>Main inclusion criteria: Pts undergoing elective surgery for fracture of the neck of the femur and able to describe their pain with accuracy</p> <p>Main exclusion criteria: Bedridden pts or suffering from severe dehydration or senile dementia</p>
Miller 1990 <sup>70</sup>	Study design: Retrospective cohort study Study period: 30317 to 32478 Type of hospital: General hospital Country: Germany Financial support:	<p>Intervention #1: Classification: Spinal anesthesia Intervention: Mepivacaine 4 % Dosage: 2ml (80 mg) Intervals: Not reported</p> <p>Intervention #2: Classification: General anesthesia Intervention: Fentanyl Dosage: 3-5mg per kg Intervals: Not reported</p>	<p>Main inclusion criteria: Proximal hip fracture</p> <p>Main exclusion criteria: NR</p>
Minville 2006 <sup>71</sup>	Study design: RCT Study period: Nov-03 to Nov-04 Type of hospital: University hospital Country: France Financial support: NR	<p>Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine Dosage: 2.5mg Intervals: Continuous administration</p> <p>Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine Dosage: 7.5mg Intervals: Single administration</p>	<p>Main inclusion criteria: 75 yrs who underwent surgery for open surgical repair of hip fracture</p> <p>Main exclusion criteria: Contraindication to spinal anesthesia or continuous spinal anesthesia including patient refusal, intracranial hypertension, major hemostasis anomalies or local infection, dementia, allergic reaction to local anesthetics, anemia (hemoglobin &lt;10 g/dL), as well as being treated with aspirin</p>

**Table E-2. Anesthesia (continued)**

Minville 2008 <sup>72</sup>	Study design: Retrospective cohort study Study period: Jan-01 to Dec-04 Type of hospital: University hospital Country: France Financial support: No external funding	Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: 2.5mg Intervals: Continuous administration  Intervention #2: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: 5mg Intervals: Continuous administration  Intervention #3: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: NR Intervals: Single administration  Intervention #4: Classification: General anesthesia Intervention: Sulfentanil Dosage: NR Intervals: NR	Main inclusion criteria: Pts over 75 yrs old who underwent surgical repair of femoral neck fractures  Main exclusion criteria: NR
Navas 2008 <sup>73</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Spain Financial support: NR	Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.15-0.25% Dosage: NR Intervals: Continuous administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: NR Intervals: Single administration	Main inclusion criteria: Pts undergoing surgery for hip fracture  Main exclusion criteria: NR

**Table E-2. Anesthesia (continued)**

Olofsson 2004 <sup>74</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: Sweden Financial support: Financial support provided by institutional and/or departmental sources	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Bupivacaine/sufentanil Dosage: 7.5mg/5mg Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine Dosage: 15mg Intervals: Single administration	Main inclusion criteria: Pts, ASA II, scheduled for surgery after hip fracture, who could understand oral information  Main exclusion criteria: Uncooperative pts, unstable angina, significant aortic stenosis, recent myocardial infarction, coagulation disorders, contraindications to spinal anesthesia
Qamarul Hoda 2007 <sup>75</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Pakistan Financial support: NR	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Bupivacaine/Fentanyl Dosage: 6mg/20ug Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine/Fentanyl Dosage: 8mg/20ug Intervals: Single administration  Intervention #3: Classification: Spinal anesthesia (single) Intervention: Bupivacaine Dosage: 10mg Intervals: Single administration	Main inclusion criteria: Elderly pts, ASA I-III, .65 yrs and scheduled for surgical repair of hip fracture.  Main exclusion criteria: Pts with any contraindication for spinal anesthesia
Rais 2008 <sup>76</sup>	Study design: RCT Study period: NR Type of hospital: Orthopedic hospital Country: Tunisia Financial support: NR	Intervention #1: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: 2.5mg Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (continuous) Intervention: Bupivacaine 0.5% Dosage: 5mg Intervals: Single administration	Main inclusion criteria: Pts with no contraindication to continuous spinal anesthesia  Main exclusion criteria: NR

**Table E-2. Anesthesia (continued)**

Said-Ahmed 2006 <sup>77</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Egypt Financial support: NR	Intervention #1: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5%/Fentanyl Dosage: 5mg/20mcg Intervals: Single administration	Main inclusion criteria: Pts, ASA I-II, aged 70 yrs or older, undergoing either insertion of Austin-Moore prosthesis or DHS for fixation of femur neck fractures
		Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5%/Sufentanil Dosage: 5mg/5mcg Intervals: Single administration	Main exclusion criteria: NR
		Intervention #3: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: 10mg Intervals: Single administration	
Sen 2007 <sup>78</sup>	Study design: Retrospective cohort study Study period: Aug-00 to Oct-01 Type of hospital: University hospital Country: Turkey Financial support: NR	Intervention #1: Classification: Spinal anesthesia (single - lateral) Intervention: Bupivacaine 0.5% Dosage: 10mg Intervals: Single administration	Main inclusion criteria: Elderly pts, ASA I-II, who had undergone spinal anesthesia for hip surgery and who had ejection fraction < 50%
		Intervention #2: Classification: Spinal anesthesia (single - supine) Intervention: Bupivacaine 0.5% Dosage: 10mg Intervals: Single administration	Main exclusion criteria: NR

**Table E-3. Complementary and alternative medicine (CAM)**

Study	Study characteristics	Interventions	Inclusion/Exclusion criteria
Barker 2006 <sup>43</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: NR	Intervention #1: Classification: Auricular acupressure Intervention: 1-mm plastic acupressure beads Dosage: 3 true auricular acupressure points Intervals: Single administration  Intervention #2: Classification: Sham Control Intervention: 1-mm acupressure plastic beads Dosage: 3 sham auricular acupressure points Intervals: Single administration	Main inclusion criteria: Pts aged 80–95 yrs, ASA II–III, who sustained an isolated hip fracture without any additional trauma  Main exclusion criteria: Not fluent in German, with ear deformity, severe neurologic or psychiatric disorders, long-term use of sedatives or analgesics
Martin 1991 <sup>79</sup>	Study design: RCT Study period: 1988 to 1989 Type of hospital: General hospital Country: US Financial support: NR	Intervention #1: Classification: Relaxation Intervention: Jacobson relaxation technique/ Meperidine/ Morphine Dosage: NA Intervals: Instruction given prior to surgery  Intervention #2: Classification: Analgesia Intervention: Meperidine/Morphine Dosage: NR Intervals: NR	Main inclusion criteria: Pts, 60 yrs old and older with a fractured hip to be surgically repaired by internal fixation  Main exclusion criteria: Pts with known psychiatric illness or mental retardation, pathologic fractures as a result of metastasis to bone, inability to cooperate or follow instructions, and multiple trauma

ASA = American Society of Anesthesiology; IM = intramuscular; IV = intravenous; NR = not reported; RCT = randomized controlled trial

**Table E-4. Multimodal pain management**

<b>Study</b>	<b>Study characteristics</b>	<b>Interventions</b>	<b>Inclusion/Exclusion criteria</b>
Milisen 2001 <sup>80</sup>	Study design: Prospective cohort study Study period: Sep-96 to Mar-97 Type of hospital: University hospital Country: Belgium Financial support: NR	Intervention #1: Classification: Multimodal pain management Intervention: Bolus: Tramadol IV; Maintenance (48hrs): Tramadol IV + propacetamol IV; Maintenance (Day 3-5): oral tramadol + oral paracetamol Dosage: 3mg/ kg; 6mg/k/ 24hrs; 120mg per kg per 24hours/NA Intervals: Continuous administration  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: Dutch-speaking and verbally testable pts admitted with a traumatic fracture of proximal femur within 24 hrs of surgery  Main exclusion criteria: Pts with multiple trauma, concussion, pathological fractures, surgery occurring > 72 hrs after admission, aphasia, blindness, deafness, and < 9 yrs formal education
Ogilvie-Harris 1993 <sup>81</sup>	Study design: Prospective cohort study Study period: NR Type of hospital: University hospital Country: Canada Financial support: NR	Intervention #1: Classification: Multimodal pain management Intervention: Skin Traction/Morphine/Acetaminophen Dosage: NA/2.5-5mg/1000mg Intervals: Rewrap every 8hrs/every 4hrs/every 4hrs  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: Geriatric pts with hip fractures  Main exclusion criteria: NR

ASA = American Society of Anesthesiology; IM = intramuscular; IV = intravenous; NR = not reported; RCT = randomized controlled trial

**Table E-5. Nerve blocks**

<b>Study</b>	<b>Study characteristics</b>	<b>Interventions</b>	<b>Inclusion/Exclusion criteria</b>
Antonopoulou 2006 <sup>82</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: Greece Financial support: NR	Intervention #1: Classification: Femoral nerve block Intervention: Bolus: Levobupivacaine 0.25%; Maintenance: Levobupivacaine 0.12% Dosage: 18ml Intervals: Single administration; Continuous administration  Intervention #2: Classification: Analgesia Intervention: Paracetamol; Pethidine Dosage: 500mg; NR Intervals: Every 8hrs; on demand	Main inclusion criteria: Pts with hip fracture  Main exclusion criteria: NR
Chudinov 1999 <sup>83</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: Israel Financial support: NR	Intervention #1: Classification: Psoas Compartment Block (continuous) Intervention: Bupivacaine 0.25% Dosage: Bolus: 2mg per kg; Maintenance: 2mg per kg Intervals: Single administration/Maintenance: every 12hrs  Intervention #2: Classification: IM analgesia Intervention: Meperidine IM Dosage: 1mg per kg Intervals: On demand (max every 5hrs)	Main inclusion criteria: Pts with unilateral fractures of the neck of the femur  Main exclusion criteria: Severe cardiac, pulmonary, renal, or liver dysfunction, systemic infection, decubitus ulcers, dementia, aspirin or anticoagulant treatment, or known hypersensitivity to local anesthetic agents

ASA = American Society of Anesthesiology; IM = intramuscular; IV = intravenous; NR = not reported; RCT = randomized controlled trial

**Table E-5. Nerve blocks (continued)**

Coad 1991 <sup>84</sup>	<p>Study design: RCT            Study period: NR            Type of hospital: General hospital            Country: UK            Financial support: NR</p>	<p>Intervention #1:            Classification: 3-in-1 nerve block            Intervention: Bupivacaine 0.5%            Dosage: 15ml            Intervals: Single administration</p> <p>Intervention #2:            Classification: Lateral cutaneous Nerve Block            Intervention: Bupivacaine 0.5%            Dosage: 15ml            Intervals: Single administration</p> <p>Intervention #3:            Classification: Standard care            Intervention: NR            Dosage: NR            Intervals: NR</p>	<p>Main inclusion criteria: Pts undergoing either pin-and-plate or compression-screw fixation of the femoral neck</p> <p>Main exclusion criteria: Pts who were receiving analgesic drugs, were suffering from dementia, or if regional anesthesia was thought to be indicated</p>
Cuvillon 2007 <sup>85</sup>	<p>Study design: Randomized controlled trials            Study period: 36404 to 37408            Type of hospital: University hospital            Country: France            Financial support: Fondation de l'avenir (Paris)</p>	<p>Intervention #1:            Classification: 3-in-1 nerve block (NS)            Intervention: Ropivacaine            Dosage: Catheter attached to pump allowing continuous ropivacaine 0.2% at 10 mL/hr x 48 hr            Intervals: Continuous</p> <p>Intervention #2:            Classification: Analgesia            Intervention: Paracetamol            Dosage: 1st dose 2g then 2g            Intervals: every 6 hours</p> <p>Intervention #3:            Classification: Analgesia            Intervention: Morphine            Dosage: 2 mg q5min in post-op until VAS &lt;30 then 0.1 mg/kg q4 hr; if VAS &gt;30 dosage increased by 50%            Intervals: NA</p>	<p>Main inclusion criteria: Patient age 70 years or older; operation for traumatic fracture sup. femur under spinal anesthetic</p> <p>Main exclusion criteria: Patient refusal to participate; more than 72 hour delay between fall and surgery; Patient age less than 70 years; weight less than 40 kg; ASA score more than 4; contraindications to locoregional analgesia; neuropathy; severe renal or hepatic insufficiency; noncooperative patients; mini mental score less than 15/30</p>

**Table E-5. Nerve blocks (continued)**

de Visme 2000 <sup>86</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: France Financial support: Financial support provided by institutional and/or departmental sources	Intervention #1: Classification: Combined lumbar/sacral plexus block (NS) Intervention: Lidocaine 1.33% Dosage: 45mL Intervals: Single administration  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: 3mL Intervals: Single administration	Main inclusion criteria: Pts over age 65 yrs with proximal femoral fracture  Main exclusion criteria: Pts with evidence of cognitive deficit (MMSE <5), contraindication to spinal anesthesia, or peripheral nerve block
Del Rosario 2008 <sup>87</sup>	Study design: Retrospective cohort study Study period: Oct-04 to Oct-05 Type of hospital: General hospital Country: Spain Financial support: NR	Intervention #1: Classification: Femoral nerve block (NS)/IV analgesia Intervention: Bolus: Bupivacaine 0.25%; Maintenance: bupivacaine 0.1%; PCA: Paracetamol IV/metamizol IV Dosage: 30ml/5ml/1g/2g Intervals: Single administration; Maintenance: every hr; Patient controlled bolus: every 6hrs/every 8hrs  Intervention #2: Classification: IV analgesia Intervention: Paracetamol IV; metamizol IV Dosage: 1g; 2g Intervals: Every 6hrs; every 8hrs	Main inclusion criteria: Pts > 50 yrs who underwent hip fracture surgery with intradural anesthesia  Main exclusion criteria: Pts who received general or epidural analgesia, presented failure of femoral analgesia, or had localized infection or coagulopathy

**Table E-5. Nerve blocks (continued)**

Eyrolle 1998 <sup>88</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: France Financial support: NR	Intervention #1: Classification: Posterior lumbar plexus block Intervention: Lidocaine 2%/Bupivacaine 0.5% Dosage: NR Intervals: NR  Intervention #2: Classification: Spinal anesthesia (single) Intervention: Bupivacaine 0.5% Dosage: NR Intervals: Single administration	Main inclusion criteria: Pts undergoing femoral neck osteosynthesis  Main exclusion criteria: NR
Fletcher 2003 <sup>89</sup>	Study design: RCT Study period: Feb to Aug Type of hospital: General hospital Country: UK Financial support: NR	Intervention #1: Classification: 3-in-1 nerve block (NS) Intervention: Bupivacaine 0.5% Dosage: 20mL Intervals: Single administration  Intervention #2: Classification: IV analgesia Intervention: Morphine IV Dosage: 5-10mg Intervals: On demand	Main inclusion criteria: Pts with all types of fractured neck of femur  Main exclusion criteria: Confused, with a bleeding diathesis, taking warfarin, local or systemic infection, or previous hypersensitivity to local anesthetics
Foss 2005 <sup>90</sup>	Study design: RCT Study period: Jan-03 to Apr-04 Type of hospital: University hospital Country: Denmark Financial support: Financial support provided by governmental sources	Intervention #1: Classification: Epidural analgesia (continuous) Intervention: Bupivacaine 0.125%/morphine Dosage: 4ml of 50ug per ml per hr Intervals: Continuous infusion (four days)  Intervention #2: Classification: Placebo Intervention: Saline Dosage: NA Intervals: Continuous infusion (four days)	Main inclusion criteria: ≥65 yrs living in own home, intact cognitive status, able to provide written informed consent, New Mobility Score of ≥3 (indicating independent indoor ambulation)  Main exclusion criteria: Refused to participate, prefracture hospitalization, contraindications to epidural analgesia, regular prefracture opioid or glucocorticoid therapy, alcohol or substance abuse, morphine intolerance, and postoperative restrictions for ambulation

**Table E-5. Nerve blocks (continued)**

Foss 2007 <sup>91</sup>	<p>Study design: Randomized controlled trials          Study period: May-03 to Jan-06          Type of hospital: University hospital          Country: Denmark          Financial support: lmk Almene Fond</p>	<p>Intervention #1:          Classification: Fascia iliaca compartment nerve block (CT)          Intervention: 1.0% mepivacaine          Dosage: 40 mL 1.0% mepivacaine with 1:200 000 epinephrine; 0.02 mL/kg placebo IM injection of 0.9% saline          Intervals: Single dose</p> <p>Intervention #2:          Classification: Analgesia          Intervention: Morphine          Dosage: 40 mL placebo FICB with 0.9% saline; 0.02 mL/kg 5.0 mg/mL morphine          Intervals: Single dose</p>	<p>Main inclusion criteria: Clinical signs of hip fracture as assessed by the ED staff; intact cognitive status on admission; and the ability to provide written informed consent.</p> <p>Main exclusion criteria: Refusal to participate in the study; previous surgery in the affected hip; regular prefracture opioid or glucocorticoid therapy; alcohol or substance abuse; infection at the injection site; morphine intolerance; or any previous opioid administration for the acute pain and nonconfirmation of the hip fracture suspicion on x-ray</p>
Gille 2006 <sup>92</sup>	<p>Study design: Randomized controlled trials          Study period: Not reported to Not reported          Type of hospital: University hospital          Country: Germany          Financial support: No industry funding</p>	<p>Intervention #1:          Classification: Femoral nerve block          Intervention: Prilocaine 1%/ Ropivacaine 0.2%          Dosage: 40ml/ 30ml          Intervals: Single administration/ Continuous (every 6hrs)</p> <p>Intervention #2:          Classification: Analgesia          Intervention: Metamizol/ Tilidine; Ibuprofen          Dosage: 1g / 100mg; 400mg          Intervals: Single administration/ single administration; every 8hrs</p>	<p>Main inclusion criteria: Isolated hip fracture</p> <p>Main exclusion criteria: Open fracture or fracture associated with neurological injury; age&lt;18 years; inability to swallow pills; contraindication for regional anesthesia or medications in trial; ongoing opioid analgesic therapy; multiple injuries; repeat intervention</p>

**Table E-5. Nerve blocks (continued)**

Graham 2008 <sup>93</sup>	Study design: RCT Study period: Apr-00 to Oct-01 Type of hospital: General hospital Country: UK Financial support: NR	Intervention #1: Classification: 3-in-1 nerve block (NS) Intervention: Bupivacaine 0.5% Dosage: 30ml Intervals: Single administration  Intervention #2: Classification: IV analgesia Intervention: Morphine IV Dosage: 0.1mg per kg Intervals: Single administration	Main inclusion criteria: Pts > 16 yrs presenting with clinical or radiological evidence of fractured hip  Main exclusion criteria: Pts with known allergy or contraindication to either morphine or bupivacaine, or if they had an abbreviated mental test score <9
Haddad 1995 <sup>94</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: UK Financial support: No external funding	Intervention #1: Classification: Femoral nerve block (CT) Intervention: Bupivacaine 0.25% Dosage: 0.3ml per kg Intervals: Single administration  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: Pts with extracapsular fractures of the femoral neck  Main exclusion criteria: Pts who were unable to score their pain due to dementia
Henderson 2008 <sup>95</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: US Financial support: NR	Intervention #1: Classification: Femoral nerve block/Opioids Intervention: Bupivacaine 0.5% Dosage: NR/NR Intervals: Continuous/On demand  Intervention #2: Classification: Standard care Intervention: Opioids Dosage: NR Intervals: Intermittent	Main inclusion criteria: ≥55 yrs presenting to the ED with acute hip fractures  Main exclusion criteria: NR

**Table E-5. Nerve blocks (continued)**

Hood 1991 <sup>96</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: UK Financial support: NR	<b>Intervention #1:</b> Classification: 3-in-1 nerve block Intervention: Prilocaine 0.75% Dosage: 43ml Intervals: Single administration	<b>Main inclusion criteria:</b> > 60 yrs with intertrochanteric fractures of neck of femur requiring surgical correction with compression screw or pin and plate devices
		<b>Intervention #2:</b> Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	<b>Main exclusion criteria:</b> Contraindication to a regional technique, allergy to local anesthetic agents, or systemic disease that indicated an alternative method of anesthesia
Kocum 2007 <sup>97</sup>	Study design: Retrospective cohort study Study period: Sep-04 to Aug-05 Type of hospital: University hospital Country: Turkey Financial support: NR	<b>Intervention #1:</b> Classification: Lumbar plexus plus sciatic block (NS) Intervention: Ropivacaine 0.25% Dosage: 60ml Intervals: Single administration	<b>Main inclusion criteria:</b> Pts, ASA III-IV, who underwent unilateral femur or hip surgery with lumbar plexus and sciatic nerve blockade
		<b>Intervention #2:</b> Classification: Lumbar plexus plus sciatic block (NS) Intervention: Bupivacaine 0.25% Dosage: 60ml Intervals: Single administration	<b>Main exclusion criteria:</b> Pts ASA I-II and those who received additional anesthesia modalities or who had other fractures

**Table E-5. Nerve blocks (continued)**

Mannion 2005 <sup>98</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Ireland Financial support: NR	<p>Intervention #1: Classification: Psoas compartment block (NS) Intervention: Levobupivacaine 0.5%/Clonidine IV Dosage: 0.4mL per kg/1ug per kg Intervals: Single administration</p> <p>Intervention #2: Classification: Psoas compartment block (NS) Intervention: Levobupivacaine 0.5%/Clonidine Dosage: 0.4mL per kg/1ug per kg Intervals: Single administration</p> <p>Intervention #3: Classification: Psoas compartment block (NS) Intervention: Levobupivacaine 0.5% Dosage: 0.4mL per kg Intervals: Single administration</p>	<p>Main inclusion criteria: Pts scheduled for surgical repair of traumatic hip fractures</p> <p>Main exclusion criteria: Concurrent medication with adrenoceptor agonists, antagonists, or contraindications to regional anesthesia</p>
Marhofer 1997 <sup>99</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: NR	<p>Intervention #1: Classification: 3-in-1 nerve block (US) Intervention: Bupivacaine 0.5% Dosage: 20ml Intervals: Single administration</p> <p>Intervention #2: Classification: 3-in-1 nerve block (NS) Intervention: Bupivacaine 0.5% Dosage: 20ml Intervals: Single administration</p>	<p>Main inclusion criteria: Pts undergoing hip surgery after trauma</p> <p>Main exclusion criteria: Pts who refused to participate or had contraindication to local anesthetics or puncture in the inguinal area, or unable to understand the study protocol</p>

**Table E-5. Nerve blocks (continued)**

Marhofer 1998 <sup>100</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: NR	<p>Intervention #1: Classification: 3-in-1 nerve block (US) Intervention: Bupivacaine 0.5% Dosage: 20ml Intervals: Single administration</p> <p>Intervention #2: Classification: 3-in-1 nerve block (NS) Intervention: Bupivacaine 0.5% Dosage: 20ml Intervals: Single administration</p> <p>Intervention #3: Classification: 3-in-1 nerve block (NS) Intervention: Bupivacaine 0.5% Dosage: 30ml Intervals: Single administration</p>	<p>Main inclusion criteria: Pts, ASA II-III, scheduled for surgery of nondislocated hip fractures following trauma</p> <p>Main exclusion criteria: Refusal by the patient, allergies to local anesthetics, or general contraindications against puncture in the inguinal area, or unable to understand the study protocol because of language or other difficulty</p>
Marhofer 2000 <sup>101</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: NR	<p>Intervention #1: Classification: 3-in-1 nerve block (NS) Intervention: Ropivacaine 0.5% Dosage: 20ml Intervals: Single administration</p> <p>Intervention #2: Classification: 3-in-1 nerve block (NS) Intervention: Bupivacaine 0.5% Dosage: 20ml Intervals: Single administration</p>	<p>Main inclusion criteria: ASA I-III, scheduled for hip surgery after trauma</p> <p>Main exclusion criteria: Refusal by the patient, inability to understand study protocol, allergies to local anesthetics, and contraindications against puncture in the inguinal area</p>
Matot 2003 <sup>102</sup>	Study design: RCT Study period: Oct-98 to Sep-98 Type of hospital: University hospital Country: Israel Financial support: Financial support provided by institutional and/or departmental sources	<p>Intervention #1: Classification: Epidural analgesia (continuous) Intervention: Bolus: Bupivacaine 0.25%/Methadone; Maintenance: Bupivacaine 0.5%/Methadone Dosage: 7-10mL/4mg; 45mg/16mg Intervals: Continuous (24hrs)</p> <p>Intervention #2: Classification: IM analgesia Intervention: Meperidine IM Dosage: 1mg per kg Intervals: Every 6hrs</p>	<p>Main inclusion criteria: ≥60 yrs with traumatic hip fracture, able to sign informed consent, known CAD or at high risk for CAD</p> <p>Main exclusion criteria: Contraindications to epidural analgesia, known allergy to study drugs, acute coronary insufficiency, ECG evidence of left bundle branch block, or ≥ 10 hrs from the time of injury</p>

**Table E-5. Nerve blocks (continued)**

Mouzopoulos 2009 <sup>103</sup>	Study design: RCT Study period: Jul-04 to Mar-08 Type of hospital: General hospital Country: Greece Financial support: NR	<p>Intervention #1: Classification: Fascia iliaca compartment nerve block (CT) Intervention: Bupivacaine Dosage: 0.25mg dose of 0.3mL per kg Intervals: every 24h before and after surgery</p> <p>Intervention #2: Classification: Placebo Intervention: Saline Dosage: NA Intervals: Every 24h before and after surgery</p>	<p>Main inclusion criteria: ≥ 70 yrs, admitted for hip fracture</p> <p>Main exclusion criteria: Delirium at admission, metastatic hip cancer, hx bupivacaine allergy, use of cholinesterase inhibitors, severe coagulopathy, Parkinsonism, epilepsy, levodopa treatment, delay of surgery &gt; 72 hrs after admission, inability to participate in interviews (e.g. dementia, respiratory isolation, intubation, aphasia, coma or terminal illness)</p>
Murgue 2006 <sup>104</sup>	Study design: Randomized controlled trials Study period: 37622 to 37987 Type of hospital: General hospital Country: France Financial support: Not reported	<p>Intervention #1: Classification: Femoral nerve block Intervention: Mepivacaine Dosage: 20 cc Intervals: NA</p> <p>Intervention #2: Classification: Analgesia Intervention: IV morphine Dosage: 2 mg Intervals: 1 mg q5 min until p&lt;=4</p> <p>Intervention #3: Classification: Analgesia Intervention: IV paracetamol + ketoprofen Dosage: 1 g P + 100 mg K Intervals: NA</p>	<p>Main inclusion criteria: Patients with suspected fractured neck of femur admitted to ED; cognitive functioning to assess pain &gt;27 high SES &gt;24 low SES</p> <p>Main exclusion criteria: Contraindications to equimolar mix of nitrous oxide/O2; contraindications to femoral block; allergy to morphine and/or paracetamol/ketoprofene; known renal insufficiency; already receiving morphine Rx</p>

**Table E-5. Nerve blocks (continued)**

<p>Pedersen 2008<sup>105</sup></p>	<p>Study design: Retrospective cohort study Study period: Jan-03 to Mar-04 Type of hospital: University hospital Country: Denmark Financial support: No external funding</p>	<p>Intervention #1: Classification: 3-in-1 nerve block Intervention: Bupivacaine Dosage: Bolus: 100mg; Maintenance: 50mg Intervals: Single administration; continuous (every 8hrs)</p> <p>Intervention #2: Classification: Analgesia Intervention: Preoperative: Morphine SC or tablets; Postoperative: Morphine SR tablets/acetaminophen or ibuprofen Dosage: 2.5-5mg/10-20mg; 1g/or 400mg Intervals: Every 12hrs; every 8hr/or every 12hrs</p>	<p>Main inclusion criteria: Pts undergoing surgery for a nonpathological, low- energy hip fracture</p> <p>Main exclusion criteria: Pts who did not receive a femoral nerve catheter or were not admitted to hip fracture unit</p>
<p>Scheinin 2000<sup>106</sup></p>	<p>Study design: RCT Study period: Jan-95 to Jan-97 Type of hospital: University hospital Country: Finland Financial support: Financial support provided by institutional, departmental and/or governmental sources</p>	<p>Intervention #1: Classification: Epidural analgesia (continuous) Intervention: Bupivacaine/Fentanyl Dosage: 1mg per ml + 10ug per ml Intervals: Continuous administration</p> <p>Intervention #2: Classification: IM analgesia Intervention: Oxycodone IM Dosage: 0.1-0.15mg per kg Intervals: On demand (max every 6hrs)</p>	<p>Main inclusion criteria: Elderly pts admitted for surgical repair of a traumatic hip fracture</p> <p>Main exclusion criteria: Known coagulation abnormalities, progressive neurologic diseases, sepsis and skin infections in lumbar region, restless or uncooperative (e.g., dementia), or significant conduction abnormalities or no sinus rhythm</p>

**Table E-5. Nerve blocks (continued)**

Shaaban Ali 2009 <sup>107</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Egypt Financial support: NR	Intervention #1: Classification: 3-in-1 nerve block Intervention: Preoperative: 3-in-1 femoral nerve block/ketorolac Dosage: NR Intervals: NR  Intervention #2: Classification: 3-in-1 nerve block Intervention: Postoperative: 3-in-1 femoral nerve block/ketorolac Dosage: NR Intervals: NR	Main inclusion criteria: ASA I-III with fracture neck of femur  Main exclusion criteria: NR
Spansberg 1996 <sup>108</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Denmark Financial support: NR	Intervention #1: Classification: Lumbar plexus block (NS) Intervention: Bolus: Bupivacaine 0.5%; Maintenance: Bupivacaine 0.25% Dosage: 0.4mL per kg; 0.14mL per kg per hr Intervals: Single administration; Continuous administration  Intervention #2: Classification: Placebo Intervention: Bolus: Saline; Maintenance: Saline Dosage: 0.4mL per Kg; 0.14mL per kg per hr Intervals: Continuous administration	Main inclusion criteria: Pts with femoral neck fractures  Main exclusion criteria: NR

**Table E-5. Nerve blocks (continued)**

Tuncer 2003 <sup>109</sup>	<p>Study design: RCT  Study period: NR  Type of hospital: University hospital  Country: Turkey  Financial support: NR</p>	<p>Intervention #1:  Classification: 3-in-1 nerve block (NS)  Intervention: Bolus: Lidocaine 2%/Maintenance: Bupivacaine 0.125%; PCA bolus: Bupivacaine 0.125%  Dosage: 30ml; 4ml per hr; 3ml  Intervals: Single administration;  Continuous administration; Patient controlled bolus on demand</p> <p>Intervention #2:  Classification: IV analgesia  Intervention: Morphine IV  Dosage: 1mg  Intervals: On demand</p>	<p>Main inclusion criteria: Pts, ASA I–II, scheduled for trochanteric fracture repair</p> <p>Main exclusion criteria: Pts with coagulation abnormalities, &lt;18 or &gt;80 yrs, wt &lt;50 or &gt;100 kg, known allergy to bupivacaine or opioids, previous analgesic treatment with opioids, inability to understand pain scales or use a patient controlled analgesia device</p>
Turker 2003 <sup>110</sup>	<p>Study design: RCT  Study period: NR  Type of hospital: University hospital  Country: Turkey  Financial support: NR</p>	<p>Intervention #1:  Classification: Psoas compartment block (NS)  Intervention: Bupivacaine 0.5%  Dosage: 30ml  Intervals: Single administration</p> <p>Intervention #2:  Classification: Epidural anesthesia (single)  Intervention: Bupivacaine 0.5%  Dosage: 15ml  Intervals: Single administration</p>	<p>Main inclusion criteria: Pts, ASA I–III, scheduled for unilateral hip surgery</p> <p>Main exclusion criteria: Contraindications to regional anesthesia, known allergy to any local anesthetic, dementia preventing proper comprehension, and refusal of the procedure</p>
Yun 2009 <sup>111</sup>	<p>Study design: Randomized controlled trials  Study period: 39264 to 39417  Type of hospital: University hospital  Country: Korea  Financial support: Not reported</p>	<p>Intervention #1:  Classification: Fascia iliaca compartment nerve block (CT)  Intervention: Ropivacaine  Dosage: 30 mL 3.75 mg/mL 2-3 min  Intervals: Single dose</p> <p>Intervention #2:  Classification: Analgesia  Intervention: Alfentanil  Dosage: 10 ug/kg bolus; 0.25 ug/kg/min 2 min  Intervals: Single dose</p>	<p>Main inclusion criteria: Patients with an isolated femoral neck fracture scheduled to undergo either compression hip screw or hip replacement surgery.</p> <p>Main exclusion criteria: A known allergy to amide local anaesthetics; haemorrhagic diathesis; peripheral neuropathy or mental disorders.</p>

**Table E-6. Neurostimulation**

<b>Study</b>	<b>Study characteristics</b>	<b>Interventions</b>	<b>Inclusion/Exclusion criteria</b>
Gorodetskyi 2007 <sup>112</sup>	Study design: RCT Study period: Feb-05 to Nov-05 Type of hospital: University hospital Country: Russia Financial support: Financial support provided by a commercial party	Intervention #1: Classification: Neurostimulation Intervention: InterX 5000 device Dosage: high peak amplitude averaging 17 volts on skin with low current of 6 mA, and damped biphasic electrical impulses Intervals: Every 24hrs  Intervention #2: Classification: Sham Control Intervention: NA Intervals: Every 24hrs	Main inclusion criteria: Between 60 and 75 yrs, undergone stabilization of A2 femoral trochanteric fracture  Main exclusion criteria: Limitations that interfere with electrical stimulation (e.g., insulin pumps, pacemakers, neurostimulation implants), hx epilepsy or seizure, bilateral fractures, fractures of pathological origin, excluding osteoporosis
Lang 2007 <sup>113</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Austria Financial support: NR	Intervention #1: Classification: Neurostimulation Intervention: Transcutaneous electrical nerve stimulation Dosage: 70 mA, frequency range: 0.5 to 120 Hz, pulse width: 60 to 300 us, Intervals: Single administration  Intervention #2: Classification: Sham Control Intervention: NA Intervals: Single administration	Main inclusion criteria: >19 yrs, acute pain (>60 mm VAS) in region of hip  Main exclusion criteria: Analgesics in previous 48 hr, neurologic impairment of legs, cognitive impairment or inability to communicate, potentially dangerous internal diseases (ASA score >3), or hip pain from causes other than fracture

ASA = American Society of Anesthesiology; IM = intramuscular; IV = intravenous; NR = not reported; RCT = randomized controlled trial

**Table E-7. Rehabilitation**

<b>Study</b>	<b>Study characteristics</b>	<b>Interventions</b>	<b>Inclusion/Exclusion criteria</b>
Di Lorenzo 2007 <sup>114</sup>	Study design: RCT Study period: Jan-02 to Oct-06 Type of hospital: General hospital Country: Italy Financial support: NR	Intervention #1: Classification: Rehabilitation Intervention: Stretching/strengthening of spinal and psoas muscles Dosage: 1 hr of training Intervals: Every 12 hrs for 4 wk  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: Pts with extracapsular unstable hip fracture who underwent surgery and have back pain on ipsilateral side of fracture despite standard rehabilitation  Main exclusion criteria: Previous chronic back pain, back surgery, spinal stenosis, spondylolisthesis or anxiety and depression

NR = not reported; RCT = randomized controlled trial

**Table E-8. Traction**

<b>Study</b>	<b>Study characteristics</b>	<b>Interventions</b>	<b>Inclusion/Exclusion criteria</b>
Anderson 1993 <sup>115</sup>	Study design: NRCT Study period: Nov-91 to Jul-93 Type of hospital: General hospital Country: UK Financial support: No external funding	Intervention #1: Classification: Skin traction Intervention: Hamilton-Russell skin traction Dosage: 5lb (2.3kg)  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR	Main inclusion criteria: Pts with fractures of the proximal femur  Main exclusion criteria: Refused informed consent or consent could not be obtained (e.g., dementia), contraindications for use of skin traction (e.g., poor skin, ulceration of lower limb, peripheral arterial disease, severe edema and lower limb deformities)
Finsen 1992 <sup>116</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: Norway Financial support: NR	Intervention #1: Classification: Skin traction Intervention: Elastic bandages Dosage: 3kg  Intervention #2: Classification: Skeletal traction Intervention: Steinman pin Dosage: 10% of the patient's body weight  Intervention #3: Classification: Pillow Intervention: Standard pillow	Main inclusion criteria: > 50 yrs admitted with recent cervical, trochanteric or subtrochanteric hip fractures  Main exclusion criteria: NR
Ghnaimat 2005 <sup>117</sup>	Study design: NRCT Study period: Feb-02 to Oct-04 Type of hospital: General hospital Country: Jordan Financial support: NR	Intervention #1: Classification: Skin traction Intervention: Skin traction Dosage: 6lb Intervals: NA  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: Pts admitted with fractures of the proximal femur  Main exclusion criteria: Allergy to adhesive bandages, ulceration in lower limbs, peripheral arterial disease, severe edema or lower limb deformities, or refused to be part of the study

NA = not applicable; NR = not reported; NRCT = nonrandomized controlled trial; RCT = randomized controlled trial

**Table E-8. Traction** (continued)

Jerre 2000 <sup>118</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Sweden Financial support: NR	Intervention #1: Classification: Skin traction Intervention: Foam rubber boot with straps around the lower leg Dosage: 3Kg Intervals: NA  Intervention #2: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR  Intervention #3: Classification: Skin traction Intervention: Foam rubber boot with straps around the lower leg Dosage: 3Kg Intervals: NA  Intervention #4: Classification: Standard care Intervention: NR Dosage: NR Intervals: NR	Main inclusion criteria: Pts with cervical or trochanteric hip fractures  Main exclusion criteria: Pts unwilling or unable to provide consent for enrollment
Needoff 1993 <sup>119</sup>	Study design: RCT Study period: NR Type of hospital: General hospital Country: UK Financial support: NR	Intervention #1: Classification: Skin traction Intervention: Ventilated foam strap secured by means of a crepe bandage Dosage: 2.5kg Intervals: NA  Intervention #2: Classification: Pillow Intervention: Standard pillow Dosage: NA Intervals: NA	Main inclusion criteria: > 60 yrs with cervical or pertrochanteric femoral fractures undergoing surgical hip fracture repair  Main exclusion criteria: Cognitively impaired pts on the Mini-Mental State Examination

**Table E-8. Traction** (continued)

Resch 1998 <sup>120</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Sweden Financial support: Financial support provided by governmental sources	Intervention #1: Classification: Skin traction Intervention: Foam boot Dosage: 3kg Intervals: NA  Intervention #2: Classification: Skeletal traction Intervention: K-wire Dosage: 3-5kg (5-10% body weight) Intervals: NA	Main inclusion criteria: Displaced hip fractures  Main exclusion criteria: Pts who could not give consent, declined participation or had local skin problems (e.g., leg ulcers)
Resch 2005 <sup>26</sup>	Study design: RCT Study period: NR Type of hospital: University hospital Country: Sweden Financial support: Financial support provided by institutional and/or departmental sources	Intervention #1: Classification: Skin traction Intervention: Foam rubber boot Dosage: 3kg Intervals: NA  Intervention #2: Classification: Pillow Intervention: Lasse Pillow Dosage: NA Intervals: NA  Intervention #3: Classification: Pillow Intervention: Standard pillow Dosage: NA Intervals: NA	Main inclusion criteria: Pts who had a dislocated cervical or trochanteric hip fracture, ability to give informed consent, and no local problems which would prohibit the use of skin traction, such as ulcers, eczema, or peripheral vascular disease  Main exclusion criteria: NR
Rosen 2001 <sup>121</sup>	Study design: RCT Study period: Jun-95 to Feb-97 Type of hospital: University hospital Country: US Financial support: No external funding	Intervention #1: Classification: Skin traction Intervention: Foam traction boot Dosage: 5lb Intervals: NA  Intervention #2: Classification: Pillow Intervention: Standard pillow Dosage: NA Intervals: NA	Main inclusion criteria: Pts with an isolated femoral neck or intertrochanteric hip fracture  Main exclusion criteria: < 50 yrs, underlying dementia, other concomitant injury, delayed hospital presentation (e.g., >24 hrs after the initial injury)

**Table E-8. Traction** (continued)

Vermeiren 1995 <sup>122</sup>	Study design: Prospective cohort study Study period: Jul-87 to Jun-89 Type of hospital: General hospital Country: Belgium Financial support: NR	Intervention #1: Classification: Skeletal traction Intervention: Skeletal traction with pillows for foot elevation Dosage: 1 kg traction weight/10 kg body weight Intervals: NA  Intervention #2: Classification: Skeletal traction Intervention: Skeletal traction with metal splint Dosage: 1 kg traction weight/10 kg body weight Intervals: NA	Main inclusion criteria: Pts admitted with an intertrochanteric or subtrochanteric hip fracture  Main exclusion criteria: NR
Yip 2002 <sup>123</sup>	Study design: NRCT Study period: Aug-95 to Dec-97 Type of hospital: University hospital Country: Hong Kong Financial support: Financial support provided by institutional and/or departmental sources	Intervention #1: Classification: Skin traction Intervention: Foam boot Dosage: 2kg Intervals: NA  Intervention #2: Classification: Pillow Intervention: Standard pillow Dosage: NA Intervals: NA	Main inclusion criteria: Pts with proximal femur fracture and consenting to enrollment  Main exclusion criteria: Pts that were senile or had been taking regular analgesia prior to admission

## Appendix F. Characteristics of Interventions

**Table F-1. Pharmacologic Analgesia**

		Intervention 1	Intervention 2	Intervention 3	Intervention 4
Apostolopoulos 2006 <sup>41</sup>	Classification	IV analgesia	IM analgesia	NA	NA
	Type of intervention	Parecoxib IV	Diclofenac IM; Pethidine IM		
	Dosage	40mg	75mg; NR		
	Dosage Intervals	Every 12hrs	Every 12hrs; on demand		
	Timing of intervention	Post-operative	Post-operative		
Baker 2004 <sup>42</sup>	Classification	Intrathecal analgesia	Intrathecal analgesia	NA	NA
	Type of intervention	Clonidine (Isotonic)	Clonidine (Hypertonic)		
	Dosage	150 ug	150 ug		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Post-operative	Post-operative		
	Baseline pain score Mean ± SD (n)			Scale name [Visual analogue scale]	
		6.51 ± 0.63 (15)	7.18 ± 0.37 (15)		
Poitevin 1999 <sup>53</sup>	Classification	Analgesia	Analgesia	NA	NA
	Type of intervention	Lysine clonixinate	Metamizole		
	Dosage	125mg	400mg		
	Dosage Intervals	every 8 hr	every 8 hr		
	Age (yr) Mean ± SD	76.91 ± 6.00	77.60 ± 6.10		
	Gender Females: n (%) Males: n (%)	35/ 48 (72.92%) 13/ 48 (27.08%)	35/ 46 (76.09%) 9/ 46 (19.57%)		

IM = intramuscular; IV = intravenous

**Table F-2. Anesthesia**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
	Spinal anesthesia	General anesthesia	NA	NA
Adams 1990 <sup>54</sup>	Bupivacaine 0.5%/ Mepivacaine 4%	Not reported		
Classification				
Type of intervention				
Dosage	Not reported	Not reported		
Dosage Intervals	Not reported	Not reported		
Age (yr)				
Mean	81 (70 – 88)	79 (63 – 96)		
Range				
Body weight (Kg)				
Mean	63.00 (45 – 100)	58.00 (40 – 80)		
Range				
Height (cm)				
Mean ± SD	161.00 ± 178	161.00 ± 178		
Range	(150 – 182)	(150 – 178)		
BMI (Kg/ m <sup>2</sup> )				
Mean ± SD	24.30	22.40		
Range				
Gender				
Females: n (%)	18/ 24 (75.00%)	28/ 32 (87.50%)		
Males: n (%)	6/ 24 (25.00%)	4/ 32 (12.50%)		
Type of fractures				
Femoral neck: n (%)	24/ 24 (100.00%)	32/ 32 (100.00%)		
Intertrochanteric: n (%)	0/ 24 (0.00%)	0/ 32 (0.00%)		
Proximal femur: n (%)	0/ 24 (0.00%)	0/ 32 (0.00%)		

**Table F-2. Anesthesia (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Ben-David 2000 <sup>56</sup>	Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA	NA
	Type of intervention	Bupivacaine/Fentanyl	Bupivacaine		
	Dosage	4mg/20ug	10mg		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of surgery	Richard's platescrew internal fixation of femoral neck fx in 8/10 ; Austin–Moore hemiarthroplasty for subcapital fx of femoral neck in 2/10	Richard's platescrew internal fixation of femoral neck fx and Austin–Moore hemiarthroplasty for subcapital fx of femoral neck in all		
	Type of anesthesia				
	Epidural	0/10 (0%)	0/10 (0%)		
	Spinal	10/10 (100%)	10/10 (100%)		
	General	0/10 (0%)	0/10 (0%)		
Casati 2003 <sup>57</sup>	Classification	Spinal anesthesia (single)	General anesthesia	NA	NA
	Type of intervention	Bupivacaine 0.5%	None		
	Dosage	7.5mg	NA		
	Dosage Intervals	Single administration	NA		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of anesthesia				
	Epidural	0/15 (0%)	0/15 (0%)		
	Spinal	15/15 (100%)	0/15 (0%)		
	General	0/15 (0%)	15/15 (100%)		
	Duration of surgery (hr) Range	(0.75 – 1.83)	(0.83 – 1.67)		
Baseline pain score Mean ± SD (n) (Range)	Scale name [Numerical rating score (1-5)]				
	1.67 ± 0.49 (15) (1.00 – 2.00)	2.13 ± 0.74 (15) (1.00 – 3.00)			

**Table F-2. Anesthesia (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Danelli 2008 <sup>58</sup>	Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA	NA
	Type of intervention	Levobupivacaine 0.5%	Levobupivacaine 0.75%		
	Dosage	15mg	15mg		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of surgery	Gamma-nail fixation or hip hemiarthroplasty in all	Gamma-nail fixation or hip hemiarthroplasty in all		
	Type of anesthesia				
	Epidural	0/29 (0%)	0/31 (0%)		
	Spinal	29/29 (100%)	31/31 (100%)		
	General	0/29 (0%)	0/31 (0%)		
Favarel- Garrigues 1996 <sup>59</sup>	Classification	Spinal anesthesia (continuous)	Spinal anesthesia (single)	NA	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%		
	Dosage	Bolus: Bupivacaine 5mg (1ml); Maintenance: Bupivacaine 2.5mg (0.5ml)	Based on age and ht: 15mg 70-79 yr or >170 cm; 12.5mg 80- 90 yr or 150-170 cm; 10mg >90 yr or <150 cm		
	Dosage Intervals	Single administration; Continuous administration on demand	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of anesthesia				
	Epidural	0/30 (0%)	0/30 (0%)		
	Spinal	30/30 (100%)	30/30 (100%)		
	General	0/30 (0%)	0/30 (0%)		
	Duration of surgery (hr) Mean ± SD	1.42 ± 0.71	1.38 ± 0.55		
Hooda 2006 <sup>60</sup>	Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	Spinal anesthesia (single)	NA

**Table F-2. Anesthesia (continued)**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Type of intervention	Bupivacaine 0.5%/Fentanyl	Bupivacaine 0.5%/Fentanyl	Bupivacaine 0.5%/Fentanyl	
Dosage	4mg (0.8ml)/20mg (0.4ml)	5mg (1.0ml)/20mg (0.4ml)	6mg (1.2ml)/20mg (0.4ml)	
Dosage Intervals	Single administration	Single administration	Single administration	
Timing of intervention	Intra-operative	Intra-operative	Intra-operative	
Type of anesthesia				
Epidural	0/30 (0%)	0/30 (0%)	0/30 (0%)	
Spinal	30/30 (100%)	30/30 (100%)	30/30 (100%)	
General	0/30 (0%)	0/30 (0%)	0/30 (0%)	
Duration of surgery (hr) Mean ± SD (Range)	0.98 ± 0.27 (0.42 –1.42)	1.00 ± 0.41 (0.50 –2.67)	1.03 ± 0.21 (0.67 –1.50)	
Juelsgaard 1998 <sup>61</sup>	Classification	Spinal anesthesia (incremental)	Spinal anesthesia (single)	General anesthesia NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%	Fentanyl
	Dosage	1.6ml	2.5ml	Bolus: 1-2ug/kg/ Maintenance: 25- 50ug
	Dosage Intervals	Incremental dosage	Single administration	Single administration/ Continuous administration (on demand)
	Timing of intervention	Intra-operative	Intra-operative	Intra-operative
	Type of surgery	Internal fixation in 4/14; hemiarthroplasty in 10/14	Internal fixation in 5/15; hemiarthroplasty in 10/15	Internal fixation in 3/14; hemiarthroplasty in 11/14
	Type of anesthesia			
	Epidural	0/14 (0%)	0/15 (0%)	0/14 (0%)
	Spinal	14/14 (100%)	15/15 (100%)	0/14 (0%)
	General	0/14 (0%)	0/15 (0%)	14/14 (100%)
	Duration of surgery (hr) Mean ± SD (Range)	1.09 ± NR (0.45 –2.00)	1.17 ± NR (0.45 –2.40)	1.13 ± NR (0.45 –1.20)
Klimscha 1995 <sup>62</sup>	Classification	Spinal anesthesia (continuous)	Spinal anesthesia (continuous)	Epidural anesthesia (continuous) Epidural anesthesia (continuous)

Table F-2. Anesthesia (continued)

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Type of intervention	Bupivacaine 0.5% plus clonidine	Bupivacaine 0.5%	Bupivacaine 0.5%/clonidine	Bupivacaine 0.5%
Dosage	1ml bupivacaine/1ml Clonidine	10ml bupivacaine	10ml bupivacaine/ 1ml Clonidine	10ml bupivacaine
Dosage Intervals	Continuous administration (3 repetitive doses)	Continuous administration (3 repetitive doses)	Continuous administration (3 repetitive doses)	Continuous administration (3 repetitive doses)
Timing of intervention	Intra-operative	Intra-operative	Intra-operative	Intra-operative
Type of anesthesia				
Epidural	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
Spinal	10/10 (100%)	10/10 (100%)	0/10 (0%)	0/10 (0%)
General	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
Krobot 2006 <sup>63</sup>				
Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA	NA
Type of intervention	Levobupivacaine/Fentanyl	Levobupivacaine		
Dosage	7.5mg/0.01mg	10mg		
Dosage Intervals	Single administration	Single administration		
Timing of intervention	Intra-operative	Intra-operative		
Kwan 1997 <sup>64</sup>				
Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA	NA
Type of intervention	Bupivacaine 0.5%/Morphine	Bupivacaine 0.5%		
Dosage	2.2ml/0.2mg	2.2ml		
Dosage Intervals	Single administration	Single administration		
Timing of intervention	Intra-operative	Intra-operative		
Type of surgery	Austin Moore arthroplasty or compression hip screw	Austin Moore arthroplasty or compression hip screw		
Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]			
	4.68 ± 2.14 (20)	5.40 ± 2.76 (20)		
Labaille 1992 <sup>65</sup>				
Classification	Spinal anesthesia (continuous)	Spinal anesthesia (continuous)	NA	NA

**Table F-2. Anesthesia (continued)**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Type of intervention	Bupivacaine 0.125%/Bupivacaine 0.125%	Bupivacaine 0.5%/Bupivacaine 0.5%		
Dosage	Bolus: 3ml/Maintaninence: 1ml	Bolus: 3ml/Maintaninence: 1ml		
Dosage Intervals	Single administration/ Continuous administration (on demand)	Single administration/ Continuous administration (on demand)		
Timing of intervention	Intra-operative	Intra-operative		
Malek 2004 <sup>66</sup>				
Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	Spinal anesthesia (single)	NA
Type of intervention	Bupivacaine 0.5%/Fentanyl	Bupivacaine 0.5%/Sufentanil	Bupivacaine 0.5%	
Dosage	3ml/50ug	3ml/5ug	3ml	
Dosage Intervals	Single administration	Single administration	Single administration	
Timing of intervention	Intra-operative	Intra-operative	Intra-operative	
Type of anesthesia				
Epidural	0/21 (0%)	0/21 (0%)	0/21 (0%)	
Spinal	21/21 (100%)	21/21 (100%)	21/21 (100%)	
General	0/21 (0%)	0/21 (0%)	0/21 (0%)	
Duration of surgery (hr) Mean ± SD	1.57 ± 0.43	1.75 ± 0.33	1.60 ± 0.50	
Martyr 2001 <sup>67</sup>				
Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA	NA
Type of intervention	Bupivaciane/Fentanyl	Bupivacaine		
Dosage	7.5mg/20ug	12.5mg		
Dosage Intervals	Single administration	Single administration		
Timing of intervention	Intra-operative	Intra-operative		
Type of surgery	Richards pin and plate in all	Richards pin and plate in all		

**Table F-2. Anesthesia (continued)**

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Type of anesthesia				
Epidural	0/20 (0%)	0/22 (0%)		
Spinal	20/20 (100%)	22/22 (100%)		
General	0/20 (0%)	0/22 (0%)		
Duration of surgery (hr) Mean ± SD	1.27 ± 0.50	1.10 ± 0.24		
Martyr 2005 <sup>68</sup>	Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA
	Type of intervention	Bupivacaine/Fentanyl	Bupivacaine	
	Dosage	9.0mg/20ug	11.0mg	
	Dosage Intervals	Single administration	Single administration	
	Timing of intervention	Intra-operative	Intra-operative	
	Type of surgery	DHS in 13/20 pts; hemianthroplasty in 7/20 pts	DHS in 11/20 pts; hemianthroplasty in 9/20 pts	
	Type of anesthesia			
	Epidural	0/20 (0%)	0/20 (0%)	
	Spinal	20/20 (100%)	20/20 (100%)	
	General	0/20 (0%)	0/20 (0%)	
	Duration of surgery (hr) Mean ± SD	0.85 ± 0.40	0.78 ± 0.33	
Maurette 1993 <sup>69</sup>	Classification	Spinal anesthesia (continuous)	Spinal anesthesia (continuous)	NA
	Type of intervention	Bolus: lidocaine 1.6%/ meperidine 1%; Maintainence: lidocaine 1.6%	Bolus: lidocaine 1.6%; Maintainence: lidocaine 1.6%	
	Dosage	NA/4ml (200mg); NA	NA	
	Dosage Intervals	Continuous administration	Continuous administration	
	Timing of intervention	Intra-operative	Intra-operative	
	Type of anesthesia			
	Epidural	0/19 (0%)	0/15 (0%)	
	Spinal	19/19 (100%)	15/15 (100%)	
	General	0/19 (0%)	0/15 (0%)	

Table F-2. Anesthesia (continued)

		Intervention 1	Intervention 2	Intervention 3	Intervention 4
	Duration of surgery (hr) Mean ± SD	1.33 ± 0.60	1.35 ± 0.40		
Miller 1990 <sup>70</sup>	Classification	Spinal anesthesia	General anesthesia		
	Type of intervention	Mepivacaine 4 %	Fentanyl		
	Dosage	2ml (80 mg)	3-5mg per kg		
	Dosage Intervals	Not reported	Not reported		
	Age (yr) Mean ± SD	79.80	80.5		
	Type of fractures Femoral neck: n (%)	0/ 180 (0.00%)	0/ 137 (0.00%)		
	Intertrochanteric: n (%)	0/ 180 (0.00%)	0/ 137 (0.00%)		
Proximal femur: n (%)	180/ 180 (100.00%)	137/ 137 (100.00%)			
Minville 2006 <sup>71</sup>	Classification	Spinal anesthesia (continuous)	Spinal anesthesia (single)	NA	NA
	Type of intervention	Bupivacaine	Bupivacaine		
	Dosage	2.5mg	7.5mg		
	Dosage Intervals	Continuous administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of surgery	DHS in 12/36 pts; Austin-Moore arthroplasty in 18/36; hip hemiarthroplasty in 6/36	DHS in 10/37 pts; Austin-Moore arthroplasty in 22/37; hip hemiarthroplasty in 5/37		
	Type of anesthesia Epidural	0/36 (0%)	0/37 (0%)		
	Spinal	36/36 (100%)	37/37 (100%)		
	General	0/36 (0%)	0/37 (0%)		
	Duration of surgery (hr) Mean ± SD	0.87 ± 0.30	0.85 ± 0.28		
Minville 2008 <sup>72</sup>	Classification	Spinal anesthesia (continuous)	Spinal anesthesia (continuous)	Spinal anesthesia (single)	General anesthesia
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%	Bupivacaine 0.5%	Sulfentanil
	Dosage	2.5mg	5mg	NR	NR

**Table F-2. Anesthesia (continued)**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Dosage Intervals	Continuous administration	Continuous administration	Single administration	NR
Timing of intervention	Intra-operative	Intra-operative	Intra-operative	Intra-operative
Time from ED arrival to surgery (hr) Mean $\pm$ SD	24.00 $\pm$ 10.00	17.00 $\pm$ 12.00	18.00 $\pm$ 10.00	23.00 $\pm$ 7.00
Type of surgery	Osteosynthesis in 76/121; intermediate prosthesis in 33/12; total hip replacement in 12/121	osteosynthesis 34/61; intermediate prosthesis 19/61; total hip replacement 8/61	osteosynthesis 52/109; intermediate prosthesis 41/109; total hip replacement 16/109	osteosynthesis 20/42; intermediate prosthesis 8/42; total hip replacement 14/42
Type of anesthesia				
Epidural	0/121 (0%)	0/61 (0%)	0/109 (0%)	0/42 (0%)
Spinal	121/121 (100%)	61/61 (100%)	109/109 (100%)	0/42 (0%)
General	0/121 (0%)	0/61 (0%)	0/109 (0%)	42/42 (100%)
Duration of surgery (hr) Mean $\pm$ SD	1.00 $\pm$ 0.33	1.03 $\pm$ 0.32	1.10 $\pm$ 0.48	1.30 $\pm$ 0.48
Navas 2008 <sup>73</sup>				
Classification	Spinal anesthesia (continuous)	Spinal anesthesia (single)	NA	NA
Type of intervention	Bupivacaine 0.15-0.25%	Bupivacaine 0.5%		
Dosage	NR	NR		
Dosage Intervals	Continuous administration	Single administration		
Timing of intervention	Intra-operative	Intra-operative		
Olofsson 2004 <sup>74</sup>				
Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	NA	NA
Type of intervention	Bupivacaine/sufentanil	Bupivacaine		
Dosage	7.5mg/5mg	15mg		
Dosage Intervals	Single administration	Single administration		
Timing of intervention	Intra-operative	Intra-operative		

**Table F-2. Anesthesia (continued)**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Type of surgery	internal fixation of femoral neck fractures with two parallel screws or DHS for subcapital fractures of the femoral neck in all pts	internal fixation of femoral neck fractures with two parallel screws or DHS for subcapital fractures of the femoral neck in all		
Type of anesthesia				
Epidural	0/25 (0%)	0/25 (0%)		
Spinal	25/25 (100%)	25/25 (100%)		
General	0/25 (0%)	0/25 (0%)		
Duration of surgery (hr)				
Mean ± SD	0.82 ± 0.13	0.65 ± 0.08		

**Table F-2. Anesthesia (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Qamarul Hoda 2007 <sup>75</sup>	Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	Spinal anesthesia (single)	NA
	Type of intervention	Bupivacaine/Fentanyl	Bupivacaine/Fentanyl	Bupivacaine	
	Dosage	6mg/20ug	8mg/20ug	10mg	
	Dosage Intervals	Single administration	Single administration	Single administration	
	Timing of intervention	Intra-operative	Intra-operative	Intra-operative	
Rais 2008 <sup>76</sup>	Classification	Spinal anesthesia (continuous)	Spinal anesthesia (continuous)	NA	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%		
	Dosage	2.5mg	5mg		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
Said-Ahmed 2006 <sup>77</sup>	Classification	Spinal anesthesia (single)	Spinal anesthesia (single)	Spinal anesthesia (single)	NA
	Type of intervention	Bupivacaine 0.5%/Fentanyl	Bupivacaine 0.5%/Sufentanil	Bupivacaine 0.5%	
	Dosage	5mg/20mcg	5mg/5mcg	10mg	
	Dosage Intervals	Single administration	Single administration	Single administration	
	Timing of intervention	Intra-operative	Intra-operative	Intra-operative	
	Type of surgery	Austin-Moore prosthesis in 14/20 pts; DHS in 6/20 pts	Austin-Moore prosthesis in 14/20; DHS in 6/20	Austin-Moore prosthesis 14/20; DHS 6/20	
	Type of anesthesia				
	Epidural	0/20 (0%)	0/20 (0%)		
	Spinal	20/20 (100%)	20/20 (100%)		
	General	0/20 (0%)	0/20 (0%)		

**Table F-2. Anesthesia (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Sen 2007 <sup>78</sup>	Classification	Spinal anesthesia (single - lateral)	Spinal anesthesia (single - supine)	NA	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%		
	Dosage	10mg	10mg		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of anesthesia				
	Epidural	0/23 (0%)	0/18 (0%)		
	Spinal	23/23 (100%)	18/18 (100%)		
	General	0/23 (0%)	0/18 (0%)		

**Table F-3. Complementary and alternative medicine (CAM)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Barker 2006 <sup>43</sup>	Classification	Auricular acupressure	Sham Control	NA	NA
	Type of intervention	1-mm plastic acupressure beads	1-mm acupressure plastic beads		
	Dosage	3 true auricular acupressure points	3 sham auricular acupressure points		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Pre-operative	Pre-operative		
	Time from fall to ED arrival (hr) Mean $\pm$ SD	0.48 $\pm$ 0.20	0.53 $\pm$ 0.25		
	Baseline pain score Mean $\pm$ SD (n)	Scale name [Visual analogue scale] 6.39 $\pm$ NR (18)	6.56 $\pm$ NR (20)		
Martin 1991 <sup>79</sup>	Classification	Relaxation	Analgesia	NA	NA
	Type of intervention	Jacobson relaxation technique/Meperidine/Morphine	Meperidine/Morphine		
	Dosage	NA	NR		
	Dosage Intervals	Instruction given prior to surgery	NR		
	Timing of intervention	Pre-operative	Pre-operative		

**Table F-4. Multimodal pain management**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Milisen 2001 <sup>80</sup>	Classification	Multimodal pain management	Standard care	NA	NA
	Type of intervention	Bolus: Tramadol IV; Maintainence (48hrs): Tramdol IV + propacetamol IV; Maintainence (Day 3-5): oral tramadol + oral paracetamol	NR		
	Dosage	3mg/ kg; 6mg/ kg/ 24hrs; 120mg/ kg/ 24hours/NA	NR		
	Dosage Intervals	Continuous administration	NR		
	Timing of intervention	Post-operative	Post-operative		
Ogilvie-Harris 1993 <sup>81</sup>	Classification	Mutlimodal pain management	Standard care	NA	NA
	Type of intervention	Skin Traction/ Morphine/Acetaminophen	NR		
	Dosage	NA/2.5-5mg/1000mg	NR		
	Dosage Intervals	Rewrap every 8hrs/every 4hrs/every 4hrs	NR		
	Timing of intervention	Pre-operative	Pre-operative		

**Table F-5. Nerve blocks**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Antonopoulou 2006 <sup>82</sup>	Classification	Femoral nerve block	Analgesia	NA	NA
	Type of intervention	Bolus: Levobupivacaine 0.25%; Maintenance: Levobupivacaine 0.12%	Paracetamol; Pethidine		
	Dosage	18ml	500mg; NR		
	Dosage Intervals	Single administration; Continuous administration	Every 8hrs; on demand		
	Timing of intervention	Post-operative	Post-operative		
	Type of anesthesia				
	Epidural Spinal General	0/49 (0%) 49/49 (100%) 0/49 (0%)	0/35 (0%) 35/35 (100%) 0/35 (0%)		
Chudinov 1999 <sup>83</sup>	Classification	Psoas Compartment Block (continuous)	IM analgesia	NA	NA
	Type of intervention	Bupivacaine 0.25%	Meperidine IM		
	Dosage	Bolus: 2mg/kg; Maintenance: 2mg/kg	1mg/kg		
	Dosage Intervals	Single administration/ Maintenance: every 12hrs	On demand (max every 5hrs)		
	Timing of intervention	Pre-operative	Pre-operative		
	Type of anesthesia				
	Epidural Spinal General	0/20 (0%) 11/20 (55%) 1/20 (5%)	0/20 (0%) 19/20 (95%) 1/20 (5%)		
	Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]			
	4.30 ± 0.60 (20)	4.30 ± 0.70 (20)			

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Coad 1991 <sup>84</sup>	Classification	3-in-1 nerve block	Lateral cutaneous Nerve Block	Standard care	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%	NR	
	Dosage	15ml	15ml	NR	
	Dosage Intervals	Single administration	Single administration	NR	
	Timing of intervention	Post-operative	Post-operative	Post-operative	
	Type of surgery	Compression screw 12/17 pts; pin and plate 5/17	Compression screw 13/17 pts; pin and plate 4/17	Compression screw 11/17; pin and plate 5/17	
	Type of anesthesia				
	Epidural	0/17 (0%)	0/17 (0%)	0/16 (0%)	
	Spinal	0/17 (0%)	0/17 (0%)	0/16 (0%)	
	General	17/17 (100%)	17/17 (100%)	16/16 (100%)	
Cuvillon 2007 <sup>85</sup>	Classification	3-in-1 nerve block (NS)	Analgesia	Analgesia	
	Type of intervention	Ropivacaine	Paracetamol	Morphine	
	Dosage	Catheter attached to pump allowing continuous ropivacaine 0.2% at 10 mL/hr x 48 hr	1st dose 2g then 2g	2 mg q5min in post-op until VAS <30 then 0.1 mg/kg q4 hr; if VAS >30 dosage increased by 50%	
	Dosage Intervals	Continuous	every 6 hours		
	Age (yr)				
	Mean ± SD	83 ± 5.00	83 ± 7.00	81.00 ± 8.00	
	Body weight (Kg)				
	Mean ± SD	60.00 ± 11.00	57.00 ± 10.00	59.00 ± 13.00	
	Height (cm)				
	Mean ± SD	159.00 ± 10.00	158.00 ± 10.00	159.00 ± 10.00	
Gender					
Females: n (%)	18/ 21 (85.71%)	19/ 21 (90.48%)	16/ 20 (80.00%)		
Males: n (%)	3/ 21 (14.29%)	2/ 21 (9.52%)	4/ 20 (20.00%)		

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
de Visme 2000 <sup>86</sup>	Classification	Combined lumbar/sacral plexus block (NS)	Spinal anesthesia (single)	NA	NA
	Type of intervention	Lidocaine 1.33%	Bupivacaine 0.5%		
	Dosage	45mL	3mL		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of surgery	Gamma nail osteosynthesis 9/15; Moore prosthesis 2/15; intermediary prosthesis 0/15; pinnings 4/15	Gamma nail osteosynthesis 11/14; Moore prosthesis 1/14; intermediary prosthesis 2/14; pinnings 0/14		
	Type of anesthesia				
	Epidural	0/15 (0%)	0/14 (0%)		
	Spinal	0/15 (0%)	14/14 (100%)		
	General	0/15 (0%)	0/14 (0%)		
Duration of surgery (hr) Mean ± SD (Range)	0.73 ± NR (0.32 –1.30)	1.02 ± NR (0.53 –2.67)			
Del Rosario 2008 <sup>87</sup>	Classification	Femoral nerve block (NS)/IV analgesia	IV analgesia	NA	NA
	Type of intervention	Bolus: Bupivacaine 0.25%; Maintenance: bupivacaine 0.1%; PCA: Paracetamol IV/metamizol IV	Paracetamol IV; metamizol IV		
	Dosage	30ml/5ml/1g/2g	1g; 2g		
	Dosage Intervals	Single administration; Maintenance: every hour; Patient controlled bolus: every 6hrs/every 8hrs	Every 6hrs; every 8hrs		
	Timing of intervention	Post-operative	Post-operative		
	Type of anesthesia				
	Epidural	0/49 (0%)	0/50 (0%)		
Spinal	49/49 (100%)	50/50 (100%)			
General	0/49 (0%)	0/50 (0%)			
Eyrolle 1998 <sup>88</sup>	Classification	Posterior lumbar plexus block	Spinal anesthesia (single)	NA	NA

**Table F-5. Nerve blocks (continued)**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Type of intervention	Lidocaine 2%/Bupivacaine 0.5%	Bupivacaine 0.5%		
Dosage	NR	NR		
Dosage Intervals	NR	Single administration		
Timing of intervention	Intra-operative	Intra-operative		
Type of anesthesia				
Epidural	0/25 (0%)	0/25 (0%)		
Spinal	0/25 (0%)	25/25 (100%)		
General	0/25 (0%)	0/25 (0%)		
Fletcher 2003 <sup>89</sup> Classification	3-in-1 nerve block (NS)	IV analgesia	NA	NA
Type of intervention	Bupivacaine 0.5%	Morphine IV		
Dosage	20mL	5-10mg		
Dosage Intervals	Single administration	On demand		
Timing of intervention	Pre-operative	Pre-operative		
Time from fall to ED arrival (hr) Mean ± SD	29.30 ± 20.80	27.40 ± 16.50		
Baseline pain score	Scale name [Numeric rating scale (0-3)]			
Mean ± SD (n)	2.80 ± 0.40 (24)	2.70 ± 0.60 (26)		

**Table F-5. Nerve blocks (continued)**

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Foss 2005 <sup>90</sup>				
Classification	Epidural analgesia (continuous)	Placebo	NA	NA
Type of intervention	Bupivacaine 0.125%/morphine	Saline		
Dosage	4ml of 50ug per ml per hr	NA		
Dosage Intervals	Continuous infusion (four days)	Continuous infusion (four days)		
Timing of intervention	Postoperative	Postoperative		
Type of surgery	Arthroplasty 10/28; intramedullar nailing 0/28; partial screws 6/28; sliding screws 12/28	Arthroplasty 8/2; intramedullar nailing 4/27; partial screws 4/27; sliding screws 11/27		
Type of anesthesia				
Epidural	28/28 (100%)	27/27 (100%)		
Spinal	0/28 (0%)	0/27 (0%)		
General	0/28 (0%)	0/27 (0%)		
Foss 2007 <sup>91</sup>				
Classification	Fascia iliaca compartment nerve block (CT)	Analgesia		
Type of intervention	1.0% mepivacaine	Morphine		
Dosage	40 mL 1.0% mepivacaine with 1:200 000 epinephrine; 0.02 mL/kg placebo IM injection of 0.9% saline	40 mL placebo FICB with 0.9% saline; 0.02 mL/kg 5.0 mg/mL morphine		
Dosage Intervals	Single dose	Single dose		
Age (yr)				
Mean	83 (75 – 88)	77 (69 – 88)		
Range				
Body weight (Kg)				
Mean ± SD	60.00 (50 – 80)	60.00 (50 – 65)		
Range				
BMI (Kg/ m <sup>2</sup> )				
Mean ± SD	22.80 (20 – 28)	21.30 (19 – 21)		
Gender				
Females: n (%)	14/ 24 (58.33%)	21/ 24 (87.50%)		
Males: n (%)	10/ 24 (41.67%)	3/ 24 (12.50%)		

**Table F-5. Nerve blocks (continued)**

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
ASA Class				
ASA I (%)	0/24 (0.00%)	3/ 24 (12.50%)		
ASA II (%)	13/24 (54.17%)	15/ 24 (62.50%)		
ASA III (%)	11/24 (45.83%)	6/ 24(25.00%)		
ASA IV (%)	0/24 (0.00%)	0/24 (0.00%)		
Gille 2006 <sup>92</sup>				
Classification	Femoral nerve block	Analgesia		
Type of intervention	Prilocaine 1%/ Ropivacaine 0.2%	Metamizol/ Tilidine; Ibuprofen		
Dosage	40ml/ 30ml	1g / 100mg; 400mg		
Dosage Intervals	Single administration/ Continuous (every 6hrs)	Single administration/ single administration; every 8hrs		
Age (yr)				
Mean ± SD	82 ± 8.85	78 ± 13.16		
Range	(61 – 103)	(35 – 93)		
Body weight (Kg)				
Mean ± SD	64.00 ± 13.41	67.00 ± 14.54		
Height (cm)				
Mean	163.00	165.00		
BMI (Kg/ m <sup>2</sup> )				
Mean	24.10	24.60		
Gender				
Females: n (%)	39/ 50 (78.00%)	38/ 50 (76.00%)		
Males: n (%)	11/ 50 (22.00%)	12/ 50 (24.00%)		
Type of fractures				
Femoral neck: n (%)	0/ 50 (0.00%)	0/ 50 (0.00%)		
Intertrochanteric: n (%)	0/ 50 (0.00%)	0 /50 (0.00%)		
Proximal femur: n (%)	50/ 50(100.00%)	50/ 50 (100.00%)		
Graham 2008 <sup>93</sup>				
Classification	3-in-1 nerve block (NS)	IV analgesia	NA	NA
Type of intervention	Bupivacaine 0.5%	Morphine IV		
Dosage	30ml	0.1mg per kg		
Dosage Intervals	Single administration	Single administration		
Timing of intervention	Pre-operative	Pre-operative		

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Haddad 1995 <sup>94</sup>	Classification	Femoral nerve block CT)	Standard care	NA	NA
	Type of intervention	Bupivacaine 0.25%	NR		
	Dosage	0.3ml per kg	NR		
	Dosage Intervals	Single administration	NR		
	Timing of intervention	Pre-operative	Pre-operative		
	Type of surgery	Internal fixation with DHS in all pts	Internal fixation with DHS in all pts		
	Baseline pain score Mean $\pm$ SD (n) (Range)	Scale name [Visual analogue scale]			
	7.40 $\pm$ NR (25) (2.00 – 10.00)	7.10 $\pm$ NR (25) (3.00 – 10.00)			
Henderson 2008 <sup>95</sup>	Classification	Femoral nerve block/ Opioids	Standard care	NA	NA
	Type of intervention	Bupivacaine 0.5%	Opioids		
	Dosage	NR/NR	NR		
	Dosage Intervals	Continuous/On demand	Intermittent		
	Timing of intervention	Pre-operative	Pre-operative		
Hood 1991 <sup>96</sup>	Classification	3-in-1 nerve block	Standard care	NA	NA
	Type of intervention	Prilocaine 0.75%	NR		
	Dosage	43ml	NR		
	Dosage Intervals	Single administration	NR		
	Timing of intervention	Intra-operative	Intra-operative		
	Type of surgery	Compression screw or pin and plate device	Compression screw or pin and plate device		
	Type of anesthesia General	25/25 (100%)	25/25 (100%)		
Kocum 2007 <sup>97</sup>	Classification	Lumbar plexus plus sciatic block (NS)	Lumbar plexus plus sciatic block (NS)	NA	NA
	Type of intervention	Ropivacaine 0.25%	Bupivacaine 0.25%		
	Dosage	60ml	60ml		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Intra-operative	Intra-operative		

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
	Duration of surgery (hr) Mean ± SD	1.05 ± 0.39	1.03 ± 0.29		
Mannion 2005 <sup>98</sup>	Classification	Psoas compartment block (NS)	Psoas compartment block (NS)	Psoas compartment block (NS)	NA
	Type of intervention	Levobupivacaine 0.5%/Clonidine IV	Levobupivacaine 0.5%/Clonidine	Levobupivacaine 0.5%	
	Dosage	0.4mL per kg/1ug per kg	0.4mL per kg/1ug/kg	0.4mL/ kg	
	Dosage Intervals	Single administration	Single administration	Single administration	
	Timing of intervention	Intra-operative	Intra-operative	Intra-operative	
	Type of surgery	Hemiarthroplasty in 6/12 pts; DHS in 6/12 pts	Hemiarthroplasty in 7/12 pts; DHS in 5/12 pts	Hemiarthroplasty in 5/12 pts; DHS in 7/12 pts	
	Type of anesthesia General	12/12 (100%)	12/12 (100%)	12/12 (100%)	
Marhofer 1997 <sup>99</sup>	Classification	3-in-1 nerve block (US)	3-in-1 nerve block (NS)	NA	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%		
	Dosage	20ml	20ml		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Pre-operative	Pre-operative		
	Type of anesthesia Epidural	0/20 (0%)	0/20 (0%)		
	Spinal	20/20 (100%)	20/20 (100%)		
General	0/20 (0%)	0/20 (0%)			
Marhofer 1998 <sup>100</sup>	Classification	3-in-1 nerve block (US)	3-in-1 nerve block (NS)	3-in-1 nerve block (NS)	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%	Bupivacaine 0.5%	
	Dosage	20ml	20ml	30ml	
	Dosage Intervals	Single administration	Single administration	Single administration	
	Timing of intervention	Pre-operative	Pre-operative	Pre-operative	

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Marhofer 2000 <sup>101</sup>	Classification	3-in-1 nerve block (NS)	3-in-1 nerve block (NS)	NA	NA
	Type of intervention	Ropivacaine 0.5%	Bupivacaine 0.5%		
	Dosage	20ml	20ml		
	Dosage Intervals	Single administration	Single administration		
	Timing of intervention	Pre-operative	Pre-operative		
Matot 2003 <sup>102</sup>	Classification	Epidural analgesia (continuous)	IM analgesia	NA	NA
	Type of intervention	Bolus: Bupivacaine 0.25%/ Methadone; Maintainence: Bupivacaine 0.5%/ Methadone	Meperidine IM		
	Dosage	7-10mL/4mg; 45mg/16mg	1mg/ kg		
	Dosage Intervals	Continous (24hrs)	Every 6hrs		
	Timing of intervention	Pre-operative	Pre-operative		
	Time from fall to ED arrival (hr) Mean ± SD	4.38 ± 2.50	4.18 ± 2.21		
	Time from ED arrival to surgery (hr) Mean ± SD	25.90 ± 16.70	28.60 ± 18.20		
	Type of surgery	DHS and plate fixation 20/34; hemiarthroplasty 12/34; cannulated hip screw 2/34	DHS and plate fixation 17/34; hemiarthroplasty 11/34; cannulated hip screw 2/34		
	Type of anesthesia				
	Epidural	30/34 (88.24%)	0/34 (0%)		
	Spinal	0/34 (0%)	27/34 (79.41%)		
	General	4/34 (11.76%)	3/34 (8.82%)		
	Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]			
	5.16 ± 1.74 (34)	4.91 ± 2.03 (34)			

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>	
Mouzopoulos 2009 <sup>103</sup>	Classification	Fascia iliaca compartment nerve block (CT)	Placebo	NA	NA	
	Type of intervention	Bupivacaine	Saline			
	Dosage	0.25mg dose of 0.3mL/ kg	NA			
	Dosage Intervals	every 24h pre-/post surgery	Every 24h pre-/post surgery			
	Timing of intervention	Pre-operative	Pre-operative			
	Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]				
		6.14 ± NR (102)	6.82 ± NR (105)			
Murgue 2006 <sup>104</sup>	Classification	Femoral nerve block	Analgesia	Analgesia		
	Type of intervention	Mepivacaine	IV morphine	IV paracetamol + ketoprofen		
	Dosage	20 cc	2 mg	1 g P + 100 mg K		
	Dosage Intervals		1 mg q5 min until p<=4			
	Age (yr) Mean ± SD Range	85.90 ± 6.60 (70 – 96)	85.90 ± 6.60 (70 – 96)	85.90 ± 6.60 (70 – 96)		
Pedersen 2008 <sup>105</sup>	Classification	3-in-1 nerve block	Analgesia	NA	NA	
	Type of intervention	Bupivacaine	Preoperative: Morphine SC or tablets; Postoperative: Morphine SR tablets/ acetaminophen/ ibuprofen			
	Dosage	Bolus: 100mg; Maintainence: 50mg	2.5-5mg/10-20mg; 1g/or 400mg			
	Dosage Intervals	Single administration; continuous (every 8hrs)	Every 12hrs; every 8hr/or every 12hrs			
	Timing of intervention	Pre-operative	Pre-operative			
	Time from ED arrival to surgery (hr) Mean ± SD	26.40 ± 19.30	27.60 ± 29.10			

**Table F-5. Nerve blocks (continued)**

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Type of surgery	Screws 39/178; DHS 50/178; intramedullary hip screw 43/178; Hemialloplasty 44/178; total hip arthroplasty 2/178	Screws 66/357; DHS 109/357; intramedullary hip screw 81/357; hemialloplasty 101/357; total hip arthroplasty 0/357		
Type of anesthesia				
Epidural	0/178 (0%)	0/357 (0%)		
Spinal	42/178 (23.60%)	48/357 (13.45%)		
General	136/178 (76.40%)	309/357 (86.55%)		
Scheinin 2000 <sup>106</sup>				
Classification	Epidural analgesia (continuous)	IM analgesia	NA	NA
Type of intervention	Bupivacaine/Fentanyl	Oxycodone IM		
Dosage	1mg per ml + 10ug/ ml	0.1-0.15mg/ kg		
Dosage Intervals	Continuous administration	On demand (max every 6hrs)		
Timing of intervention	Pre-operative	Pre-operative		
Type of surgery	Screw, lamina or prothesis in all pts	Screw, lamina or prothesis in all pts		
Type of anesthesia				
Epidural	0/38 (0%)	0/39 (0%)		
Spinal	38/38 (100%)	39/39 (100%)		
General	0/38 (0%)	0/39 (0%)		
Baseline pain score	Scale name [Visual analogue scale]			
Mean ± SD (n)	3.40 ± 2.40 (38)	4.20 ± 2.90 (39)		
Shaaban Ali 2009 <sup>107</sup>				
Classification	3-in-1 nerve block	3-in-1 nerve block	NA	NA
Type of intervention	Preoperative: 3-in-1 Femoral nerve block/ketorolac	Postoperative: 3-in-1 Femoral nerve block/keterolac		
Dosage	NR	NR		
Dosage Intervals	NR	NR		
Timing of intervention	Pre-operative	Post-operative		

**Table F-5. Nerve blocks (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Spansberg 1996 <sup>108</sup>	Classification	Lumbar plexus block (NS)	Placebo	NA	NA
	Type of intervention	Bolus: Bupivacaine 0.5%; Maintenance: Bupivacaine 0.25%	Bolus: Saline; Maintenance: Saline		
	Dosage	0.4mL per kg; 0.14mL/kg/hr	0.4mL per Kg; 0.14mL/kg/hr		
	Dosage Intervals	Single administration; Continuous administration	Continuous administration		
	Timing of intervention	Post-operative	Post-operative		
	Type of anesthesia Spinal	10/10 (100%)	10/10 (100%)		
	Duration of surgery (hr) Mean ± SD (Range)	0.96 ± NR (0.50 –1.83)	1.18 ± NR (0.75 –2.08)		
Tuncer 2003 <sup>109</sup>	Classification	3-in-1 nerve block (NS)	IV analgesia	NA	NA
	Type of intervention	Bolus: Lidocaine 2%/Maintenance: Bupivacaine 0.125%; PCA bolus: Bupivacaine 0.125%	Morphine IV		
	Dosage	30ml; 4ml/hr; 3ml	1mg		
	Dosage Intervals	Single administration; Continuous administration; Patient controlled bolus on demand	On demand		
	Timing of intervention	Post-operative	Post-operative		
	Type of anesthesia General	20/20 (100%)	20/20 (100%)		
	Duration of surgery (hr) Mean ± SD	2.10 ± 0.32	2.17 ± 0.29		

**Table F-5. Nerve blocks (continued)**

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Turker 2003 <sup>110</sup>	Classification	Psoas compartment block (NS)	Epidural anesthesia (single)	NA
	Type of intervention	Bupivacaine 0.5%	Bupivacaine 0.5%	
	Dosage	30ml	15ml	
	Dosage Intervals	Single administration	Single administration	
	Timing of intervention	Intra-operative	Intra-operative	
	Type of surgery	Partial hip replacement	Partial hip replacement	
	Type of anesthesia			
	Epidural	0/15 (0%)	15/15 (100%)	
	Spinal	0/15 (0%)	0/15 (0%)	
	General	15/15 (100%)	15/15 (100%)	
	Duration of surgery (hr)			
	Mean ± SD	2.19 ± 0.31	2.15 ± 0.44	
	Baseline pain score	Scale name [Visual analogue scale]		
	Mean ± SD (n)	1.56 ± 0.97 (15)	1.23 ± 1.05 (15)	
Yun 2009 <sup>111</sup>	Classification	Fascia iliaca compartment nerve block (CT)	Analgesia	
	Type of intervention	Ropivacaine	Alfentanil	
	Dosage	30 mL 3.75 mg/mL 2-3 min	10 ug/kg bolus; 0.25 ug/kg/min 2 min	
	Dosage Intervals	Single dose	Single dose	
	Age (yr)			
	Mean ± SD	75	75.10	
	Range	(69 – 85)	(62 – 88)	
	Body weight (Kg)			
	Mean ± SD	60.60 ± 7.20	60.30 ± 11.30	
	Height (cm)			
	Mean	156.20	160.80	
	Gender			
	Females: n (%)	13/ 20 (65.00%)	13/ 20 (65.00%)	
	Males: n (%)	5/ 20 (25.00%)	7/ 20 (35.00%)	

**Table F-6. Neurostimulation**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>	
Gorodetskyi 2007 <sup>112</sup>	Classification	Neurostimulation	Sham Control	NA	NA	
	Type of intervention	InterX 5000 device	NA			
	Dosage	high peak amplitude 17 volts , low current 6 mA, damped biphasic electrical impulses	NA			
	Dosage Intervals	Every 24hrs	Every 24hrs			
	Timing of intervention	Post-operative	Post-operative			
	Type of surgery	DHS/dynamic condylar screw for non-complex fractures 25/30; Gorodnichenko external fixation method for complex fractures 5/30	DHS/dynamic condylar screw for non-complex fractures 27/30; Gorodnichenko external fixation method for complex fractures 3/30			
	Type of anesthesia General	30/30 (100%)	30/30 (100%)			
	Baseline pain score Mean $\pm$ SD (n) Range	Scale name [Visual analogue scale] 9.00 $\pm$ NR (30) (7.50 – 10.00)	8.80 $\pm$ NR (30) (7.50 – 10.00)			
	Lang 2007 <sup>113</sup>	Classification	Neurostimulation	Sham Control	NA	NA
		Type of intervention	Transcutaneous electrical nerve stimulation	NA		
Dosage		70 mA, range: 0.5-120 Hz, pulse width: 60 to 300 us	NA			
Dosage Intervals		Single administration	Single administration			
Timing of intervention		Pre-operative	Pre-operative			
Time from fall to ED arrival (hr) Mean $\pm$ SD		29.80 $\pm$ 8.50	28.20 $\pm$ 12.30			
Baseline pain score Mean $\pm$ SD (n)		Scale name [Visual analogue scale] 8.90 $\pm$ 0.90 (30)	8.60 $\pm$ 1.20 (33)			

**Table F-7. Rehabilitation**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Di Lorenzo 2007 <sup>114</sup>	Classification	Rehabilitation	Standard care	NA	NA
	Type of intervention	Stretching-strengthening of spinal and psoas muscles	NR		
	Dosage	1 hr of training	NR		
	Dosage Intervals	Every 12 hrs for four wk	NR		
	Timing of intervention	Postoperative	Postoperative		
	Baseline pain score	Scale name [Visual analogue scale]			
	Mean $\pm$ SD (n) Range	7.94 $\pm$ 0.80 (18) (7.00 – 9.00)	7.94 $\pm$ 0.82 (19) (7.00 – 9.00)		

**Table F-8. Traction**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Anderson 1993 <sup>115</sup>	Classification	Skin traction	Standard care	NA	NA
	Type of intervention	Hamilton-Russell skin traction	NR		
	Dosage	5lb (2.3kg)	NR		
	Dosage Intervals	NA	NR		
	Timing of intervention	Pre-operative	Pre-operative		
	Baseline pain score	Scale name [Visual analogue scale]			
Mean $\pm$ SD (n)	5.11 $\pm$ NR (101)	5.42 $\pm$ NR (151)			

**Table F-8. Traction (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Finsen 1992 <sup>116</sup>	Classification	Skin traction	Skeletal traction	Pillow	NA
	Type of intervention	Elastic bandages	Steinman pin	Standard pillow	
	Dosage	3Kg	10% of patient's wt	NA	
	Dosage Intervals	NA	NA	NA	
	Timing of intervention	Pre-operative	Pre-operative	Pre-operative	
	Time from ED arrival to surgery (hr) Mean $\pm$ SD (Range)	24.00 $\pm$ NR (10.00 – 52.00)	23.00 $\pm$ NR (8.00 – 68.00)	26.00 $\pm$ NR (10.00 – 90.00)	
	Type of surgery	Hip compression screws or uncemented endoprosthesis	Hip compression screws or uncemented endoprosthesis	Hip compression screws, uncemented endoprosthesis 24/25; cemented endoprosthesis 1/25	
Ghnaimat 2005 <sup>117</sup>	Classification	Skin traction	Standard care	NA	NA
	Type of intervention	Skin traction	NR		
	Dosage	6lb	NR		
	Dosage Intervals	NA	NR		
	Timing of intervention	Pre-operative	Pre-operative		
Jerre 2000 <sup>118</sup>	Classification	Skin traction	Standard care	Skin traction	Standard care
	Type of intervention	Foam rubber boot with straps around lower leg	NR	Foam rubber boot with straps around lower leg	NR
	Dosage	3Kg	NR	3Kg	NR
	Dosage Intervals	NA	NR	NA	NR
	Timing of intervention	Pre-operative	Pre-operative	Pre-operative	Pre-operative
	Time from ED arrival to surgery (hr) Mean $\pm$ SD	21.50 $\pm$ 37.70	18.50 $\pm$ 9.40	16.30 $\pm$ 8.20	15.20 $\pm$ 9.30
	Time from fall to surgery (hr) Mean $\pm$ SD	34.50 $\pm$ 44.30	27.20 $\pm$ 10.00	25.00 $\pm$ 9.30	28.60 $\pm$ 18.80
	Baseline pain score Mean $\pm$ SD (n)	Scale name [Visual analogue scale]			
	4.10 $\pm$ 2.70 (30)	4.50 $\pm$ 2.60 (30)	4.30 $\pm$ 2.40 (30)	3.90 $\pm$ 2.70 (30)	
Needoff	Classification	Skin traction	Pillow	NA	NA

**Table F-8. Traction (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
1993 <sup>119</sup>	Type of intervention	Ventilated foam strap secured by means of a crepe bandage	Standard pillow		
	Dosage	2.5kg	NA		
	Dosage Intervals	NA	NA		
	Timing of intervention	Pre-operative	Pre-operative		
	Duration of surgery (hr) Mean ± SD	0.69 ± NR	0.77 ± NR		
	Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]			
		6.82 ± NR (30)	6.32 ± NR (34)	NA	NA
Resch 1998 <sup>120</sup>	Classification	Skin traction	Skeletal traction		
	Type of intervention	Foam boot	K-wire		
	Dosage	3kg	3-5kg (5-10% body weight)		
	Dosage Intervals	NA	NA		
	Timing of intervention	Pre-operative	Pre-operative		
	Time from ED arrival to surgery (hr) Mean ± SD (Range)	24.00 ± 13.00 (20.00 – 28.00)	21.00 ± 9.00 (18.00 – 24.00)		
	Duration of surgery (hr) Mean ± SD (Range)	0.80 ± 0.40 (0.68 – 0.92)	0.97 ± 0.60 (0.78 – 1.15)		
	Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]			
	Range	4.80 ± 2.50 (40) (4.00 – 5.60)	3.80 ± 2.00 (38) (3.20 – 4.40)		

**Table F-8. Traction (continued)**

		<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Resch 2005 <sup>26</sup>	Classification	Skin traction	Pillow	Pillow	NA
	Type of intervention	Foam rubber boot	Lasse Pillow	Standard pillow	
	Dosage	3kg	NA	NA	
	Timing of intervention	Pre-operative	Pre-operative	Pre-operative	
	Time from ED arrival to surgery (hr) Mean $\pm$ SD	22.00 $\pm$ 6.70	24.00 $\pm$ 6.50	23.00 $\pm$ 6.60	
	Duration of surgery (hr) Mean $\pm$ SD	0.88 $\pm$ 0.52	1.08 $\pm$ 0.95	0.98 $\pm$ 0.55	
	Baseline pain score Mean $\pm$ SD (n)	Scale name [Visual analogue scale]			
	4.30 $\pm$ 2.20 (49)	3.30 $\pm$ 2.50 (21)	3.90 $\pm$ 1.90 (53)	NA	
Rosen 2001 <sup>121</sup>	Classification	Skin traction	Pillow		
	Type of intervention	Foam traction boot	Standard pillow		
	Dosage	5lb	NA		
	Timing of intervention	Pre-operative	Pre-operative		
	Time from ED arrival to surgery (hr) Mean $\pm$ SD	28.80 $\pm$ 15.36	31.44 $\pm$ 25.44		
	Baseline pain score Mean $\pm$ SD (n)	Scale name [Visual analogue scale]			
	5.86 $\pm$ 2.73 (50)	6.12 $\pm$ 2.08 (50)			
Vermeiren 1995 <sup>122</sup>	Classification	Skeletal traction	Skeletal traction	NA	NA
	Type of intervention	Skeletal traction with pillows for foot elevation	Skeletal traction with metal splint		
	Dosage	1 kg traction weight/10 kg body weight	1 kg traction weight/10 kg body weight		
	Dosage Intervals	NA	NA		
	Timing of intervention	Pre-operative	Pre-operative		
	Type of surgery	Nail-plates or screw plates 62/64; sliding hip nails 4/64	Nail-plates or screw-plates 46/68; sliding hip nails 16/68; Ender nails 5/68; cancellous screw fixation 1/68		

**Table F-8. Traction (continued)**

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>	<b>Intervention 4</b>
Yip 2002 <sup>123</sup>				
Classification	Skin traction	Pillow	NA	NA
Type of intervention	Foam boot	Standard pillow		
Dosage	2kg	NA		
Dosage Intervals	NA	NA		
Timing of intervention	Pre-operative	Pre-operative		
Time from fall to ED arrival (hr) Mean ± SD (Range)	17.52 ± 14.16 (0.00 – 96.00)	17.52 ± 14.88 (0.00 – 72.00)		
Time from ED arrival to surgery (hr) Mean ± SD	113.52 ± 51.84	112.56 ± 71.76		
Type of surgery	Hemiarthroplasty 52/166; DHS 99/166; percutaneous hip screws 10/166; other types of surgeries 4/166	Hemiarthroplasty in 45/145; DHS 78/145; percutaneous hip screws 16/145; other types of surgeries 5/145		
Baseline pain score Mean ± SD (n)	Scale name [Visual analogue scale]			
	0.24 ± NR (166)	0.30 ± NR (145)		

## Appendix G. Risk of bias (RoB) Assessment of Randomized Controlled Trials

**Table G-1. Pharmacologic Analgesia**

Study	Item	Judgment	Description
Apostolopoulos 2006 <sup>41</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	UNCLEAR	Not enough information provided in the text to make a precise decision
	Free of selective reporting?	UNCLEAR	Not enough information provided in the text to make a precise decision
	Free of other bias?	UNCLEAR	No information on baseline characteristics or any information on financial support.
Baker 2004 <sup>42</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported as a double-blind trial and that the study solutions were freshly prepared by an anesthesiologist who had no further part in the study. Also reported that the anesthesiologist who injected the study solution and the investigator were blinded to the baricity of the clonidine solution administered
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and the source of funding was declared to be institutional
Poitevin 1999 <sup>53</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	Not reported
	Blinding?	YES	Reported as a double-blind study using identical matching placebos
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics are balanced but there is no source of funding declared

**Table G-2. Anesthesia**

Study	Item	Judgment	Description
Adams 1990 <sup>54</sup>	Adequate sequence generation?	NO	Quasi-randomization based on the date of admission
	Allocation concealment?	NO	Based on even or odd calendar dates of admission
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics are balanced but there is no source of funding declared
	Alonso Chico 2003 <sup>55</sup>	Adequate sequence generation?	UNCLEAR
Allocation concealment?		UNCLEAR	Not reported
Blinding?		UNCLEAR	Not reported
Incomplete outcome data addressed?		YES	All pts completed the study and were included in the analyses (intention-to-treat)
Free of selective reporting?		YES	Protocol not available, but the outcomes in the methods match those in the results
Free of other bias?		UNCLEAR	Baseline characteristics are balanced but there is no source of funding declared
Ben-David 2000 <sup>56</sup>		Adequate sequence generation?	UNCLEAR
	Allocation concealment?	UNCLEAR	Reported the use of sealed-envelope technique with no further details
	Blinding?	YES	Reported that all pts received the same injectate volume. Additionally the syringes were prepared by one researcher and administered by a second who remained blinded to its contents. Patient assessment and care were conducted and study data were recorded by the second blinded researcher. Finally, the protocol allowed for conversion to general anesthesia as deemed necessary by the blinded anesthesiologist. No mention of patient blinding was reported.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and the source of funding was declared to be institutional

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Casati 2003 <sup>57</sup>	Adequate sequence generation?	UNCLEAR	Reported the use of a sealed-envelope technique with no further details
	Allocation concealment?	UNCLEAR	Reported that Allocation concealment was via a sealed-envelope technique with no further details
	Blinding?	NO	Reported that the orthopedic and rehabilitation staff who assessed the clinical criteria prior to discharge from hospital were blinded to the anesthesia technique used during surgery. There is no mention of clinicians or patients being blinded. Additionally since pts in the spinal group were awake, while the pts in the general anesthesia group were unconscious, pt blinding was not possible. Finally, no mention of any procedure to blind the clinicians performing the surgery or anesthesia.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Danelli 2008 <sup>58</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a computer-generated sequence of random numbers
	Allocation concealment?	YES	Reported that allocation concealment was ensured using sequentially numbered, sealed opaque envelopes
	Blinding?	YES	Reported as a double-blind study with an independent observer, who was blinded to group allocation, recording the observations.
	Incomplete outcome data addressed?	YES	Principle of Intention-to-treat not used in the analyses with 9% of randomized pts were excluded with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-2. Anesthesia (continued)**

Study	Item	Judgment	Description
Favarel-Garrigues 1996 <sup>59</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All patient completed the study and followed up for one month post-operatively (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Hooda 2006 <sup>60</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported as a double-blind trial and that In order to facilitate blinding; spinal anesthesia was administered by a fellow colleague and observer did not know the amount of drug received by the patient
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Juelsgaard 1998 <sup>61</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported that the investigator was blinded to the randomization
	Incomplete outcome data addressed?	NO	Intention-to-treat principle was not used in the analyses with 11/54 (%) of randomized pts excluded from the analyses with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Klimscha 1995 <sup>62</sup>	Adequate sequence generation?	YES	Reported that randomization was performed by having an assistant blindly pick from an envelope a piece of paper with the name of the study solution and route of administration written on it

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
	Allocation concealment?	UNCLEAR	Reported as using envelopes with no further details
	Blinding?	YES	Reported that an assisting anesthesiologist inserted the catheters, prepared the fresh study solution, injected it, and covered the injection port with a cotton towel to blind the other anesthesiologist to the group assignment.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared. There was mention of 'valuable support' from an employee of a pharmaceutical company with no further explanation
Kwan 1997 <sup>64</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	YES	Injections were prepared by another investigator who was not performing the block.
	Blinding?	YES	Reported as double-blind design. Two different investigators prepared the solutions and administered them. An assessment of pain level conducted by investigator who was unaware of the constituents of the allocation
	Incomplete outcome data addressed?	YES	Intention-to-treat analysis was not used with 10% of participants dropped-out of the trial with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Malek 2004 <sup>66</sup>	Adequate sequence generation?	UNCLEAR	Reported the use of a sealed-envelope technique with no further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed-envelope technique with no further details
	Blinding?	UNCLEAR	Reported that only the anesthesiologist and anesthetic nurse were aware of the allocation, but there is no reporting on how was in charge of monitoring the patients and recording the outcomes
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and the source of funding was declared to be institutional
Martyr 2001 <sup>67</sup>	Adequate sequence generation?	UNCLEAR	Reported that for each patient a numbered syringe was chosen at random from the supply kept in the Pharmacy Department with no further details
	Allocation concealment?	YES	Reported that the coded syringes were chosen at random
	Blinding?	YES	Reported that the syringes were prepared by Baxter Healthcare and the study solution syringes were the same volume as the standard solution syringes and were all numbered and coded such that the administering anesthetist was blinded to their contents.
	Incomplete outcome data addressed?	NO	Intention-to-treat principle was not used in the analyses with 6/48 (12.50%) of randomized pts excluded from the analyses with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Martyr 2005 <sup>68</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a computer-generated randomization
	Allocation concealment?	YES	Reported that randomization was performed by a third-party and syringes were sequentially numbered and administered
	Blinding?	YES	Reported that the syringes were prepared by a third party and stored in the hospital pharmacy, and that the anesthesiologists and nurses that administered and monitored the patients were not aware of the allocation
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced, and disclosure of institutional financial support is provided, but the interventions were provided by Baxter Healthcare and it is not clear if they were provided as a type of financial support for the trial or were co

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Maurette 1993 <sup>69</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported as double-blind, and that the investigator that administered the medications was different from the one that prepared them
	Incomplete outcome data addressed?	YES	Intention-to-treat principle was not used with 1/35 (2.86%) of randomized pts were excluded with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Minville 2006 <sup>71</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Reported that a blinded observer assessed the dermatome level of sensory blockade, but no details of who assessed the outcome measures
	Incomplete outcome data addressed?	YES	Intention-to-treat principle was not used in the analyses with one pt not completing the investigation and not included in the analyses
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
	Navas 2008 <sup>73</sup>	Adequate sequence generation?	UNCLEAR
Allocation concealment?		UNCLEAR	No description of allocation concealment reported
Blinding?		UNCLEAR	Not reported
Incomplete outcome data addressed?		UNCLEAR	Not enough information provided in the text to make a precise decision
Free of selective reporting?		YES	Protocol not available, but the outcomes in the methods match those in the results
Free of other bias?		UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Olofsson 2004 <sup>74</sup>	Adequate sequence generation?	UNCLEAR	Reported the use of a sealed-envelope technique with no further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed-envelope technique with no further details
	Blinding?	YES	Reported that the study was double-blind and that all pts received the same injectate volume which was prepared by a nurse not involved in the study
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and the source of funding was declared to be institutional

**Table G-2. Anesthesia (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Qamarul Hoda 2007 <sup>75</sup>	Adequate sequence generation?	UNCLEAR	Reported that randomization was performed using the sealed envelope technique with no further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed envelopes with no further details
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Rais 2008 <sup>76</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Said-Ahmed 2006 <sup>77</sup>	Adequate sequence generation?	UNCLEAR	Reported the use of randomization using sealed envelopes with no further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed envelopes with no further details
	Blinding?	YES	Reported that the syringes were prepared by a researcher and passed to a second investigator who was blinded to its content. The second investigator was reported to have administered the drug and collected the study data.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-3. Complementary and alternative medicine (CAM)**

Study	Item	Judgment	Description
Barker 2006 <sup>43</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	Reported using a sealed envelope to determine the patient's group assignment without any further details
	Blinding?	YES	Reported that the trial was double-blind and that following the administration of the intervention, one paramedic covered the ears of all subjects with ear patches to assure blinding of the other paramedic, who was involved in the outcome assessment
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-3. Complementary and alternative medicine (CAM) (continued)**

Study	Item	Judgment	Description
Martin 1991 <sup>79</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a table of random numbers coding system
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Reported that the researcher that was instructing the patients on the use of the intervention was also the one measuring outcomes; including subjective assessments of pain.
	Incomplete outcome data addressed?	UNCLEAR	Pts were randomized before receiving confirmation of inclusion in the study with no mention of the number excluded after randomization
	Free of selective reporting?	NO	Protocol not available, but methods section numerates differing outcomes than were presented in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Antonopoulou 2006 <sup>82</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	UNCLEAR	Not enough information provided in the text to make a precise decision
	Free of selective reporting?	NO	Protocol not available, but methods section numerates differing outcomes than were presented in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Chudinov 1999 <sup>83</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Coad 1991 <sup>84</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported that the nurses who prescribed rescue analgesia were unaware of the patients' allocation
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	NO	Protocol not available, but it was noted that the authors abandoned a pilot study for measuring pain score using VAS due to unsatisfactory results.
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Cuvillon 2007 <sup>85</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed, numbered envelopes with no further details
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics are balanced and the source of funding was declared to be institutional
de Visme 2000 <sup>86</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	YES	Randomization was performed in the hospital pharmacy (third party)
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	NO	Intention-to-treat principle was not used in the analyses with 11/29 (37.93%) of randomized pts excluded from analysis
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and the source of funding was declared to be institutional
Eyrolle 1998 <sup>88</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	NO	Protocol is not available and the intended outcomes were not clearly described in the methods section
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Fletcher 2003 <sup>89</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a random number generator
	Allocation concealment?	YES	Reported the use of sealed opaque envelopes
	Blinding?	NO	Reported that data collectors and outcome assessors were blinded but patients were not blinded to group allocation
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	NO	Protocol not available, but one of the outcomes in the methods is not presented in the results (i.e. time to discharge)
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Foss 2005 <sup>90</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a computer-generated randomization list
	Allocation concealment?	YES	Reported that randomization was performed by a third party
	Blinding?	YES	Reported that it was a double-blind trials and that the epidural cassettes were packed by the local pharmacy and blinded and supplied with a randomization number by a person not affiliated with the project
	Incomplete outcome data addressed?	YES	Intention-to-treat principle was not used in the analyses with 5/60 (8.33%) pts excluded from the analyses with reasons given
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and source of funding declared as governmental
Foss 2007 <sup>91</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using computer-generated list
	Allocation concealment?	YES	Reported that the medicine used for each individual patient was prepared by a nurse not otherwise involved with the collection of patient data
	Blinding?	YES	Reported that the study was double blind with placebo injections given along with the intervention studied in each group
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	The outcomes reported in the publication match those in the protocol (NCT00162630)
	Free of other bias?	YES	Gender is imbalanced between the groups but this is unlikely to introduce bias; Funding provided by IMK Almene Fond, a private research fund

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Gille 2006 <sup>92</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	Not reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	UNCLEAR	Not clear if all pts completed the trial and were included in the analyses
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics are balanced and the source of funding was declared to be institutional
Graham 2008 <sup>93</sup>	Adequate sequence generation?	UNCLEAR	Reported the use of numbered, sequential, sealed opaque envelopes with no further details
	Allocation concealment?	YES	Reported that allocation concealment was ensured using numbered, sequential, sealed opaque envelopes
	Blinding?	NO	Reported as an 'open-label' trial
	Incomplete outcome data addressed?	NO	Intention-to-treat principle was not used in the analyses with 7/40 (17.50%) of randomized pts excluded from analyses with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Haddad 1995 <sup>94</sup>	Adequate sequence generation?	UNCLEAR	Reported as randomized by using sealed envelopes with no further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed-envelope technique with no further details
	Blinding?	YES	Reported that the staff that monitored the patients and provided rescue analgesia were unaware of the patients' allocation
	Incomplete outcome data addressed?	YES	Intention-to-treat principle was not used with 5/50 (10%) of randomized pts were excluded with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Henderson 2008 <sup>95</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	No information on baseline characteristics or any information on financial support.
Hood 1991 <sup>96</sup>	Adequate sequence generation?	UNCLEAR	Reported the use of unmarked envelopes with no further details
	Allocation concealment?	UNCLEAR	Reported the use of sealed-envelope technique with no further details
	Blinding?	YES	Reported that all the patients had their skin prepared and an elastoplast placed over the possible injection site to minimize bias, while staff providing rescue analgesia administration and assessing the quality of analgesia after operation were blinded to the patients' allocation
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Mannion 2005 <sup>98</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a randomization table restricted to blocks of 12 (block randomization)
	Allocation concealment?	UNCLEAR	Reported as using sealed envelopes without any further details
	Blinding?	YES	Reported as a double-blind trial and that the drug solutions to be administered were prepared by an anesthesiologist not involved in block performance, patient care, or data collection.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Marhofer 1997 <sup>99</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Marhofer 1998 <sup>100</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported that all blocks were performed by one anesthesiologist while another anesthesiologist unaware of the group assignment performed the monitoring
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Marhofer 2000 <sup>101</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Reported as a double-blind trial without any further details
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Matot 2003 <sup>102</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using random numbers
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and the source of funding was declared to be institutional
Mouzopoulos 2009 <sup>103</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a computer-generated randomization code
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported that patients were blinded to the treatment using a placebo with identical appearance and route of administration to the study medication
	Incomplete outcome data addressed?	YES	Intention-to-treat principle was not used in the analyses with 12/219 (5.48%) of randomized pts not included in the analyses
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Murgue 2006 <sup>104</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	Not reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics are balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Scheinin 2000 <sup>106</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using permuted blocks with strata
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Reported as an 'open-label' trial
	Incomplete outcome data addressed?	NO	Intention-to-treat principle was not used in the analyses with 18/77 (23.38%) of randomized pts excluded from the analyses
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	NO	Baseline characteristics were unbalanced with more males allocated to the parenteral analgesia group, but the source of funding is declared to be governmental and institutional.
Shaaban Ali 2009 <sup>107</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Not reported
	Incomplete outcome data addressed?	UNCLEAR	Not enough information provided in the text to make a precise decision
	Free of selective reporting?	NO	Protocol not available, but methods section numerates differing outcomes than were presented in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were not presented and there is no source of funding declared
Spansberg 1996 <sup>108</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a computer-generated randomization.
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	YES	Reported as a double-blind trial and reported the use of a placebo (saline) to blind patients, recovery staff and observers.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-4. Nerve blocks (continued)**

Study	Item	Judgment	Description
Tuncer 2003 <sup>109</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Turker 2003 <sup>110</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	UNCLEAR	Reported that the outcomes assessment was blinded (single-blind)
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Yun 2009 <sup>111</sup>	Adequate sequence generation?	YES	'using an allocation sequence (which was generated by Y.H. Kim using a computer)'
	Allocation concealment?	UNCLEAR	'The random allocation sequence was concealed until group was assigned' - no further details.
	Blinding?	NO	Although the anaesthesiologist who performed the spinal block and recorded the UAS scores during patient positioning was unaware of group assignments the clinical effects of i.v. alfentanil were evident in most patients which may have introduced a bias'
	Incomplete outcome data addressed?	YES	All the patients in both groups were included in the statistical analysis'
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics are balanced but source of funding is not declared

**Table G-5. Neurostimulation**

<b>Study</b>	<b>Item</b>	<b>Judgment</b>	<b>Description</b>
Gorodetskyi 2007 <sup>112</sup>	Adequate sequence generation?	UNCLEAR	Reported as randomized using a fixed randomization scheme with sealed envelopes with no further details.
	Allocation concealment?	UNCLEAR	Reported as using sealed envelopes with no further details
	Blinding?	YES	Reported that all the assessing surgeons, patients and research personnel involved in determining and recording outcome measurements were blinded. Additionally reported that the sham device had an identical appearance and application to the active device with lights, buzzing and beeps, but did not produce interactive neurostimulation
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	NO	Baseline characteristics were balanced but there is financial support from a commercial party
	Lang 2007 <sup>113</sup>	Adequate sequence generation?	YES
Allocation concealment?		YES	Reported that they used sealed, sequentially-numbered, opaque envelopes
Blinding?		YES	Reported that the investigator that recorded the data was not aware of the allocation, neither was the patient (use of a sham procedure)
Incomplete outcome data addressed?		NO	Intention-to-treat principle was not used in the analyses with 9/72 (12.50%) of randomized pts excluded from analyses with reasons provided
Free of selective reporting?		YES	Protocol not available, but the outcomes in the methods match those in the results
Free of other bias?		UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-6. Rehabilitation**

Study	Item	Judgment	Description
Di Lorenzo 2007 <sup>114</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using a random numerical table (simple dichotomized admission table)
	Allocation concealment?	UNCLEAR	Reported that the allocation was performed by a 'blinded' nurse but without any further details
	Blinding?	NO	Reported as an 'open' trial.
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-7. Traction**

Study	Item	Judgment	Description
Finsen 1992 <sup>116</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using random numbers
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	NO	Intention-to-treat principle was not used in the analyses with 38/118 (32.20%) of randomized pts excluded with reasons provided
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Jerre 2000 <sup>118</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared

**Table G-7. Traction (continued)**

Study	Item	Judgment	Description
Needoff 1993 <sup>119</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were balanced but there is no source of funding declared
Resch 1998 <sup>120</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and source of funding declared as governmental
Resch 2005 <sup>26</sup>	Adequate sequence generation?	UNCLEAR	Reported as a randomized trial without any further details
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	UNCLEAR	Baseline characteristics were not described for the groups, but the source of funding was declared to be institutional. Additionally, reasons for the 1:2:1 randomization scheme was not provided

**Table G-7. Traction (continued)**

Study	Item	Judgment	Description
Rosen 2001 <sup>121</sup>	Adequate sequence generation?	YES	Reported that randomization was performed using computer-generated randomization
	Allocation concealment?	UNCLEAR	No description of allocation concealment reported
	Blinding?	NO	Not reported, but also not possible with the study design
	Incomplete outcome data addressed?	YES	All pts completed the study and were included in the analyses (intention-to-treat)
	Free of selective reporting?	YES	Protocol not available, but the outcomes in the methods match those in the results
	Free of other bias?	YES	Baseline characteristics were balanced and declaration made of no external funding

# Appendix H. Summary Risk of Bias Assessments

**Table H-1. Pharmacological analgesia**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	2 (100%)	0 (0%)
Allocation concealment	0 (0%)	2 (100%)	0 (0%)
Blinding	0 (0%)	1 (50%)	1 (50%)
Incomplete outcome data addressed	0 (0%)	1 (50%)	1 (50%)
Free of selective reporting	0 (0%)	1 (50%)	1 (50%)
Free of other bias	0 (0%)	1 (50%)	1 (50%)

**Table H-2. Anesthesia**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	15 (83.33%)	3 (16.67%)
Allocation concealment	0 (0%)	14 (77.78%)	4 (22.22%)
Blinding	1 (5.56%)	6 (33.33%)	11 (61.11%)
Incomplete outcome data addressed	2 (11.1%)	1 (5.56%)	15 (83.33%)
Free of selective reporting	0 (0%)	0 (0%)	18 (100%)
Free of other bias	0 (0%)	15 (83.33%)	3 (16.67%)

**Table H-3. Complementary and alternative medicine (CAM)**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	1 (50%)	1 (50%)
Allocation concealment	0 (0%)	2 (100%)	0 (0%)
Blinding	1 (50%)	0 (0%)	1 (50%)
Incomplete outcome data addressed	0 (0%)	1 (50%)	1 (50%)
Free of selective reporting	1 (50%)	0 (0%)	1 (50%)
Free of other bias	0 (0%)	2 (100%)	0 (0%)

**Table H-4. Nerve blocks**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	15 (68.18%)	7 (31.82%)
Allocation concealment	0 (0%)	18 (81.82%)	4 (18.18%)
Blinding	6 (27.27%)	8 (36.36%)	8 (36.36%)
Incomplete outcome data addressed	3 (13.64%)	2 (9.09%)	17 (77.27%)
Free of selective reporting	5 (22.73%)	0 (0%)	17 (77.27%)
Free of other bias	1 (4.55%)	18 (81.82%)	3 (13.64%)

**Table H-5. Neurostimulation**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	1 (50%)	1 (50%)
Allocation concealment	0 (0%)	1 (50%)	1 (50%)
Blinding	0 (0%)	0 (0%)	2 (100%)
Incomplete outcome data addressed	1 (50%)	0 (0%)	1 (50%)
Free of selective reporting	0 (0%)	0 (0%)	2 (100%)
Free of other bias	1 (50%)	1 (50%)	0 (0%)

**Table H-6. Rehabilitation**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	0 (0%)	1 (100%)
Allocation concealment	0 (0%)	1 (100%)	0 (0%)
Blinding	1 (100%)	0 (0%)	0 (0%)
Incomplete outcome data addressed	0 (0%)	0 (0%)	1 (100%)
Free of selective reporting	0 (0%)	0 (0%)	1 (100%)
Free of other bias	0 (0%)	1 (100%)	0 (0%)

**Table H-7. Traction**

Domain	High	Unclear	Low
Adequate sequence generation	0 (0%)	4 (66.67%)	2 (33.33%)
Allocation concealment	0 (0%)	6 (100%)	0 (0%)
Blinding	6 (100%)	0 (0%)	0 (0%)
Incomplete outcome data addressed	1 (16.67%)	0 (0%)	5 (83.33%)
Free of selective reporting	0 (0%)	0 (0%)	6 (100%)
Free of other bias	1 (16.67%)	4 (66.67%)	2 (33.33%)

# Appendix I. Newcastle-Ottawa Scale Assessment of Cohort Studies

Table I-1. Anesthesia

Author, year	Study design	Representativeness of cohort	Selection		Outcome of interest	Comparability		Outcome		Total stars
			Selection of non-exposed cohort	Ascertainment of exposure		Comparability of cohorts	Assessment of outcome	Adequate duration of followup	Adequate follow-up of cohort	
Labaille 1992 <sup>65</sup>	Prospective cohort study	B (1*)	A (1*)	B (1*)	A (1*)	A (1*)	B (1*)	A (1*)	A (1*)	8
Miller 1990 <sup>70</sup>	Retrospective cohort study	A (1*)	A (1*)	D (0)	A (1*)	A (1*)	B (1*)	A (1*)	A (1*)	7
Minville 2008 <sup>71</sup>	Retrospective cohort study	B (1*)	A (1*)	A (1*)	A (1*)	B (1*)	B (1*)	A (1*)	A (1*)	8
Sen 2007 <sup>78</sup>	Retrospective cohort study	B (1*)	A (1*)	A (1*)	B (0)	A (1*)	B (1*)	A (1*)	A (1*)	7

Table I-2. Multimodal pain management

Author, year	Study design	Representativeness of cohort	Selection		Outcome of interest	Comparability		Outcome		Total stars
			Selection of non-exposed cohort	Ascertainment of exposure		Comparability of cohorts	Assessment of outcome	Adequate duration of followup	Adequate follow-up of cohort	
Milisen 2001 <sup>80</sup>	Prospective cohort study	B (1*)	A (1*)	A (1*)	A (1*)	A,B (2*)	C (0)	A (1*)	A (1*)	8
Ogilvie-Harris 1993 <sup>81</sup>	Prospective cohort study	D (0)	C (0)	A (1*)	A (1*)	B (1*)	B (1*)	A (1*)	D (0)	5

**Table I-3. Nerve blocks**

Author, year	Study design	Selection			Comparability			Outcome		Total stars
		Representativeness of cohort	Selection of non-exposed cohort	Ascertainment of exposure	Outcome of interest	Comparability of cohorts	Assessment of outcome	Adequate duration of followup	Adequate follow-up of cohort	
Del Rosario 2008 <sup>87</sup>	Retrospective cohort study	B (1*)	A (1*)	A (1*)	B (0)	B (1*)	B (1*)	A (1*)	A (1*)	7
Kocum 2007 <sup>97</sup>	Retrospective cohort study	B (1*)	A (1*)	A (1*)	A (1*)	A (1*)	B (1*)	A (1*)	B (1*)	8
Pedersen 2008 <sup>105</sup>	Retrospective cohort study	A (1*)	A (1*)	A (1*)	A (1*)	A,B (2*)	B (1*)	A (1*)	A (1*)	9

**Table I-5. Traction**

Author, year	Study design	Selection			Comparability			Outcome		Total stars
		Representativeness of cohort	Selection of non-exposed cohort	Ascertainment of exposure	Outcome of interest	Comparability of cohorts	Assessment of outcome	Adequate duration of followup	Adequate follow-up of cohort	
Vermeiren 1995 <sup>122</sup>	Prospective cohort study	A (1*)	A (1*)	A (1*)	A (1*)	(0)	B (1*)	A (1*)	B (1*)	7

## Appendix J. GRADE Tables, Assessing the Evidence

Each major outcome was provided a summary of the body of evidence (e.g. number of studies, study designs), the quality of the evidence, the results of pooling (if performed), and an overall grade for the quality of evidence for each outcome using the AHRQ GRADE approach. Randomized trials were considered to high quality unless downgraded as a result of concerns of important limitations (e.g. high risk of bias, inconsistent results, etc.). Cohorts were considered to be lower quality unless upgraded as a result of both confidence in the lack of any major limitations and characterized by having special strengths (e.g. large effect size).

**Table J-1. Analgesia for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) - IM Analgesia (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Precise	Publication bias: Not investigated	35	55	-	MD 0.7 lower (1.04 to 0.36 lower)	INSUFFICIENT
<b>Acute pain (post-treatment means) - Oral analgesia (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	48	46	-	MD 0.43 lower (1.3 lower to 0.44 higher)	INSUFFICIENT
<b>Acute pain (post-treatment means) - Intrathecal analgesia (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Precise	Publication bias: Not investigated	15	15	-	MD 1.69 lower (2.01 to 1.37 lower)	INSUFFICIENT
<b>Acute pain (rest) - Oral analgesia (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	48	46	-	MD 0.43 lower (1.3 lower to 0.44 higher)	INSUFFICIENT
<b>Delirium - Oral analgesia</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	1/48 (2.1%)	1/46 (2.2%)	OR 0.96 (0.06 to 15.77)	1 fewer per 1000 (from 20 fewer to 238 more)	INSUFFICIENT

**Table J-2. Spinal vs. general anesthesia for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) - Spinal anesthesia (single) (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	15	15	-	MD 0.86 lower (1.3 to 0.42 lower)	INSUFFICIENT
<b>Delirium - Spinal anesthesia (single)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	8/15 (53.3%)	9/15 (60%)	OR 0.76 (0.18 to 3.24)	67 fewer per 1000 (from 387 fewer to 229 more)	INSUFFICIENT
<b>Mortality 30 days</b>											
4	2 RCTs; 2 Cohorts	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	10/53 (18.9%)	5/46 (10.9%)	OR 1.73 (0.53 to 5.68)	66 more per 1000 (from 48 fewer to 301 more)	LOW
<b>Myocardial Infarction</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	1/29 (3.4%)	0/14 (0%)	OR 1.55 (0.06 to 42.91)	0 more per 1000 (from 0 fewer to 0 more)	INSUFFICIENT

1-2

**Table J-3. Spinal anesthesia (continuous vs. single administration) for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Delirium</b>											
2	RCTs	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	5/67 (7.5%)	4/67 (6%)	OR 1.27 (0.32 to 4.99)	15 more per 1000 (from 40 fewer to 181 more)	LOW

**Table J-3. Spinal anesthesia (continuous vs. single administration) for Hip Fracture (continued)**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Mortality 30 days</b>											
4	3 RCTs; 1 Cohort	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	2/81 (2.5%)	4/82 (4.9%)	OR 0.46 (0.07 to 3.02)	26 fewer per 1000 (from 45 fewer to 85 more)	INSUFFICIENT
<b>Myocardial Infarction</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	0/14 (0%)	1/15 (6.7%)	OR 0.33 (0.01 to 8.88)	44 fewer per 1000 (from 66 fewer to 321 more)	INSUFFICIENT
<b>Stroke</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	0/37 (0%)	0/37 (0%)	not pooled	not pooled	INSUFFICIENT

**Table J-4. Spinal anesthesia (single): addition of fentanyl for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	20	20	-	not pooled	INSUFFICIENT

**Table J-5. Spinal anesthesia (single): addition of morphine for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
1	RCTs	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	20	20	-	MD 0.36 lower (1.11 lower to 0.39 higher)	INSUFFICIENT
<b>Delirium</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	1/20 (5%)	0/20 (0%)	OR 3.15 (0.12 to 82.16)	0 more per 1000 (from 0 fewer to 0 more)	INSUFFICIENT

**Table J-6. Spinal anesthesia (single): addition of sufentanil for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	25	25	-	not pooled	INSUFFICIENT

**Table J-7. Spinal anesthesia: Ropivacaine vs. Bupivacaine for hip fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Delirium</b>											
1	Cohort	Low	Unknown	Direct	Imprecise	Publication bias: Not investigated	2/32 (6.3%)	1/30 (3.3%)	OR 1.93 (0.17 to 22.5)	29 more per 1000 (from 28 fewer to 404)	INSUFFICIENT

more)

**Table J-8. Spinal anesthesia: Different doses (Bupivacaine 2.5 mg vs. 5mg) for hip fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Mortality 30 days</b>											
1	Cohort	Low	Unknown	Direct	Imprecise	Publication bias: Not investigated	4/121 (3.3%)	4/61 (6.6%)	OR 0.49 (0.12 to 2.02)	32 fewer per 1000 (from 57 fewer to 59 more)	INSUFFICIENT

**Table J-9. Comparative alternative medicine for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) - Acupressure (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	18	20	-	MD 3.01 lower (4.53 to 1.49 lower)	INSUFFICIENT
<b>Acute pain (post-treatment means) - Relaxation (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Precise	Publication bias: Not investigated	30	30	-	MD 1.1 lower (1.43 to 0.77 lower)	INSUFFICIENT

**Table J-10. Multimodal pain management**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect	Quality	
							Analgesia	control	Relative (95% CI)		Absolute
<b>Delirium - Protocol #1</b>											
1	Cohort	Medium	Unknown	Direct	Imprecise	Publication bias: Not investigated	12/60 (20%)	14/60 (23.3%)	OR 0.82 (0.34 to 1.96)	34 fewer per 1000 (from 140 fewer to 140 more)	INSUFFICIENT
<b>Delirium - Protocol #2</b>											
1	Cohort	Medium	Unknown	Direct	Imprecise	Publication bias: Not investigated	1/55 (1.8%)	2/51 (3.9%)	OR 0.45 (0.04 to 5.16)	21 fewer per 1000 (from 38 fewer to 135 more)	INSUFFICIENT
<b>Mortality 30 days - Protocol #2</b>											
1	Cohort	Medium	Unknown	Direct	Imprecise	Publication bias: Not investigated	5/55 (9.1%)	8/51 (15.7%)	OR 0.54 (0.16 to 1.77)	66 fewer per 1000 (from 128 fewer to 91 more)	INSUFFICIENT
<b>Myocardial Infarction - Protocol #2</b>											
1	Cohort	Medium	Unknown	Direct	Imprecise	Publication bias: Not investigated	1/55 (1.8%)	2/51 (3.9%)	OR 0.3 (0.01 to 7.62)	21 fewer per 1000 (from 38 fewer to 134 more)	INSUFFICIENT
<b>Stroke - Protocol #2</b>											
1	Cohort	Medium	Unknown	Direct	Imprecise	Publication bias: Not investigated	0/55 (0%)	1/51 (2%)	OR 0.3 (0.01 to 7.62)	14 fewer per 1000 (from 20 to 115 more)	INSUFFICIENT

**Table J-11. Nerve blocks vs. no block for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect	Quality	
							Analgesia	control	Relative (95% CI)		Absolute
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
10	RCTs	High	Consistent	Direct	Precise	Publication bias: Unlikely	306	347	-	SMD 0.74 lower (1.03 to 0.46 lower)	MODERATE
<b>Pain on movement (post-treatment) (Better indicated by lower values)</b>											
4	RCTs	High	Inconsistent	Direct	Imprecise	Publication bias: Not investigated	128	130	-	Not pooled	INSUFFICIENT
<b>Pain on rest (post-treatment) (Better indicated by lower values)</b>											
3	RCTs	High	Inconsistent	Direct	Imprecise	Publication bias: Not investigated	104	104	-	Not pooled	INSUFFICIENT
<b>Day 1 Pain</b>											
1	RCT	High	Unknown	Direct	Precise	Publication bias: Not investigated	7/25 (28%)	20/25 (80%)	OR 0.1 (0.03 to 0.36)	514 fewer per 1000 (from 210 fewer to 693 fewer)	INSUFFICIENT
<b>Delirium</b>											
5	3 RCTs; 2 Cohorts	Medium	Consistent	Direct	Precise	Publication bias: Not investigated	11/150 (7.3%)	29/157 (18.5%)	OR 0.36 (0.17 to 0.74)	109 fewer per 1000 (from 41 fewer to 148 fewer)	MODERATE
<b>Mortality 30 days</b>											
4	RCTs	HIGH	Consistent	Direct	Imprecise	Publication bias: Not investigated	2/114 (1.8%)	10/114 (8.8%)	OR 0.28 (0.07 to 1.12)	62 fewer per 1000 (from 81 fewer to 10 more)	LOW

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Table J-11. Nerve blocks vs. no block for Hip Fracture (continued)

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Myocardial Infarction</b>											
3	2 RCTs; 1 Cohort	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	1/72 (1.4%)	1/73 (1.4%)	OR 1 (0.06 to 16.67)	0 fewer per 1000 (from 13 fewer to 174 more)	INSUFFICIENT
<b>Stroke</b>											
2	1 RCT; 1 Cohort	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	1/25 (4%)	0/25 (0%)	OR 3.12 (0.12 to 80.39)	0 more per 1000 (from 0 fewer to 0 more)	INSUFFICIENT

Table J-12. Nerve blocks vs. regional anesthesia for Hip Fracture

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
3	RCTs	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	55	54	-	MD 0.35 lower (1.1 lower to 0.39 higher)	LOW
<b>Delirium</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	6/15 (40%)	5/14 (35.7%)	OR 1.2 (0.27 to 5.4)	43 more per 1000 (from 227 fewer to 393 more)	INSUFFICIENT

**Table J-13. Neurostimulation for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
2	RCTs	High	Consistent	Direct	Imprecise	Publication bias: Not investigated	60	63	-	MD 2.79 lower (4.95 to 0.64 lower)	INSUFFICIENT
<b>Pain on movement (post-treatment) (Better indicated by lower values)</b>											
1	RCT	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	30	30	-	MD 3.9 lower (6.22 to 1.58 lower)	INSUFFICIENT

**Table J-14. Rehabilitation for Hip Fracture**

Quality assessment							Summary of findings				
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	No of patients		Effect		Quality
							Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) (Better indicated by lower values)</b>											
1	RCTs	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	18	19	-	MD 1.39 lower (2.27 to 0.51 lower)	INSUFFICIENT

**Table J-15. Traction for Hip Fracture**

Quality assessment							Summary of findings				
							No of patients		Effect		Quality
No of studies	Design	Risk of Bias	Consistency	Directness	Precision	Other considerations	Analgesia	control	Relative (95% CI)	Absolute	
<b>Acute pain (post-treatment means) - Skin traction vs. no traction (Better indicated by lower values)</b>											
7	RCTs	High	Inconsistent	Direct	Imprecise	Publication bias: Not investigated	462	522	-	MD 0.17 higher (0.38 lower to 0.72 higher)	LOW
<b>Acute pain (post-treatment means) - Skin traction vs. skeletal traction (Better indicated by lower values)</b>											
1	RCTs	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	40	38	-	MD 0.1 higher (0.6 lower to 0.8 higher)	INSUFFICIENT
<b>Mortality 30 days (traction vs. no traction)</b>											
1	RCTs	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	0/55 (0%)	4/50 (8%)	OR 0.17 (0.02 to 1.49)	65 fewer per 1000 (from 78 fewer to 35 more)	INSUFFICIENT
<b>Mortality 30 days (skin vs. skeletal) - Skin traction vs. skeletal traction</b>											
1	RCTs	High	Unknown	Direct	Imprecise	Publication bias: Not investigated	0/26 (0%)	0/29 (0%)	not pooled	not pooled	INSUFFICIENT