



Does femoral nerve block provide pain relief for patients with a fractured neck of femur?

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SUMMARY STATEMENT:

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REQUEST:

Does femoral nerve block provide pain relief for patients with a fractured neck of femur?

REQUESTED BY:

Dr. Pamela Rosengarten, Director Emergency Medicine, Emergency Department, MMC, Clayton

METHODOLOGY

Search Strategy

The Centre for Clinical Effectiveness defined the 'best available evidence' as that research we can identify that is least susceptible to bias.

First we search for systematic reviews, evidence-based clinical practice guidelines, or health technology assessments. Then we identify diagnostic studies with independent blind comparison of an appropriate spectrum of consecutive patients, all of whom have undergone both the diagnostic test and the reference standard. If we identify sound, relevant material of this type, the search stops. Otherwise, our search strategy broadens to include studies that are more prone to bias, less generalizable, or have other methodologic difficulties. While we cite observational and case series studies, and narrative reviews and consensus statements, in our reports we do not critically appraise them. Some studies can produce accurate results but they are generally too prone to bias to allow determination of their validity beyond their immediate setting.

Details of Evidence Request:

Patient/condition: A fractured neck of femur
Intervention: Femoral nerve block
Comparisons: No femoral nerve block, other treatment.
Outcome: Pain relief

Search terms:

The following search terms were used to scour electronic databases and websites:

Table 1. Search terms used in the retrieval of articles from electronic databases and websites

Field of focus	Search term
Condition-related	Hip fracture, femur fracture, femoral fracture, femoral neck fracture.
Intervention-related	Femoral nerve block, Regional anaesthesia, nerve block
Outcome-related	Pain

Resources Searched

We searched the following databases and Internet websites:

- Cochrane Library CD-ROM- Issue 1, 2001
- Best Evidence (OVID)- 1991 to January/February 2001
- Medline (OVID)- 1997 to February 2001
- PreMedline (OVID)- April 2, 2001

Refinements, Searching & Reporting Constraints:

We included items of evidence that were available to us on 11 April 2001. Having identified a systematic review of nerve blocks for hip fractures from the Cochrane database (issue 1, 2001), a restriction period of 2000-2001 was applied while searching the other databases. We only searched for articles that compared femoral nerve block to other type of intervention to reduce pain in the treatment of hip (neck of femur) fracture

RESULTS:

From our sources we identified 1 article directly related to the request and was categorised as follows:

Table 2. Study designs of articles retrieved by search

Study Design	Number included
Systematic reviews or meta-analyses	1
Evidence-based clinical practice guidelines	0
Randomised controlled trials	0
Cross Sectional Diagnostic studies	0
Controlled trials, cohort or case-control analytic studies	0
Descriptive case series	Excluded
Consensus reports, non-evidence-based clinical practice guidelines	Excluded
Narrative reviews	Excluded

We have critically appraised the systematic review. We are reasonably confident this article represents the most important findings published to date based on our refinements, searching and reporting constraints.

EVIDENCE SUMMARIES

Format

Evidence summaries are in the form of spreadsheets reproduced at the end of this report. Each spreadsheet contains the article citation, the study design, patient description, scientific validity of the article, results, and pertinent remarks from the authors and Centre for Clinical Effectiveness reviewer.

REFERENCES

ARTICLES CRITICALLY APPRAISED FOR THIS REPORT

1. Parker MJ, Griffiths R, Appadu BN. (2001). Nerve blocks (subcostal, lateral cutaneous, femoral, triple, psoas) for hip fractures (Cochrane Review). In: The Cochrane Library, Issue **1**, 2001. Oxford: Update Software. A substantive amendment to this systematic review was last made on 29 October 2000

ARTICLES NOT CRITICALLY APPRAISED (Pain was not the outcome assessed)

1. Naja, Z.; el Hassan, M. J.; et al (2000). Combined sciatic-paravertebral nerve block vs. general anaesthesia for fractured hip of the elderly. Middle East Journal of Anesthesiology. **15** (5):559-68

2. Parker, M. J.; Unwin, S. C.; et al.(2000). General versus spinal/epidural anaesthesia for surgery for hip fractures in adults (Cochrane Review). Cochrane Database of Systematic Reviews [computer file] **4**.

3. Urwin, S. C.; Parker, M. J.; Griffiths, R. (2000). General versus regional anaesthesia for hip fracture surgery: a meta-analysis of randomized trials. British Journal of Anaesthesia **84**(4):450-5.

APPENDIX

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Levels of Evidence

Based on "How to use the evidence: assessment and application of scientific evidence" (National Health & Medical Research Council, Canberra, 2000):

Level I	Evidence obtained from a systematic review of all relevant randomised controlled trials.
Level II	Evidence obtained from at least one properly designed randomised controlled trial.
Level III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).
Level III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomized, cohort studies, case control studies, or interrupted time series with a control group.
Level III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.
Level IV	Evidence obtained from case series, either post-test or pre-test/post-test.

<p>Evidence Summary</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Does femoral nerve block provide pain relief for patients with a fractured neck of femur?</p> </div>	<p>Study 1</p> <p>Parker MJ, Griffiths R, Appadu BN (2001). Nerve blocks (subcostal, lateral cutaneous, femoral, triple, psoas) for hip fractures (Cochrane Review). In: The Cochrane Library, Issue 1 Oxford: Update Software.</p>
<p>STUDY DESIGN & NHMRC LEVELS OF EVIDENCE</p>	<p>Systematic Review (Level I)</p>
<p>DESCRIPTION: Subjects, Interventions, Comparisons, Outcomes, Inclusion & Exclusion Criteria</p>	<p>Patients: Skeletally mature patients with a proximal femoral fracture. Intervention: Peripheral nerve block of any types. Comparison: No nerve block. Outcomes: Pain and analgesia requirements. Other outcomes were also assessed. Inclusion and exclusion criteria: Articles published in all languages. Randomised and quasi-randomised trials in which nerve blocks were used as part of the care of hip fracture patients were included. Trials in which the treatment allocation was inadequately concealed were also included. Epidural and continuous spinal blocks were excluded.</p>
<p>VALIDITY: Methodology, rigour, selection, opportunity for bias</p>	<p>Search strategy: The Cochrane Musculoskeletal Injuries Group specialised trials register, MEDLINE, and bibliographies of trial reports. Also hand searching, reference lists of trials and review articles. Assessed validity: Yes Consistent results: Heterogeneity between comparable trails was tested. Potential for bias: Although standard search strategy was used to identify published articles, the authors did not attempt to identify unpublished materials, thus possible publication bias.</p>
<p>RESULTS: Generally favourable or unfavourable, specific outcomes of interest, estimate of experimental effect and precision if appropriate</p>	<p>Seven studies were identified and included in the review.</p> <ul style="list-style-type: none"> • Coad 1991 study: the number of intramuscular injections required in the first 24 hours post-operatively was reduced from a mean 2.5 to 0.6 with addition of a triple nerve block, and to 1.5 with the lateral cutaneous nerve block. The mean dose of pethidine given in the first 24 hours was reduced from 118mg to 29mg with a triple nerve block and 73 mg with a lateral cutaneous nerve block. The time to the administration of the first dose of opiate was increased from a mean of 1.75 hours with general anaesthesia alone to 24.3 hours with a triple nerve block and 10.8 hours with a lateral cutaneous nerve block. The number of patients needing parenteral analgesia in the first 24 hours from surgery was reduced from 16/16 patients to 7/17 with a triple block and 14/17 with a lateral cutaneous nerve block. • Hood 1991 study: the number of patients who required no analgesia in the first 24 hours after surgery was 2/25 in the control group, and 19/25 in the nerve block group. The mean number of injections for pain control in the first 24 hours was 1.8 for the control group and 1.3 after nerve block. Both the recovery and ward nursing staff assessment of the post-operative analgesia showed fewer patients having a poor recovery assessment after the nerve block (15/24 versus 1/25 for recovery room staff and 13/24 versus 2/25 for ward staff). • Jones 1985 study: the number of intramuscular injections required in the first 24 hours was reduced from a mean 2.0 to 0.7 with addition of a nerve block. Furthermore, the mean dose of pethidine given in the first 24 hours was reduced from 87mg to 31mg (a difference reported to be statistically significant). Jones 1985 also reported that the number of patients needing analgesia in the first 24 hours from surgery was reduced from 9/9 patients to 5/9. • Spansberg 1996 study: showed a small reduction in the mean pain scores for those who received bupivacaine (no significant difference). • Haddad 1995 study: used a VAS at 15 minutes, two and eight hours after administration of the nerve block. There was a greater

	<p>reduction in the mean pain scores for the group who received the nerve block, with the results reported to be statistically significant at 15 minutes and two hours. The number of parenteral analgesic drugs administered in the 24 hours from admission was reduced for the nerve block group.</p> <ul style="list-style-type: none"> • Chudinov 1999 study: assessed pain pre-operatively and post-operatively at eight hourly intervals using a VAS. Significant differences (reported as $p < 0.05$) with less pain in the psoas block group were noted at eight and 16 hours pre-operatively and 16, 24 and 32 hours post-operatively. The number of patients with a VAS grade of three or more at the different time intervals did not differ between groups. The numbers of patient who were satisfied with pain control were greater in those who were allocated to receive the psoas block. • White 1980 study: only 16 out of 20 of the psoas nerve blocks were reported to be satisfactory.
<p>AUTHORS COMMENTS: Risk/benefit, limitations</p>	<p>"Because of the small number of patients included in this review and the differing type of nerve blocks and timing of insertion, it is not possible to determine if nerve blocks confer any significant benefit when compared with other analgesic methods as part of the treatment of a hip fracture. Further trials with larger numbers of patients and full reporting of clinical outcomes would be justified."</p>
<p>REVIEWER'S COMMENTS: Risk/benefit, methodology, conclusions</p>	<p style="text-align: right;">STRENGTHS</p> <ul style="list-style-type: none"> • Clear research question and outcomes • Inclusion and exclusion criteria were transparent. • Reported and clearly outlined search strategy • Used the general search strategy for the Musculoskeletal injuries group. • It is a systematic review • Described the characteristics of the included studies • Quality of included studies were assessed /reported <p style="text-align: right;">WEAKNESSES</p> <ul style="list-style-type: none"> • Although claimed to have searched various computer databases, only Medline database was mentioned or reported. • All of the studies identified were small trials (small sample) and were published in English language. • No attempt was made to identify relevant but unpublished material, thus possible publication bias.