Centre for Clinical Effectiveness
Enhancing patient outcomes through clinical application of the best available evidence

EVIDENCE CENTRE
EVIDENCE REPORT
Series 2001: Intervention

Does the use of a traction splint for fractured shaft of femur prior to surgery cause skin or tissue necrosis?

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SUMMARY STATEMENT:

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REQUEST:

Does the use of a traction splint for fractured shaft of femur prior to surgery cause skin or tissue necrosis?

REQUESTED BY:

Kerry Hood, Clinical Nurse Educator, Emergency Department, Dandenong Hospital.

SUMMARY OF FINDINGS:

- No systematic reviews, meta-analyses, clinical trials or observational studies (including case series) that evaluated the association between postoperative use of a traction splint for fractured shaft of femur and necrosis (skin or tissue) were identified.
- To date, the benefits or side effects associated with the postoperative use of a traction splint for fractured shaft of femur have not been evaluated and reported.
- Research is needed to assess the relationship between the use of a traction splint for fractured shaft of femur prior to surgery and necrosis (skin or tissue).

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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. We determine this according to predefined NHMRC criteria (see Appendix).

First we search for systematic reviews, evidence-based clinical practice guidelines, or health technology assessments, and randomized controlled trials. 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. We include case-control and longitudinal cohort studies in our critical appraisal reports. 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:

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	Femoral fractures, femoral shaft fractures, fractured shaft of femur.
Intervention related	Splint, traction, traction splint
Outcome related	Necrosis, skin necrosis, tissue necrosis

Resources Searched

We searched the following databases and Internet websites:

Cochrane Library CD-ROM	2001, issue 1
OVID EBM Reviews-Best evidence	1991 to Nov/Dec 2000
OVID Medline	1966 to December week 4,2000
OVID PreMedline	January 19, 2001
OVID CINAHL	1982 to December 2000
PubMed Clinical Queries	February 1, 2001
HealthStar	January 12, 2001
National Guideline Clearinghouse	January 23, 2001
Centre for evidence-based physiotherapy (PEDRO)	January 16, 2001
NHS Centre for Reviews and dissemination	

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Refinements, Searching & Reporting Constraints:

Our electronic searching was performed on 24 January 2001. The search was restricted to articles published in English in the last 10 years.

Inclusion Criteria

Primary, controlled studies that evaluated the use of a traction splint for fractured shaft of femur prior to surgery and necrosis (skin or tissue).

Exclusion Criteria

- Study published in a language other than English.
- Studies published prior to 1990.
- Studies involving animals.

RESULTS:

From our sources we identified eight articles and reviewed the abstracts. None of these studies examined the association between postoperative use of a traction splint for fractured shaft of femur and necrosis (skin or tissue). As a result all eight articles were excluded as they were not relevant to the clinical question. In conclusion, this clinical question has not yet been evaluated and reported in the literature. A well-designed controlled trial is needed to address the clinical question.

Table 2: Study designs of retrieved and appraised articles.

Study Design	Number included
Systematic reviews or meta-analyses	0
Evidence-based clinical practice guidelines	0
Randomised controlled trials	0
Comparative study	0
Descriptive case series	0
Consensus reports, non-evidence-based clinical practice guidelines	0
Narrative reviews	0

ARTICLES CRITICALLY APPRAISED FOR THIS REPORT

None

ARTICLES NOT INCLUDED IN THE APPRAISAL

1. Coyte P C, Bronskill S E, Hirji Z Z, Daigle-Takacs G, Trerise B S, Wright J G (1997). Economic evaluation of 2 treatments for pediatric femoral shaft fractures. Clinical Orthopaedics & Related Research 336: 205-215.

2. Curtis JF; Killian JT; Alonso JE (1995). Improved treatment of femoral shaft fractures in children utilizing the pontoon spica cast: a long-term follow-up. Journal of Pediatric Orthopedics 15 (1):36-40

3. Havranek, P., J. N. Westfelt, et al. (1992). "Proximal tibial skeletal traction for femoral shaft fractures in children. Treatment to discard or retain." Clinical Orthopaedics & Related Research(283): 270-5.

4. Nork S E, Hoffinger S A (1998). Skeletal traction versus external fixation for pediatric femoral shaft fractures: a comparison of hospital costs and charges. Journal of Orthopaedic Trauma. 12(8): 563-568.

5. Orr, D. J., H. D. Simpson, et al. (1994). "Home traction in the management of femoral fractures in children." Journal of the Royal College of Surgeons of Edinburgh **39**(5): 329-31.

6. Parsch, K. D. (1997). "Modern trends in internal fixation of femoral shaft fractures in children. A critical review." J Pediatr Orthop B **6**(2): 117-25

7. Westbrook, S. (1995). "Donway traction splint." Accident & Emergency Nursing **3**(4): 226-7.

8. Wright J G (2000). The treatment of femoral shaft fractures in children: a systematic overview and critical appraisal of the literature. Canadian Journal of Surgery. 43(3): 180-189.

APPENDIX

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Levels of Evidence

As defined by "A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines" (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.

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