

Operative techniques and peri-operative procedures influencing postoperative pain following total hip arthroplasty

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Background

- PROSPECT is an interdisciplinary working group of surgeons and anaesthesiologists providing procedure-specific and evidence-based recommendations for postoperative pain management. Evidence and recommendations are web-based (www.postoppain.org) and address surgical and analgesic interventions affecting postoperative pain (Figure 1).
- Total hip arthroplasty (THA) is a common operative procedure to relieve joint pain and improve mobility and quality of life in patients with degenerative disease of the hip joint, or proximal femoral fracture.
- THA is associated with a considerable intensity of pain in the early postoperative period; adequate pain relief is essential to enable rapid ambulation and initiation of physiotherapy.
- The use of surgical drains, prosthesis design and composition of implants can influence postoperative pain. This systematic review examines the influence of operative techniques and peri-operative procedures on postoperative pain.



Figure 1. PROSPECT: Recommendations for procedure-specific postoperative pain management on the web (www.postoppain.org).

Methods

- A systematic review of the literature was performed according to the protocol of the Cochrane collaboration. MEDLINE and EmBASE were searched from 1966–July 2004 using predefined search terms.
- Studies included in the review were randomized trials of operative techniques in THA.
- All included studies were required to report pain scores using a visual analogue scale (VAS) or verbal rating scale (VRS). All pain scores were converted to VAS 1–100 mm. Other outcomes were recorded where available. Results are reported as significant where $p < 0.05$; n = number of studies.
- Supplementary information from similar orthopaedic procedures and clinical practice was also assessed.
- Recommendations for regional analgesia in THA, based on the evidence, were formulated by consensus of the PROSPECT working group (Figure 2).

Results

- Results are summarized in Table 1 and the evidence can be found on the PROSPECT website (Figure 3).

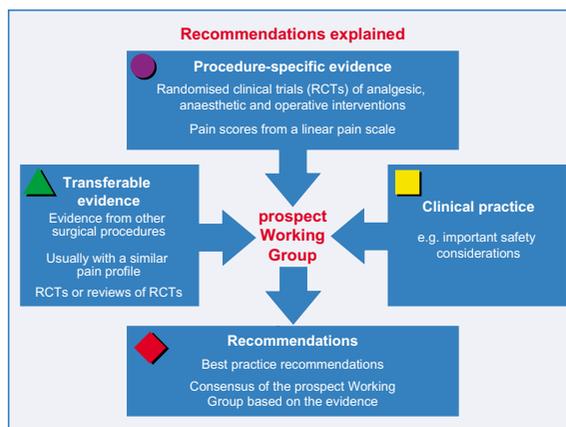


Figure 2. PROSPECT working group: Formulating the recommendations for postoperative pain management.

THA-specific studies

Modified Hardinge approach versus transtrochanteric lateral approach (n=1)

- The modified Hardinge approach and transtrochanteric lateral approach were associated with similar postoperative pain scores, as well as function and range of mobility scores.²

Drained versus un-drained wounds (n=1)

- Wound drains were associated with higher pain scores than no drains (no statistical analysis).³

Information from other orthopaedic procedures (including systematic reviews)

Cemented versus non-cemented prostheses

- One review of four clinical trials concluded that cemented prostheses for hip fracture demonstrated no short-term analgesic benefit (3–6 months), compared with non-cemented prostheses, but did provide better long-term outcomes including lower pain scores (at one year) and a lower risk of failure to regain mobility.⁴

Drained versus un-drained wounds

- In orthopaedic surgery, drained and un-drained wounds were not associated with any differences for postoperative pain, range of movement, function, hospital stay and swelling of the limb, but were associated with a greater incidence of infection.^{5,9}

Bipolar versus unipolar hemiarthroplasty

- A review of six clinical trials found no significant difference for postoperative pain between bipolar and unipolar hemiarthroplasty for treatment of hip fractures.⁴

Table 1. Effects of different operative techniques on postoperative pain scores and other outcomes following orthopaedic surgery.

Orthopaedic procedure	Technique	Control	Postoperative effects versus control	
			Pain scores	Other effects
THA	Modified Hardinge approach	Transtrochanteric lateral approach	↔ ²	↔ ² Mobility, function
THA	Drained wound	Undrained wound	↑ ³ THA	
Orthopaedic surgery	Drained wound	Undrained wound	↔ ^{5,9} Orthopaedic surgery	↔ ^{5,9} Mobility, function, swelling, hospital stay ↑ ^{5,9} Infection
Hip fracture	Cemented prosthesis	Non-cemented prosthesis	↓ ⁴	↑ ⁴ Mobility
Hip fracture	Bipolar hemiarthroplasty	Unipolar hemiarthroplasty	↔ ⁴	

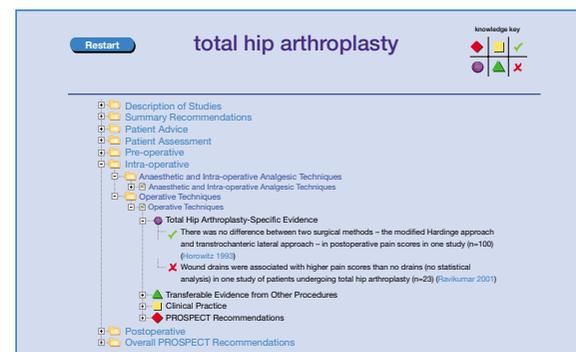


Figure 3. Evidence for operative techniques on the PROSPECT website.

Information and recommendations for postoperative pain management are available for operative and analgesic techniques in the peri-operative pathway.

Conclusions

- The different surgical techniques tested in THA did not improve postoperative analgesia or function.
- Surgical drains are not recommended because they are associated with increased incidence of infection, higher pain scores and in addition they do not confer a benefit for function or hospital stay.
- In patients with a hip fracture, cemented prostheses had better long-term analgesic and mobility outcomes. However, non-cemented prostheses have a longer life and are easier to change. Therefore, factors such as patient age and co-morbidities can influence the choice of the prosthesis type.
- It is recommended that surgical requirements rather than pain management should be the main consideration in choosing the surgical technique.
- New operative techniques for THA include the mini-incision, which is being investigated for advantages over the conventional method, including less blood loss, less pain and shorter hospital stay.

References

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