Evaluation of two analgesic techniques within an enhanced recovery programme for total hip arthroplasty

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Introduction

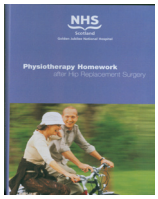
Enhanced Recovery Programmes (ERP) have demonstrated both clinical and economic benefits in lower limb arthroplasty[1]. An ERP can be thought of as having pre-operative, intra-operative and post-operative components[2]. Successful patient outcomes rely on optimal care at each point[3]. Within our current ERP we use two methods of post-operative pain management for patients undergoing Total Hip Arthroplasty (THA).

Aim

To compare local infiltration analgesia with the established practice of patient controlled epidural analgesia for post-operative pain relief following total hip arthroplasty as part of an ERP

Patients and methods

Two concurrent groups undergoing THA between 1st December 2009 and 30th April 2010 were studied. Both groups were managed within the same ERP.



Educational DVD

Pre-operative

All patients received the same comprehensive patient education at pre-operative assessment and the same pre-operative medication regime.

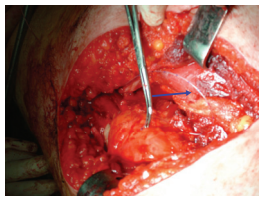
Intra-operative

Patients had surgery performed under spinal or combined spinal epidural anaesthesia supplemented by a target controlled infusion of propofol. Either local infiltration analgesia (LIA) or patient controlled epidural analgesia (PCEA) was used.

LIA

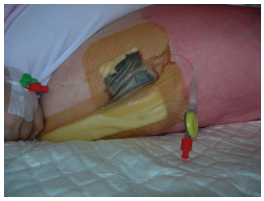
200ml of 0.2% ropivacaine split:

- 50ml into the anterior capsule
- 50ml into surrounding deep tissues
- 50ml infiltrated into subcutaneous tissues
- intra-articular catheter inserted
- 20ml after wound closure


Insertion of Catheter

PCEA

Bolus of 4ml of 0.25% levobupivacaine was administered prior to leaving theatre.


Post-operative dressing

Post-operative

LIA

20ml bolus of 0.2% ropivacaine given at
four hours post theatre
2300 hours on day of surgery
between 0800-1000 on post-operative day 1

PCEA

Patients could self medicate with 2ml 0.125% bupivacaine, with a 15 minute lockout.

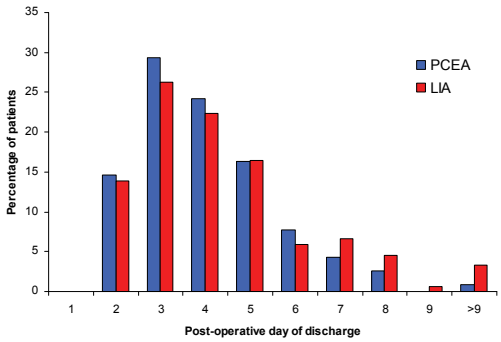
The intra-articular/epidural catheter was removed on the morning of post-operative day 1.

Rehabilitation

All patients were reviewed by physiotherapy and mobilised as able. Patients received standardised post-operative care and multimodal analgesia within the ward and were discharged when they achieved the standard discharge criteria.

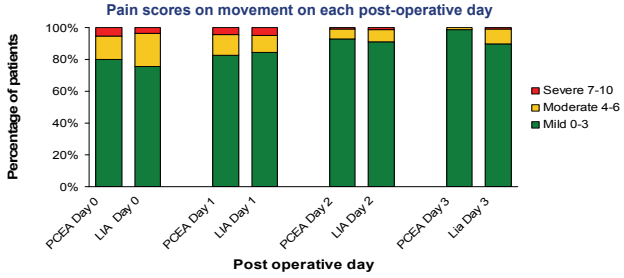
Results

Percentage of patients discharged from hospital on each post-operative day



The median post-operative day of discharge was 4 in both groups (p=0.3). In the LIA group 97% were mobilised within 24hrs compared with 96% in the PCEA group (p=0.7). There was no significant difference in pain scores for the first 48 hours (p=0.962), however for post-operative day 3 the LIA group had more patients with scores > 4. No significant difference was noted in urinary catheterisation rates or transfusion rates. However significantly less patients with PCEA reported nausea or vomiting compared with LIA.

Pain scores on movement on each post-operative day



Group	PCEA	LIA	p value
n	116	152	
Age (SD)	67.5 (9.2)	67.6 (9.8)	0.8
BMI (SD)	29.8 (SD)	29.2 (SD)	0.7
Post-operative blood transfusion	5	4	0.5
Catheterisation	7	4	0.2
No nausea and vomiting	85%	79%	0.018*

Demographic and outcome variables showing acceptable complication rates

Discussion

Within both analgesic regimes the length of stay was lower than the national average (4.1 and 4.4 vs. 7.2 days). The majority of patients in both groups were independently mobile within 24 hours with satisfactory pain control. The statistically higher LIA pain scores on post-operative day 3 and the rise in reported nausea and vomiting were not detrimental to achieving discharge criteria. The use of LIA does however reduce the potential risk associated with epidural specific complications.

Conclusion

The use of an LIA system provides a level of post-operative analgesia comparable with that of PCEA following THA within an ERP with no impact on post-operative rehabilitation

References

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2. Wainwright T, Middleton R. Current anaesthesia and critical care. 2010;21(3):114-120
3. Sharma V *et al.* Clin Orthop Relat Res 2009; 467:1400-1411