An enhanced recovery programme allowing early mobilisation and discharge following total knee arthroplasty

D A McDonald, A H Deakin, R Siegmeth, N B Scott, A W G Kinninmonth
Golden Jubilee National Hospital, Clydebank, Scotland, G81 4HX

NHS SCOTLAND
Golden Jubilee National Hospital

Introduction

Recently literature on the use of intra-articular analgesia as part of an Enhanced Recovery Programme has demonstrated encouraging results. Patients with optimised pain relief are able to mobilise earlier, allowing accelerated rehabilitation and discharge home, whilst at the same time reducing peri-operative morbidity [1, 2, 3].

Encouraged by these early studies, our organisation has instituted a regime covering all aspects of the peri-operative care for Total Knee Arthroplasty (TKA). This includes: pre-operative counselling and preparation; multimodal anaesthesia and analgesia regime; intra-articular analgesia for 24 hours post-operation; early mobilisation.

Aim

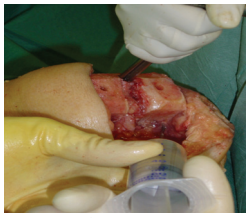
To report outcomes of an enhanced recovery programme with a large consecutive unselected cohort of primary total knee arthroplasty patients

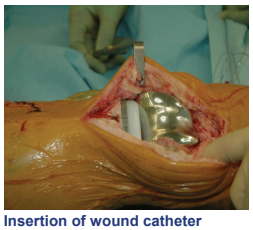
Methods

Pre-operative

Technique explained and reinforcement provided regarding early mobilisation and a positive mental attitude.
A multi-modal analgesic regime was used in all patients.

Educational DVD shown to patients


Posterior infiltration


Insertion of wound catheter


Subcutaneous infiltration

Intra-operative

- Patients had surgery performed under spinal or combined spinal epidural anaesthesia supplemented by a target controlled infusion of propofol

200ml 2mg/ml (0.2%) infusion bag of ropivacaine split as follows:

- 50ml Posterior Capsule
- 30ml Proximal to suprapatella pouch
- 100ml Subcutaneous/ deep tissues
- 20ml after wound closure

Post-operative

40ml Bolus top-ups of 0.2% ropivacaine were given at:

- four hours after initial infiltration
- 2300 hours on day of surgery
- between 0800-1000 on post-operative day 1

Following the final bolus the wound catheter was removed.

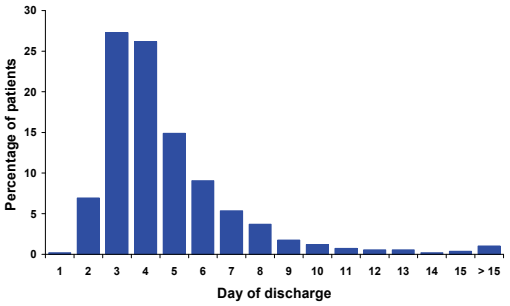
Rehabilitation

Patients reviewed by physiotherapist on day of surgery and mobilised as able. If patients were unable to mobilise they were reviewed the following morning

Patients received standardised post-operative care within the ward and were discharged when they achieved the standard discharge criteria. Patients returned for standard follow up at six weeks post surgery.

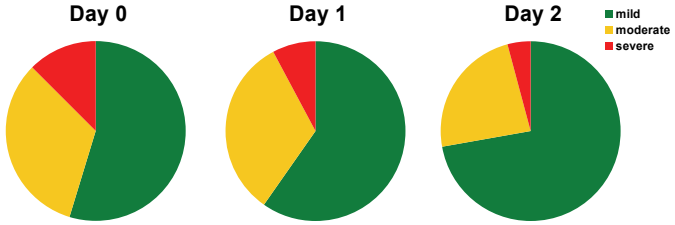
Results

The median day of discharge to home was post-operative day four. 35% of patients ambulated on the day of surgery and 95% of patients within 24 hours.



Percentage of patients discharged from hospital each post-operative day

Median pain score on mobilisation was three for first post-operative night, day one and two.



Pain scores (on movement) showing adequate analgesia over initial post-operative period

Scottish Arthroplasty Registrar was contacted to provide independent complication rates. No statistical difference was found between post operative complications pre and post implementation of the ERP.

Age (median [IQR])	69 [11]
Gender (Male : Female)	439 : 642
Body Mass Index	32(6)
Pre-operative Oxford score	42(7)
Complications	
Blood transfusion	6
DVT§	4
PE§	5
Infection†	18
Deaths§	2
Functional Measures	
Discharge maximum flexion	84(8)
Sent for outpatient physiotherapy	29%
Follow up maximum flexion‡	93(13)
Loss of >5° maximum flexion‡	6.6%
Post-operative Oxford score‡	28(8)

Demographic and outcome variables showing acceptable complication rates and function scores

§ within 90 days, † within one year, ‡at first (six week) follow up

Discussion

This multidisciplinary approach provides acceptable post-operative analgesia, early mobilisation and discharge with the added benefits of low rates of post-operative catheterisation and PONV. It compares very favourably with published data on other peri-operative regimes using ERP in a large unselected cohort of patients [4].

Conclusion

This multidisciplinary approach reduced length of stay to below the national average without being detrimental to complication rates or function achieved at six weeks

References

1. Toftdahl K *et al.* Acta Orthop 78(2):172-179, 2007
2. Andersen KV *et al.* Acta Orthop 78(2):180-186, 2007
3. Husted H *et al.* Acta Orthop 79(2):168-173, 2008
4. Larsen K *et al.* BMC, MD. 04/28;9:59-59. 2008