

A Motor Sparing Knee block for Knee Surgery

Audit of analgesic effects in 26 consecutive cases undergoing total knee arthroplasty

*Dr C Egeler, Dr A Jayakumar, Dr S Ford
Consultant Anaesthetists, ABMU HB Swansea*

Introduction

We have described the anatomy and proprioceptive effects of a new Motor Sparing Knee (MSK) block.

This approach may facilitate mobilisation and provide analgesia after primary total knee arthroplasty (TKA), which may be advantageous over Femoral and Sciatic Nerve Block.

The analgesic effects have been audited in 26 consecutive patients undergoing TKA.

Methods

- 26 patients undergoing primary TKA received routine MSK Block after GA or Spinal anaesthetic.
- Patients received either GA with Fentanyl/Propofol/Sevoflurane or Spinal with heavy Bupivacaine 0.5 % 2-3 ml as per patient preference.

- MSK Block consisting of:

using a total of 25 ml 0.75 % Levobupivacaine

1. Cut nerves
2. IPN / adductor canal
3. Genicular nerves



- Intraoperatively Paracetamol, NSAIDS if tolerated and Morphine was given as required.
- In recovery Morphine was used as clinically indicated. A rescue femoral block and catheter was inserted if pain levels were felt to be inadequate.
- Postoperatively regular Paracetamol, NSAIDS if tolerated was prescribed, with Oramorph and/or Tramadol as required.
- Pain levels (0-3 scale) and opioid requirements were collected over 24 hours.
- At the same time data was collected for patients undergoing TKA having Femoral +/- Sciatic Nerve blocks (NB, n = 10) and patients having enhanced recovery protocol (ERAS) without nerve blocks (n = 13).
- Postoperative analgesia requirements were calculated for oral morphine equivalence.

Results

	age	weight	GA	Spinal
Male N = 11	66.5 (53-71)	93 kg (75-125)	10	1
Female N = 15	71.8(48-86)	61 kg (50-85)	12	3

Table 1 shows basic demographics, Fig1-2 show average pain scores (0 = no pain, 1 = mild pain, 2 = moderate pain, 3 = severe pain) of MSK, ERAS and NB groups.

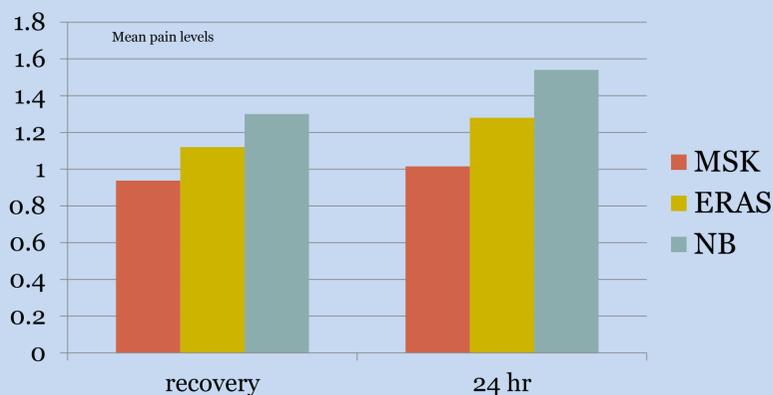


Fig 1: average pain levels in recovery and during 24 hours

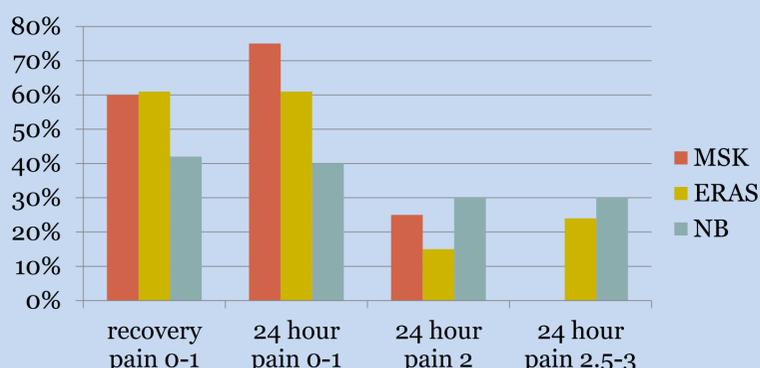


Fig 2: percent of patients with no or mild pain in recovery, distribution of pain levels during 24 hours

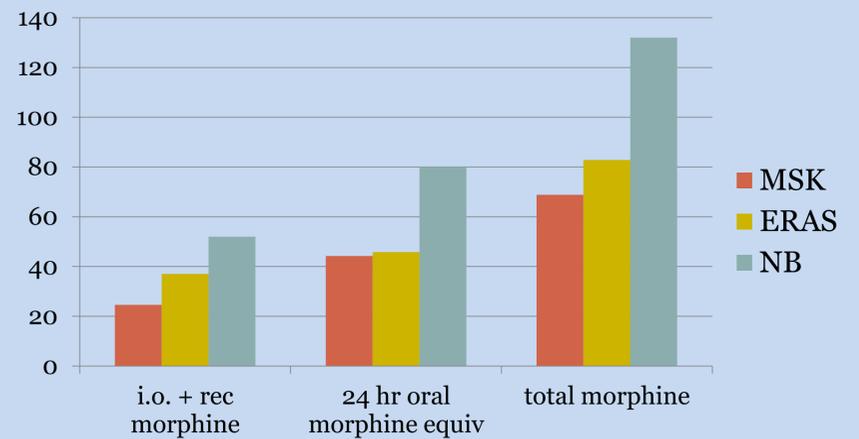


Fig 3: oral equivalent dosages of morphine used

- Average pain scores were comparable between all groups in recovery.
- 2 patients received femoral catheters in recovery on clinical assessment (1 with severe pain, 1 with moderate pain).
- Over 24 hours 75 % of MSK patients had no or mild pain, 61 % in ERAS and 40 % in NB group.
- No MSK patient had severe pain, compared to 24 % of ERAS and 30 % of NB patients.
- 24 hour Morphine consumption was similar between MSK and ERAS patients, but lower in the MSK group for intraoperative and recovery requirements.

Discussion

- This audit data suggests that MSK Block provides good postoperative analgesia after primary TKA.
- Whilst postoperative 24 hour opioid requirements are similar between MSK and ERAS patients, the preemptive nature of the MSK block resulted in a reduction in intraoperative and recovery opioid requirements.
- Patients who had Femoral +/- Sciatic Nerve blocks appear to have worse pain scores and higher opioid requirements. These blocks were inserted using nerve stimulator guidance or landmarks, which may explain the rather high failure rate.
- 2 patients in the MSK group received femoral nerve rescue catheters in recovery on clinical judgement early in the series and may be seen as MSK block failures.
- MSK Block requires 6 separate injections, which may seem excessive and time consuming. However, 4 of 6 injections are a US landmark block and in experienced the whole sequence takes no longer than 5 minutes.
- Motor function has not been objectively tested, but the majority of patients were able to move their legs in recovery and did not have delays in mobilisation.

Conclusion

This data suggests that MSK Block may be an effective new regional anaesthesia technique to provide good analgesia after knee surgery.

A formal study is required to compare MSK block with ERAS protocol and femoral nerve block techniques.