

## A Step (Hop) Towards Ambulatory Surgery for Ankle Fusion Surgery R. Erskine, S. Weston, T. Addison, V. Yates

### Introduction

Major foot and ankle surgery has traditionally been associated with severe pain requiring high doses of parenteral opioids and a 4 - 5 day hospital stay.

In conjunction with Mr Steve Milner, lower limb Orthopaedic Consultant, the Acute Pain Team (APT) initiated a plan to trial the use of popliteal sciatic nerve catheters, attached to a disposable elastomeric pump, providing a continuous infusion of Bupivacaine 0.25%, with the potential to send this home with the patient.

The aims were to improve analgesia, reduce PONV, enhance patient experience with the added benefit of potential reduction in hospital stay

### Background

Historically, patients having complex ankle surgery received Morphine Patient Controlled Analgesia (PCA) and a popliteal sciatic nerve catheter through which intermittent bolus doses of Bupivacaine were delivered by the on call doctor. This top up service was difficult to run efficiently particularly at nights and weekends due to reduced medical staffing. Subsequently, patients experienced severe pain leading to high opioid consumption and consequent PONV.

The APT trialled various elastomeric devices to provide a continuous infusion of local anaesthetic safely and efficiently. Elastomeric pumps are inexpensive, safe with no electronics or batteries required and are designed to run at a fixed rate. Minimal training for staff is needed and the pumps are portable, discreet and easy for patients to understand. The Team chose the SpiritMedical Dosifusor as it provided flexibility of use.

### Setting Up the Service

- Consent for the service gained from the Change of Practice Committee.
- Business case agreed to secure funding for devices.
- APT to evaluate safety and efficacy.
- Agreement from Pharmacy aseptic service to fill the devices.
- Agreed group of patients and data to be collected.
- Agreement of Orthopaedic Outreach Team to remove the popliteal catheter at home for those discharged with the devices.
- Training of theatre recovery and ward staff.
- Development of a data collection sheet and follow – up telephone questionnaire.
- Patient information leaflets produced to include information on popliteal catheter placement, the Dosifusor device and post discharge care advice with contact numbers.
- Consent gained from patients for telephone follow up.

### Process

- In theatre: catheter placed by surgeon, using Ultrasound, and pre incision bolus of 10-20ml Bupivacaine 0.5% given.
- In Recovery: Dosifusor device containing 250ml of 0.25% Bupivacaine connected - infused at fixed rate of 5ml/hr.
- Patients were discharged from hospital when pain controlled and deemed safe by physio.
- All Popliteal catheters removed when infusion complete (48-52hrs).
- Patients discharged home with Dosifusor devices had popliteal catheter removed by Orthopaedic Outreach Team.
- Follow up telephone call within one week of discharge.

### Data

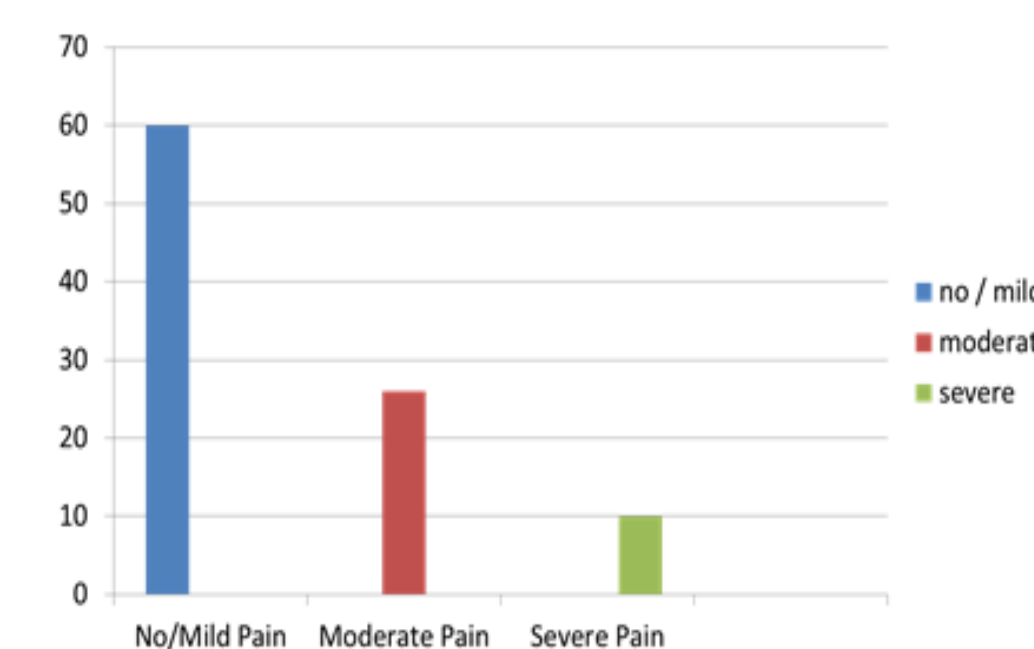
- 81 patients audited over 12 months.
- Mean Age 60 years (24 – 84). Surgery mostly Ankle arthrodesis / osteotomies
- 15 patients had GA (3/15 required rescue analgesia in recovery)
- 66 patients had spinal (4/66 required rescue analgesia in recovery)
- 9 / 81 patients had paracetamol pre-op loading dose of 2g
- All patients were prescribed regular paracetamol and codeine or tramadol +/- NSAID as tolerated with PRN strong opioid

### Results

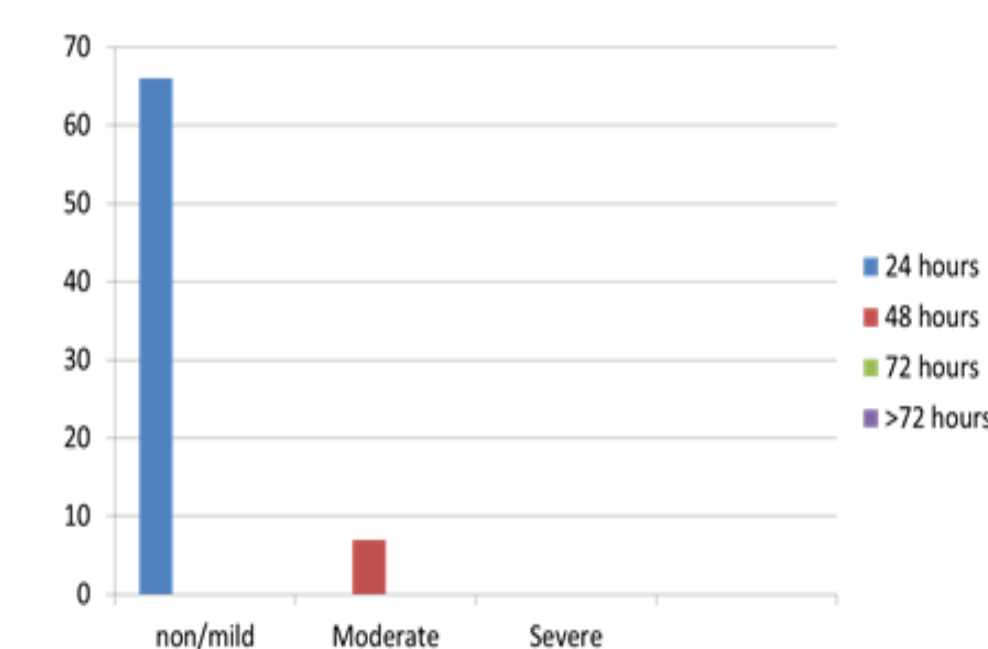
60% of patients did not require additional strong opioids post op  
18% of patients needed paracetamol only  
65% of patients reported non or mild PONV

15 patients went home within 24 hours  
26 patients went home within 48 hours  
19 patients went home within 72 hours  
21 patients went home > 72 hours

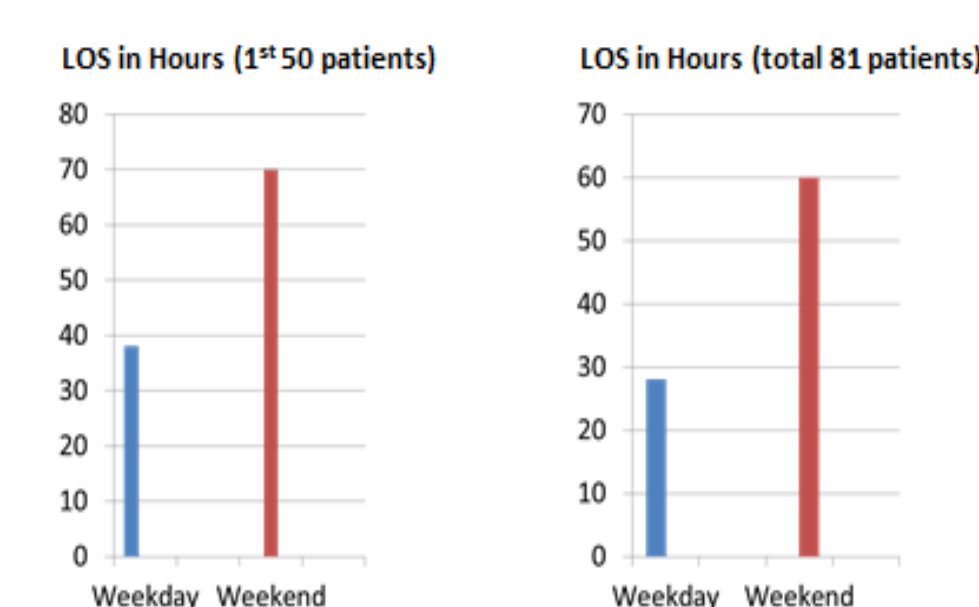
% Pain in First 24 Hours



% Nausea & Vomiting First 24 Hours



Average Length of Stay (LOS)



### Discussion

Significant improvement in analgesia, patient satisfaction and reduced PONV was demonstrated.

A substantial reduction in length of stay (LOS) was demonstrated in the first 50 patients surveyed. However, LOS was different depending on operation day with a marked increase for those undergoing surgery at the end of the week. Average LOS for patients operated on a Wednesday was 38hrs and 70hrs for those patients operated on a Friday or Saturday.

By the end of the year, when the technique was fully established, LOS was reduced to 28hrs and 60hrs respectively; overall average LOS for total 81 patients is now 54hrs.

### Telephone Follow – up: Patient Experience

- 79 of 81 patients responded
- No significant issues with nausea or vomiting noted
- No calls to GP or 111 service
- No calls to Orthopaedic Outreach Team
- No pump issues
- 1 readmission due to urine retention, 2 for bleeding (wound)
- 94% reported excellent or good overall pain management

'I had this op on the other leg and it was agony, this was so much better'

'I had no sickness which I always have had badly in the past' ( 8 previous surgeries)

### Conclusion

The use of a continuous local anaesthetic infusion provides sustained quality analgesia in patients undergoing complex ankle surgery. Utilising a disposable elastomeric pump proved to be a safe, reliable and effective means of delivery. In many cases the need for additional strong opioid analgesia was minimal with consequently very low levels of PONV reported. A high level of patient satisfaction was achieved. Earlier discharge for this group of patients was demonstrated in the majority of cases with approximately 243 bed nights saved.

### What Next?

Sending patients home safely with superior analgesia in the form of a continuous local anaesthetic infusion has now become accepted practice for this group of patients and been adopted by other orthopaedic surgeons in the Trust.

The discrepancies in LOS for patients having surgery at the end of the week has been addressed improving patient flow.

The aim is to achieve LOS of less than 24 hrs; daycase tariff in the majority of cases. This will give patients the reassurance of an overnight stay, if required, providing confidence in effective pain management and safety in mobilisation.

The success of this project has enthused upper limb orthopaedic consultants. Shoulder, elbow and wrist replacement surgeries are all known to be painful operations. Patients who receive a local anaesthetic infusion via a Brachial Plexus catheter are understood to have improved pain relief and the APT hope to pursue a similar project in this group of patients.

