Continuous Infusion vs Single Bolus Popliteal Block Following Ankle and Hindfoot Surgery: A Randomized, Prospective, Double Blinded, Placebo Controlled Trial

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Summary: This prospective randomized, double blind placebo controlled trial showed statistically significant differences in mean pain scores and opiate usage in the 72 hours after hind foot surgery with a catheter infusion than with a single bolus popliteal block. The overall pain scores were low in both groups, however, raising the question whether the extra time and cost of inserting a catheter is warranted clinically.

Introduction: Adequately managing post-operative pain following ankle and hindfoot surgery can be difficult. Conventional analgesics have significant side effects including nausea and gastric irritation. The results of a pilot study of continuous infusion vs single bolus popliteal block encouraged us to perform the full PRCT.

Method: The trial was approved by the Research and Ethics Committee and registered with the European Clinical Trials Database. Inclusion criteria were all patients undergoing significant hind foot or ankle procedures. Exclusion criteria included peripheral neuropathy and inability to fill in the questionnaire.

The pilot study provided a standard deviation of pain scores which allowed us to calculate the sample size required; 25 patients in each group would have 90% power to detect a difference in means VAS scores of 3 which we considered clinically significant. Sealed envelopes contained random allocations and were opened by the anaesthetist. A bolus of 20ml 0.25% bupivacaine was injected and then the catheter was inserted and connected to a pump. Patients were randomly assigned to receive either an infusion of normal saline or bupivacaine over the next 72 hours.

The patients completed a VAS, three times daily, for 72 hours postoperatively and supplementary opiate analgesic requirements and any complications were recorded.

Results: Both groups had very low median VAS pain scores on the day of operation and there was no difference between the two: study 1.167, control 1.000 (p=0.893). On the 3 post operative days studied there were significantly lower pain scores in the study group; day 1: 1.67 vs 3.67 (p=0.003), day 2: 1.33 vs 2.83 (p=<0.001).

There was no difference in median morphine usage on the day of operation; study = 10, placebo = 10 (p = 0.942). The morphine usage was lower in the study group on all post operative days and this was significant on days 2&3; day 1: 10 vs 15 (p=0.054), day 2: 10 vs 20 (p=)

There were no major complications with the administration of the blocks or with the catheters.

Conclusion: Despite the statistically significant difference in pain scores, we do not feel that we can fully reject the null hypothesis. We started with the impression that a difference of 3 points on the VAS would constitute a clinically significant difference. The pain scores were surprisingly low in both groups throughout the follow up period with the highest mean score being 3.6. The difference in the pain scores was only between 1.5 and 2 points on the scale. Regional anesthesia via a popliteal catheter is a safe and effective method of managing post operative pain patients undergoing major ankle and hind foot surgery but it is debatable, from the results of this study, whether the benefits of an infusion catheter over a single bolus warrant the extra time and cost involved.