

Popliteal versus Local Field Block for Pain-Related Post-Operative Unplanned Emergency Room visits after Foot and Ankle Surgery

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Purpose

The purpose of our study is to determine if popliteal block is more effective in preventing emergency department visits compared to local field block alone, after foot and ankle surgeries.



Abstract

Ultrasound guided popliteal blocks for post-operative pain management have grown in popularity within foot and ankle surgery. The purpose of this study was to evaluate the efficacy of popliteal block in preventing post-operative emergency department visits after foot and ankle surgery. We compared rates of presentation to the emergency department for pain following foot and ankle surgery between surgeries with a popliteal block and those with local field block alone. We identified one hundred and one charts, of which 26 presented to the emergency department for post-operative pain following popliteal block. Our results demonstrated that popliteal blocks did not perform better than local blocks, and that there is no statistically significant difference between the two methods of post-operative pain control in terms of rates of presentation to the emergency department for pain.



Introduction

High success rates for achieving an anesthetized lower extremity have been demonstrated with popliteal and local field blocks (3, 4). Some studies have reported that the success rates of both popliteal and local field blocks are as high as 96% and 92%, respectively (5). As opioid usage becomes more tightly regulated, and patient satisfaction is ever more valued, post-operative pain management using these modalities is more important than ever. Adequate pain control not only gives the patient a more pleasant experience, but also positively influences the surgical outcomes.

In comparison to local field blocks, popliteal blocks have been shown to have an increased duration of effectiveness (5, 7). Further, in many cases, popliteal blocks have taken precedence over spinal or epidural anesthesia due to lower complication rates (2). Generally, the rate of adverse events after a popliteal block has been reported as being low (1) (8); however, the rare complications can be devastating. Such complications include neuropathic symptoms, paresthesias, and motor weakness/failure (1-7).

Similarly, efficacy and safety of local blocks for post-operative pain control in foot and ankle surgery have been well documented (9, 10, 11). Myerson et al reported successful analgesia rates of 95% with ankle blocks, with a 0.3% minor complication rate, while patients were satisfied 87% of the time.

Results

After applying all the inclusion and exclusion criteria, we had a final cohort of 101 patients. Of those, 26 presented and 75 did not present to the ED for pain within 30 days of surgery. Seventy-three (72.3%) patients had a local block only, and 28 (27.7%) were categorized into the popliteal block group. On average, patients who presented to the ED for pain returned at 5.4 days post-operatively.

The median surgery time was 91 minutes. The factors, "age", "gender" and "type of surgery" were not associated with presentation to the ED for pain after bivariate analysis ($P > 0.1$). On the other hand, the variables "duration of surgery" and "type of regional block" had potential for association with ED visit for pain, after the bivariate analysis ($P < 0.1$). Therefore, "type of block", "duration of surgery" and "type of surgery" (per protocol though $P > 0.01$) were included in the final regression model.

Results (Cont'd)

All, 75/75 (100%) of patients in the control group were enrolled in an insurance plan while 19/26 (73%) of patients in the study group were enrolled in an insurance plan. 9/26 (34%) in the study group and 11/75 (14%) in the study group were diabetic. 14/26 (53%) of patients in the study group were diagnosed with a psychiatric disease including depression or anxiety, as compared to the control group being 17/75 (22%). Current smoking status was also evaluated within the study and control groups demonstrating 7/26 (27%) and 7/75 (9%) respectively.

After adjusting for the covariates, "longer surgery" (OR = 6.3, 95% CI = 1.90-23.19) was, while "the popliteal group" was not (OR = 1.6, 95% CI = 0.55-4.71), significant for association with within 30-day post-operative ED visit for pain.

In a *post hoc* analysis, we discovered that there is a significant association between longer cases and the use of popliteal block (chi-square $P = 0.001$). Therefore, we explored further to determine if a popliteal block was associated with ED visit for pain, after stratifying by duration of surgery. Within the patients who had a longer surgery, an association between "type of block" and ED visit was still not detected. Thirty-two percent (9/28) of patient who had a local block and 50% (11/22) of the popliteal block group presented to the ED for pain in the patients who had a longer procedure (chi-square $P = 0.394$).

Conclusion

In conclusion, popliteal blocks are known to aid in post-operative pain control regarding duration of analgesia and time to first narcotic dosage, but our data did not support the notion that popliteal blocks would reduce the rate at which people visit the ED for pain following foot and ankle surgery, as compared to local field block alone.

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