

Effect of Piriformis versus Greater Trochanteric Starting Point on Postoperative Pain of Intramedullary Nailing in Isolated Femur Fractures

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INTRODUCTION: Femoral shaft fractures are commonly treated with intramedullary nailing of the femur through the greater trochanter or the piriformis fossa. While previous studies have shown both entry points have similar functional outcomes, the question remains as to whether there is a difference in pain experienced with the differing entry points. Utilizing the greater trochanter as the entry point limits the potential muscle damage, and therefore has the possibility to induce less pain post-operatively. This in-depth examination of the differing entry points will help identify if there is a significant decrease in patient pain level with the use of the greater trochanter as compared to the piriformis fossa entry point. Additionally, there is a paucity of evidence regarding reported patient pain in the field of Orthopedic Surgery. This study aims to establish an avenue of objective research on this topic.

METHODS: We focused specifically on patients diagnosed with Femoral Shaft Fractures and received an antegrade intramedullary nail. In this study we utilized patient reported pain using the Visual Analogue Scale (VAS) from 1-10 with 10 being the highest rating and recorded Medical Administration Record (MAR) for pain alleviating medications, drugs and dosage. Patients reported pain at 24 hours post-operative, and the start points were determined based on documentation within operative reports. With normally distributed data, an unpaired t-test was used to address the primary objective in comparing levels of pain (VAS scores) between the piriformis and greater trochanter entry point groups.

RESULTS: Preliminary research with a sample size of 25 showed no statistically significant difference in post-operative pain between the piriformis fossa and greater trochanter start points. The results from the unpaired T-test yielded a p-value of 0.4268 and t-stat of -0.8435. Mean VAS score of 2.9 in Piriformis start points and 4.2 in Greater Trochanter start points (Figure 1). Piriformis start point VAS score quartiles are 1st quartile 0-2, 2nd quartile 2-2.9, 3rd quartile 2.9-3.1, 4th quartile 3.1-6 (Figure 2). Greater Trochanter VAS score quartiles are 1st quartile 0-2.2, 2nd quartile 2.2-4.2, 3rd quartile 4.2-7, 4th quartile 7-10 (Figure 2).

DISCUSSION: With a p-value > 0.05, patients in the study who were treated with intramedullary nailing through the greater trochanter start point did not differ in pain one day after surgery compared with patients treated through the piriformis fossa. We plan on collecting more data in the future with a larger sample size and more comprehensive VAS pain reporting including reporting over the first 3 days post-op. Our investigation into post-operative pain felt by utilizing the greater trochanter as opposed to piriformis fossa as the entry point for femoral shaft fractures, did not show a statistically significant difference. Although this preliminary data contained no statistically significant data, the question remains as to whether or not there is a connection between entry point and post-operative pain; Specifically, if there is decreased pain when utilizing the greater trochanter as the entry point as opposed to other entry points. Future research will aim to answer this question, and should include a larger sample size, as well as more comprehensive VAS pain reporting criteria including reporting over the first 3 days post-op.

SIGNIFICANCE/CLINICAL RELEVANCE: Studies of this nature are important as they help to establish the optimal approaches for enhancing patient well-being in terms of functional outcomes and post-operative experiences. There is very little literature that exists addressing the differences in patient pain with the various surgical techniques.

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IMAGES AND TABLES:

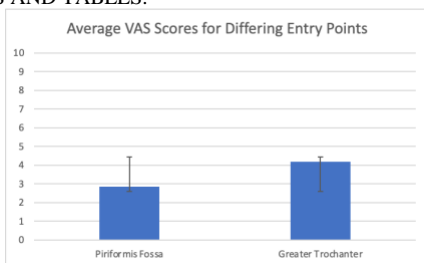


Figure 1.

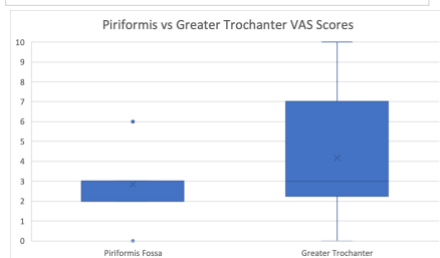


Figure 2.