Intraoperative Hematoma Block Decreases Postoperative Pain and Narcotic Consumption After Intramedullary Rodding of Femoral Shaft Fractures: A Randomized Controlled Trial

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Purpose: The use of a hematoma block has been proven to be effective for local analgesia in the setting of an acute fracture at the time of closed reduction. However, its use as an adjunct to a standardized pain protocol in operative fracture management has not been validated. The purpose of this study is to evaluate the efficacy of an intraoperative, post-fixation fracture hematoma block on postoperative pain control and narcotic consumption in patients with acute femoral shaft fractures.

Methods: 58 consecutive patients with isolated femoral shaft fractures (AO/OTA 32) underwent intramedullary rodding for fracture stabilization at a Level I trauma center from 2019 to 2021. All patients were prospectively randomized to receive an intraoperative, post-fixation fracture hematoma injection containing 20 mL of 0.5% ropivacaine or normal saline in addition to a standardized multimodal pain regimen that included narcotics. Visual analog scale (VAS) pain scores were recorded in 8-hour intervals. Pain scores at each interval and total postoperative 24-hour narcotic consumptions were compared between the two experimental groups using Mann-Whitney U testing.

Results: There were no significant differences in age (median 33 vs 29.5 years, $P = 0.39$) or sex (7 vs 11 female, $P = 0.42$) between the anesthetic group (n = 28) and the control group (n = 30). The anesthetic group demonstrated significantly lower VAS pain scores than the control group in the total 24-hour period (5.7 vs 7.3, $P = 0.004$), and at 8 hours (6 vs 8, $P = 0.007$), 16 hours (6 vs 7, $P = 0.041$), and 24 hours (5 vs 7, $P = 0.006$). In addition, the narcotic consumption (morphine milligram equivalents) was significantly lower in the anesthetic group compared to the saline group over the first 24-hour postoperative period (36 vs 65, $P = 0.010$). No adverse effects were observed secondary to the saline or ropivacaine infiltration.

Conclusion: The results demonstrated that an intraoperative hematoma block following intramedullary rodding of femoral shaft fractures provides a safe and effective option for pain control that also decreases narcotic consumption. This treatment can be used as an adjunct to a standardized pain protocol in patients with femoral shaft fractures in order to decrease narcotic consumption in the immediate postoperative period.