

31. LOCAL ADMINISTRATION OF MORPHINE FOR ANALGESIA AFTER ILIAC BONE GRAFT HARVEST

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Introduction: Autogenous bone grafts from the ilium are frequently harvested for purposes of bone fusion in patients undergoing spinal stabilization surgery. The pain from the donor site can often be more severe than from the laminectomy incision (1). Although this pain usually resolves over a period of several weeks, it may persist and represent a significant source of postoperative morbidity. Donor site pain has been reported in up to 38% of patients at 6 months following surgery (2). The local application of morphine can be effective in reducing pain in a rat model of bone damage (3). In this study, low doses of morphine were shown to effectively block the development of hyperalgesia and allodynia. We evaluated the analgesic efficacy of administering morphine to the donor bone graft site for spinal fusion surgery.

Methods: 60 patients undergoing cervical spinal fusion surgery utilizing autogenous bone harvested from the ilium were randomized to one of three groups: Group 1 received saline infiltrated into the harvest site; Group 2 received intramuscular morphine 5 mg; Group 3 received morphine 5 mg infiltrated into the harvest site. After surgery, all patients were administered morphine via a PCA pump. Pain scores both from the harvest and incision sites as well as morphine use were recorded at 2, 4, 6, 8, 12, and 24 h after surgery. At one year following surgery, the presence and subjective characteristics of donor site pain were recorded.

Results: Total 24 h morphine use (mg) was significantly lower ($p < 0.0001$) in group 3 (33.7 ± 8.3), compared to either group 1 (64.3 ± 6.6) or group 2 (59.6 ± 9.3). Pain from the graft site was scored the same at 2 h but remained significantly lower ($p < 0.0001$) for group 3 at all later time intervals. Pain scores from the incision site were similar among the three study groups. One year following surgery, 25 % of patients reported having chronic donor site pain. The association of chronic donor site pain was significantly higher ($p < 0.05$) in Group 1 (33%) and Group 2 (37%) compared to Group 3 (5%).

Conclusion: This study revealed a significant analgesic benefit from the local administration of morphine to the iliac bone graft harvest site in patients undergoing cervical spine fusion surgery. Patients who received morphine at the harvest site reported lower pain scores and used less morphine in the 24 hours following surgery. In addition to a short term analgesic benefit, patients who were administered local morphine also demonstrated a significant reduction in the incidence of chronic donor site pain. It has been suggested that effective treatment of acute pain will reduce the incidence of chronic pain syndromes(4). Perhaps the peripheral administration of morphine in our study was effective in reducing acute pain for an extended period of time and thus decreased the incidence of chronic donor site pain one year following surgery.

1. *J Bone Joint Surg* 1989;71:677-80.
2. *Spine* 1992;12:474-80.
3. *Anesthesiology* 1998;89:190-201.
4. *Reg Anesth Pain Med* 2000;25:6-21.