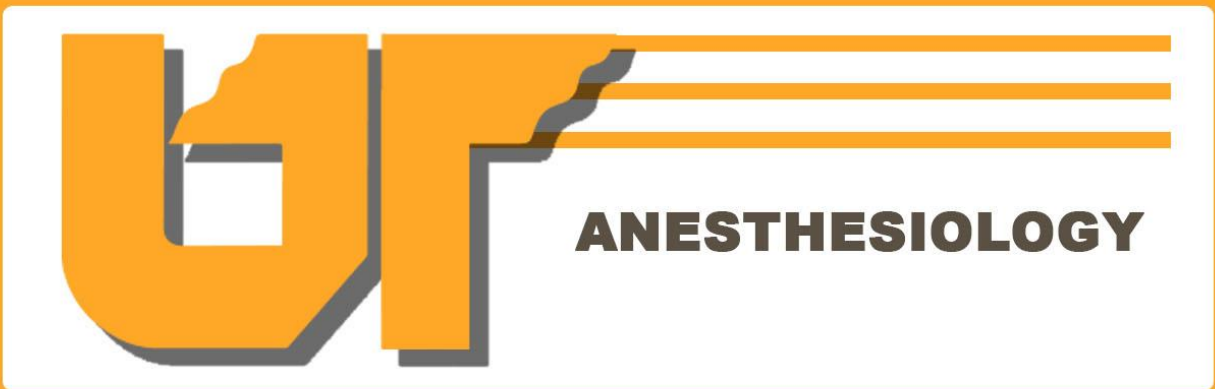


Intrathecal Morphine in Patients Undergoing Deep Inferior Epigastric Flap Breast Reconstruction

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Introduction:

The use of intrathecal morphine has been shown to provide effective pain control for up to 24 hours after injection, as well as decrease the amount of IV opioid medication required post-operatively (1). Benefits of reduction in IV narcotic agents peri-operatively could include decrease in respiratory depression and associated complications, quicker mobilization after surgery, and potentially less incidence of opioid tolerance and dependence post-operatively. A recent retrospective study examined a group of 269 patients who underwent Deep Inferior Epigastric (DIEP) Flap surgery for breast reconstruction (2). This study showed a benefit in both postoperative pain control and incidence of respiratory dysfunction following surgery using a dose of 300mcg of intrathecal morphine. We examined cases of three middle-aged female patients at our institution who underwent DIEP flap surgery and received 150mcg of intrathecal morphine pre-operatively. We looked into post-operative pain scores, morphine milligram equivalents (MMEs), length of stay, use of analgesic adjuncts such as ketamine, IV lidocaine, liposomal bupivacaine, as well as incidence of post-operative respiratory complications. Our institutional practice is to use 150mcg of morphine for intrathecal placement, half of the dose used in the study above. By examining these cases, we hope to highlight the potential benefits of intrathecal morphine in surgical procedures involving the chest wall at our institution and examine whether 150mcg of intrathecal morphine is an effective analgesic dose in these cases.

Materials and Methods:

This is a retrospective review of three patient cases at The University of Tennessee Medical Center in Knoxville, Tennessee. The patients underwent DIEP Flap breast reconstruction surgery with the same surgeon within a span of two months. These patients received intrathecal morphine placement prior to surgery. All three patients underwent sterile intrathecal morphine placement in the pre-operative holding area within sixty minutes of surgical incision. 150mcg of preservative-free morphine diluted in 2mL of sterile saline was used for intrathecal injection in each patient. Other materials used included 25g pencil point needle, 22g introducer needle, chlorhexidine skin solution, and 1% lidocaine for subcutaneous infiltration. Each patient was placed in the seated position for the procedure. Patient follow-up was performed immediately postoperatively and in the morning on postoperative day one. Our multimodal acute pain service managed additional pain medications for 24 hours post-intrathecal morphine placement. Total MMEs and length of stay data were gathered from the hospital charting system.

This Case Report was submitted to the University of Tennessee Institutional Review Board according to our institutional policies. It has been reviewed by an IRB representative and determined to be exempt from IRB review. All HIPAA protected information has been de-identified and removed from this Case Report series.

Case Report/Results

Patient data collected included MMEs over the first 24 hours following ITM placement, pain scores on postoperative day 1, MMEs during hospital stay, and length of stay. (Table 1). MME/day was extrapolated from this data. No respiratory or other significant complications related to intrathecal morphine placement occurred. Patient A had the highest MME utilization across all metrics but had the shortest length of stay. MME utilization in the first 24 hours after surgery ranged from 11.5 (Patient C) to 27 (Patient A). Patient rated pain sores on post-operative day 1 ranged from 2-6/10. Total length of stay ranged from 3.4 to 5.5 days with Patient A having the shortest length of stay and Patient C having the longest. Patient B had the lowest MME use per day at 20.23, and Patient A had the highest at 74.6. None of these patients required analgesic adjuncts during their stay including IV ketamine infusion, IV lidocaine infusion, and none received injection of liposomal bupivacaine. There were no incidences of respiratory compromise post-operatively for any of these three patients.

Table 1:

Patient	24 hr Post-op MME	POD1 Pain Scores	Total MME	LOS	MME/day
A	27	3-5/10	253.5	3.4	74.6
B	15	6/10	87	4.3	20.23
C	11.5	2-6/10	240.5	5.5	43.7

Discussion:

Intrathecal morphine has been shown to decrease the amount of IV narcotic pain medication needed postoperatively. This has potential benefits in incidence of respiratory complications, opioid dependence, and hospital length of stay. Using increased doses of intraoperative opioids is suggested to contribute to increased 30 day hospital readmission rates (3). Opioid usage post-operatively greater than 500 MMEs after TLIF surgery has been linked to continued opioid use 6 months from surgery. By employing the use of intrathecal morphine, we hope to decrease both the intraoperative and postoperative need for opioid medication. The use of 300mcg of intrathecal morphine has been shown to decrease analgesic requirements, respiratory depression and instances of acute respiratory failure in patients undergoing DIEP Flap surgery (2). We examined three patients undergoing DIEP Flap reconstruction who received intrathecal morphine. These patients demonstrated adequate pain control on post-operative day 1, were discharged within several days of surgery, and suffered no respiratory complications. Current recommendations are not to exceed 300mcg of intrathecal morphine (2). We have had good success in pain control for surgical cases using 150mcg of intrathecal morphine. These patients showed encouraging results in 24 hour MME use, and did not need additional analgesic adjuncts while being followed by our Multimodal Acute Pain Service.

Conclusions from these Case Reports are limited having only used intrathecal morphine for three patients undergoing DIEP Flap Reconstruction. This is a retrospective analysis of patient pain scores and MME usage, which could be affected by chronic opiate use or chronic pain prior to surgery. Ideally, a randomized controlled trial could be performed with a larger population of patients to determine whether 150mcg is as an effective analgesic dose as 300mcg for patients undergoing DIEP Flap surgery. A lower dose could potentially reduce the risk of respiratory depression further while still providing adequate analgesia. In addition, lowering the need for IV narcotic agents could, in theory, reduce complications from systemic opioid administration such as nausea and constipation, potentially reduce the incidence of opioid tolerance and dependence as patients are discharged from the hospital, and decrease hospital readmission. We hope to continue to examine the potential benefits of intrathecal morphine administration for patients at our institution, specifically in those who are undergoing DIEP Flap Reconstruction and other surgeries involving the chest wall.

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