

## How to Reduce Opioid Use following Bariatric Surgery?

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The number of people undergoing surgery in order to lose weight and control the complications of morbid obesity is increased in recent years. Although bariatric surgery is actually mainly performed laparoscopically, analgesic optimization continues being essential to reduce complications and to improve the patient's comfort [1]. Despite minimally invasive nature of laparoscopic bariatric surgery, pain can be moderate to severe in the immediate postoperative period [2]. Pain control after bariatric surgery may be especially challenging because of increased sensitivity of the obese patient to opioid-induced respiratory depression [2-4]. Morbidly obese patients, due to high incidence of obstructive sleep apnea, are predisposed to opioid induced airway obstruction and scientific guidelines emphasize the importance of opioid-sparing analgesic approach in over-weighted patients [5,6]. Morbidly obese patients need a multimodal analgesic technique which can offer analgesia without significant adverse effects on the respiratory function.

First of all, let me remind that the somatic component of post-bariatric surgery pain originates from the trocar insertion sites. It seems logical to reduce the number of trocars to provide reduction in postoperative pain.

### Single-Port Procedure

Lo et al. [7] found that single-port laparoscopic sleeve gastrectomy (SPSG) results in less use of postoperative analgesia compared to multi-port laparoscopic sleeve gastrectomy in the short-term. Rogula et al. [8] suggested that SPGS is feasible in carefully selected bariatric patients and results in short-term outcomes comparable to those observed after conventional multi-port technique. Improved pain and cosmesis seem to be potential benefits of SPSPG [8]. Park et al. [9] reported that the patients undergoing SPSPG experienced significantly less pain at the first postoperative hour. Gaillard et al. [10] used single port technique as a routine procedure in 1000 patients.

The surgeon can use the most non-invasive possible surgical technique to minimize surgical trauma, and the anesthesiologist should consider to use loco-regional techniques added to non-steroidal anti-inflammatory drugs in order to reduce opioid use.

### Local Anesthetic Infiltration

Current evidence suggests that local anesthetic wound infiltration should be employed as part of multimodal postoperative pain management [11]. Local anesthetic infiltration of the trocar sites is accepted as one step of multimodal analgesia in bariatric surgery [1]. Bertin et al. [12] reported the use of liposome bupivacaine, a novel multivesicular formulation of bupivacaine indicated for single-dose infiltration into the surgical site to produce postsurgical analgesia, as part of a multimodal analgesic regimen in a patient with a history of chronic pain scheduled to undergo laparoscopic sleeve gastrectomy.

**Received date:** 01 Jun 2016; **Accepted date:** 29 Jul 2016; **Published date:** 03 Aug 2016.

**Citation:** Ari DE (2016) How to Reduce Opioid Use following Bariatric Surgery? *J Clin Anesth Manag* 1(4): doi <http://dx.doi.org/10.16966/2470-9956.115>

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### Epidural Analgesia

Epidural analgesia may be another option for pain management after bariatric surgery. Epidural analgesia and port-site infiltration associated with iv analgesia is demonstrated to reduce the postoperative pain, when compared with iv analgesia exclusively [1]. Chargini et al. [13] conducted a retrospective study comparing intravenous patient controlled analgesia and epidural analgesia following bariatric surgery. Although epidural anesthesia lowers the narcotic use in obese patients, the application of the epidural catheterization may be technically difficult due to large adipose tissue. Hung et al. [14] reminded the anesthesiologists and surgeons that epidural anesthesia may be a viable alternative to general anesthesia for laparoscopic bariatric surgery in selected cases. The authors stated that this anesthetic technique may maintain pre-operative respiratory function, increase alertness, and reduce the use of rescue analgesics. Obviously, laparoscopic surgery may be intolerable under epidural anesthesia for certain patients. Conversion to general anesthesia must be always available.

### Transversus Abdominis Plane Block

Transversus abdominis plane (TAP) block, a regional anesthesia technique that blocks neural efferents from the anterior abdominal wall [15], has recently been described as an effective technique to reduce postoperative pain intensity and morphine consumption after lower abdominal surgery [16]. The traditional posterior TAP block results in effective alleviation of pain below the level of T10 dermatome, but it often fails to block areas above the umbilicus [17]. The subcostal approach of TAP block has been reported to provide analgesia to the supraumbilical abdomen [18]. This superior approach has been shown to offer adequate postoperative analgesia after upper abdominal procedures [17,19]. The opioid-sparing effect of TAP block is beneficial in order to decrease airway complications in the obese patients. Minimal use of opioids also leads to decreased incidence nausea and vomiting which may be extremely disturbing for the postoperative patients.

Sinha et al. [4] performed ultrasound-guided posterior TAP block as a part of multimodal analgesic technique in morbidly obese patients undergoing laparoscopic bariatric surgery. Wassef et al. [20] obtained satisfactory analgesia with posterior TAP block following single-port sleeve gastrectomy. In the other hand, Albrecht et al. [2] suggested that bilateral TAP block do not provide additional analgesic benefit when added to trocar insertion site local anesthetic infiltration for laparoscopic gastric bypass surgery.

US guidance facilitates the application of TAP block in patients lacking of clear anatomical landmarks, especially in the presence of obesity [19]. In the other hand, due to deep anatomical location of structures and

nerves and poor quality of the image, the ultrasonographic evaluation is more difficult in obese patients. For posterior TAP block, the visibility of muscle layers is improved when an assistant pulls away the abdomen towards the opposite site [4].

In the frame of multimodal analgesia, local anesthetic infiltration to the trocar sites combined with regional techniques may be used in order to reduce opioid use following bariatric surgery.

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