

## Combined preincisional periportal and preperitoneal infiltration with bupivacaine in pain relief after laparoscopic surgery

It is well known that the intensity of postoperative pain following laparoscopy is less compared to open surgical technique. However, it still requires pain relief methods to achieve the new era of the enhanced recovery after surgery (ERAS) ([www.erassociety.org](http://www.erassociety.org)) protocols. We have criticized the term ERAS and replaced it by enhanced recovery after anesthesia (ERAA) which we have published recently.<sup>[1]</sup> We have designed the ERAA ladder which summarizes all aspects of ERAS protocol including the background, preoperative, intraoperative as well as postoperative management [Figure 1]. In terms of pain modality, intraoperatively, we avoided opioids and replaced it by dexmedetomidine (4 mcg/ml) infusion at a rate of 0.5 mcg/kg/h. In the postoperative period, we avoided well opioids and replaced it with multimodal analgesia (MMA) including nonsteroidal anti-inflammatory drugs and paracetamol beside a rescue dose of intravenous (IV) tramadol if required. Furthermore, regional anesthesia in open surgical techniques such as thoracic epidural analgesia can be recommended. IV lidocaine infusion can also be used in

either laparoscopic or open surgical techniques. Continuous wound infiltration of local anesthetic is weekly recommended in open abdominal surgery technique. Transversus abdominis plane (TAP) block is strongly recommended in laparoscopic abdominal surgery. The TAP block is purely a somatic blockade; it has no visceral pain relief effect. It is considered basically an integral part of many MMA strategies to optimize the postoperative pain management following lower abdominal surgeries. The analgesic effect of TAP block is limited to the afferent sensory nerves of the anterolateral abdominal wall. The pattern of sensory distribution after TAP block depends on the volume of local anesthetic as well as the number and sites of injection. Preperitoneal local anesthetic instillation for pain relief following laparoscopic hernia repair was first described by Dean *et al.*<sup>[2]</sup> Recently, we have performed some cases of preperitoneal infiltration with bupivacaine during laparoscopic hernia repair surgery, and we have noticed that the pain relief following laparoscopy was excellent to the extent the patients were able to stand and walk few hours after surgery without any consequent effects. Initially, the

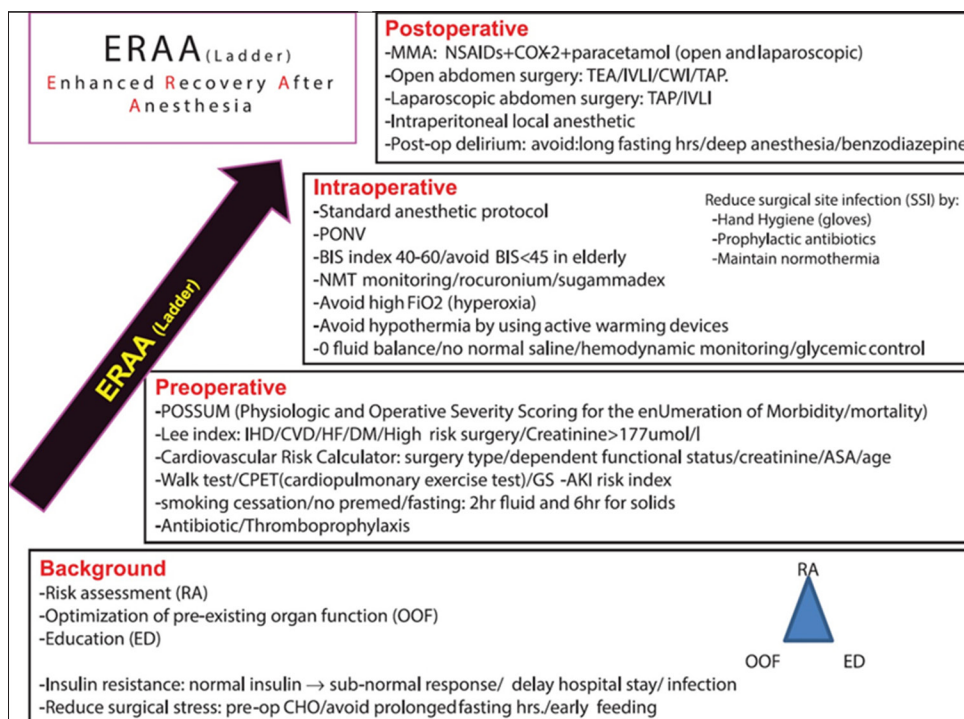
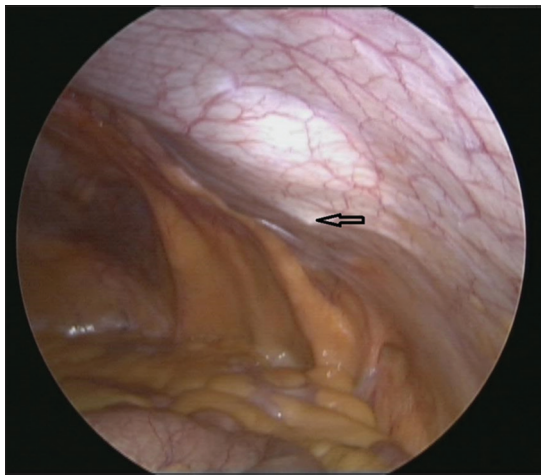


Figure 1: Enhanced recovery after anesthesia protocol

Veress needle inserted percutaneously till it reaches the preperitoneal space under camera visualization. Then, saline was injected through the needle to create the preperitoneal space followed by local anesthetic injection [Figure 2]. Bupivacaine 0.25% was used at a dose of 2–3 mg/kg b.w. Anatomically, the peritoneum consists of two layers which are continuous with each other: the parietal peritoneum and the visceral peritoneum. They both consist of a layer of simple squamous epithelial cells, called mesothelium. The parietal peritoneum lines the internal surface of the abdominopelvic wall. It is derived from somatic mesoderm in the embryo. It receives the same somatic nerve supply as the region of the



**Figure 2: Local anesthetic instillation in the preperitoneal space. Arrow shows tip of the needle in the preperitoneal space with subsequent bulge following local anesthetic injection**

abdominal wall that it lines, therefore pain from the parietal peritoneum is well localized and it is sensitive to pressure, pain, laceration, and temperature. The visceral peritoneum invaginates to cover the majority of the abdominal viscera. It is derived from splanchnic mesoderm in the embryo. The visceral peritoneum has the same nerve supply as the viscera it invests. Unlike the parietal peritoneum, pain from the visceral peritoneum is poorly localized and is only sensitive to stretch and chemical irritation. Pain from the visceral peritoneum is referred to areas of skin (dermatomes) which are supplied by the same sensory ganglia and spinal cord segments as the nerve fibers innervating the viscera. That means the instillation of bupivacaine preperitoneal will work. Whether this technique will replace TAP block or not further studies needed. We believe a randomized controlled trial is needed to confirm our initial observation on preperitoneal infiltration with bupivacaine and the postoperative pain relief.

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