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Bilateral Rectus Sheath Block as an Effective Alternative Anaesthetic Technique for palliative Feeding Jejunostomy in an Advanced Carcinoma Thyroid Patient who Developed Tracheo - Oesophageal Fistula

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Abstract: ***Tracheoesophageal fistula (TEF) is an extremely rare complication seen in patients of thyroid cancer who has received chemotherapy and radiation therapy. These patients may present with cough, respiratory distress, difficulty in feeding and pneumonia. Alternative feeding options like feeding gastrostomy/jejunostomy will be planned for such patients as a part of palliative treatment. Administering anaesthesia to such patients is challenging as fistula may cause complications such as aspiration, bleeding, perforation, migration and pneumonia during general anaesthesia. If a concurrent heart condition exists, which increases the risk of central neuraxial block, it is significantly more difficult to administer anaesthesia to such people. Here, we present a case of 62yrs old male patient weighing 60kgs with a BMI of 22kg/m2, ASA class IV, who is a known case of thyroid Carcinoma stage IV with lung metastasis who has developed Tracheoesophageal fistula after chemotherapy and radiation therapy and has posted for feeding jejunostomy as a part of palliative care. We could not adopt even central neuraxial blockade because the pre - anesthesia evaluation also revealed a poor EF of 32% with mid and basal segment and anterior wall hypokinesia in 2D Echo. Due to these significant perioperative concerns, we have opted for ultrasonography - guided bilateral rectus sheath block and patient tolerated the surgery well with minimal sedation. Rectus sheath block is a potentially useful regional anaesthetic technique for abdominal surgeries involving midline incisions, allowing surgery in high - risk patients while avoiding general anaesthesia and central neuraxial blockade, and the real time ultrasonography has increased the success rate with reduced complications of peritoneal puncture, bleeding and visceral injury.***

Keywords: Rectus sheath block, Feeding jejunostomy, Tracheo - oesophageal fistula, ASA IV, Ultrasound guided

1. Introduction

Perioperative airway management in the patient with tracheoesophageal fistula could be a challenge for anesthesiologist because of the problems with oxygenation and/or ventilation which result in gastric dilatation, atelectasis, or pulmonary aspiration. A patient with lung metastases will also have great difficulty recovering from mechanical ventilation.

Schleich[1] first described the rectus sheath block for anterior abdominal wall surgeries in adults in 1899. The ventral branches of the T7 - T11 spinal nerve roots are located between the rectus abdominis muscle and the posterior rectus sheath, and they enter the rectus muscle close to the midline. These ventral branches innervate the central region of the anterior abdominal wall[2]. Local anaesthetic deposited here from a single injection site can spread cephalocaudally inside this compartment because the rectus muscle's tendinous intersections are not connected to the posterior rectus sheath[3].

It has been reported to be used in abdominal gynaecological procedures and umbilical hernia repair[4, 5, 6]. And it is more commonly used in paediatric patients[7, 8] in recent times. It was the sole anesthetic technique used for elective umbilical surgery in high - risk patients with poor cardiovascular and physiological reserves[9]. Few other cases also have been documented in the literature.

We hereby present a case of feeding jejunostomy done under ultrasonography - guided bilateral rectus sheath block in an advanced thyroid carcinoma patient who has developed trachea - oesophageal fistula after multiple cycles of radiotherapy and chemotherapy, and who also has cardiac hypokinesia, in order to avoid general and central neuraxial anaesthesia. This may be a worthwhile alternative anaesthetic technique for high - risk patients requiring anterior abdominal surgery with a midline incision.

2. Case Report

A 62 - year - old man, weighing 60 kg and with a body mass index of 22 kg/m^2, presented for feeding jejunostomy as a palliative management as he developed trachea - oesophageal fistula which is causing feeding difficulty and cough and pneumonia. He is also a known case of Hypertension, Diabetes mellitus type2 on regular treatment with oral medications. On examination he is conscious, coherent with the vitals of PR - 128/min, BP – 80/60mmHg, RR - 20/min, Spo2 - 88% on room air and 95% with 4L O2 inhalation with nasal prongs. RS – Bilateral air entry present with conducted sounds and bilateral crepitations on auscultation. CVS – S1S2 heard, Abdomen – soft, CNS – No abnormality detected.

Based on the risks associated with general and central neuraxial anaesthesia, and as the surgeon is planning for a midline incision between xiphoid process and umbilicus, we decided to perform the surgery under bilateral rectus sheath block with minimal sedation in order to minimise haemodynamic instability. After informed consent, patient was shifted to operation theatre. ASA standard monitoring done with electrocardiography, pulse oximetry and noninvasive blood pressure. Oxygen supplementation given with 4L/min using nasal prongs. After preparation and draping and under strict aseptic precautions, B/L rectus sheath block was performed under USG guidance (Esoate) using a 22G (0.70 mm × 50 mm) Stimuplex® A insulated needle via an in - plane approach.20 mL of 0.75% ropivacaine was deposited in the potential space between the rectus abdominis muscle and the posterior rectus sheath bilaterally.

Surgery was commenced 20 mins after the block by the surgeons after local infiltration with 1% lignocaine. Patient was given 50mcg of Fentanyl at the start of surgery to facilitate sedation and analgesia. Patient was comfortable throughout the procedure, and was hemodynamically stable with no complaints of pain until closure.

3. Discussion

Tracheoesophageal fistula is a rare condition that can be due to trauma, ingestion of corrosive substances, foreign bodies, inflammatory processes or cancer. Problems with oxygenation and/or ventilation can occur when the endotracheal tube is placed in or over the fistula, resulting in gastric dilatation, atelectasis, or pulmonary aspiration. For all these reasons, we avoided general anesthesia in this patient. To avoid the hemodynamic changes seen with the central neuraxial blockade in this patient with cardiac dysfunction, we did not opt for spinal or epidural anaesthesia.

Rectus sheath block is a more promising approach as it doesn't cause physiologic sympathectomy. Eventhough previous studies mainly focused on lower abdominal surgeries it is now becoming popular for abdominal surgeries with midline incisions from xiphoid to symphysis pubis[8.] With a high rate of success and minimal problems, it was also used for postoperative analgesia of abdominal procedures including laparoscopic cholecystectomy and gynecologic cancer surgery[10, 11].

According to study conducted by Webster K[12] Rectus sheath block provides dense analgesia with a shorter duration than TAP block, and as the surgeon is planning for a midline incision, we preferred the RSB over the TAP block in our patient.

Inspite of being the safe anesthetic technique for such high risk patients, it also offers advantage post operatively by reducing the incidence and severity of deep vein thrombosis and pulmonary embolism, reducing risk of atelectasis and respiratory infection with the advantage of early mobilization. Rectus sheath catheters can also be used for continuous analgesia postoperatively, however we did not do in our patient as the postoperative pain was expected to be minimal with the given small incision.

Traditionally, rectus sheath block was used to be done blindly following the loss of resistance with the potential for inadequate block/ vessel puncture/peritoneal or intestinal injury and with the advancement of ultrasound technology, many regional anesthetic blocks can now be safely and visibly performed with real - time needle guidance, and even observe the local anaesthetic spread within the correct tissue plane[13]. A recent systematic review of ultrasonography - guided truncal blocks strongly recommended the use of ultrasonographic guidance for rectus sheath block in order to increase its success rate[3].

Thus we conclude that rectus sheath block will be of great help both for the anaesthetists who are competent with ultrasound guided block tecnhnique to avoid complications of general/central neuraxial anaesthesia in a high risk patient and also for such patients in avoiding complications, mechanical ventilation/ICU stay and thus enabling early mobilization.

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