

Transversus Abdominus Plane Block with I.V Sedation by Ketamine and Dexmedetomidine Combined, as an Alternative to Spinal, Epidural and General Anesthesia

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ABSTRACT

Introduction: Feeding jejunostomy is a vital technique to achieve enteral access in patients where gastrostomy tube placement is contraindicated. These patients are usually cachectic and comorbid.

Case report: Hereby present a case: Patient was 30 year old, 35 kg female, with documented case of carcinoma esophagus since 3 years presented for creation of feeding jejunostomy. Patient was cachectic, BMI 14.4. Patient was having reduced air entry over left lung, x-ray suggesting left lung pleural effusion. Coagulopathy: PT/INR-18.1/1.46. Hemodynamic; HR-76/min. BP-92/62 mm hg. Sedation and analgesia with inj. ketamine i.v. 20 mg (0.5mg/kg) paired with inj. dexmedetomidine i.v. 7ugm (0.2ugm/kg) was given, followed by placement of bilateral TAP block with inj levobupivacaine 0.5 percent 10ml, on both sides. (3mg/kg). Anesthesia was sustained with intermittent doses of inj.ketamine i.v.10mg (0.3mg/kg) paired with inj dexmedetomidine i.v. 3.5ugm (0.1ugm/kg) i.v bolus every 15-20 mins and depending upon patients sedation status.

Conclusion: We present the use of TAP block instead of GA and as an alternative to regional techniques, neuraxial (spinal or epidural) anesthesia in patients with multiple co morbid conditions specially when these technique are contraindicated. TAP block provide superficial cutaneous anesthesia but not visceral coverage, therefore to obtain good analgesia, ketamine paired with dexmedetomidine can be used.

Keywords: Transversus Abdominus, I.V Sedation, Ketamine, Dexmedetomidine, Spinal, Epidural, General Anesthesia

INTRODUCTION

Feeding jejunostomy is a vital technique to achieve enteral access in patients where gastrostomy tube placement is contraindicated. These patients are usually cachectic and comorbid. Usually done under general or neuraxial anesthesia. We present the use of TAP block with I.V. sedation as the sole anesthetic for performing the procedure of feeding jejunostomy in a 30 year-old female with known case of carcinoma esophagus having multiple comorbid conditions. The transversus abdominis plane (TAP) block is a peripheral nerve block that is used primarily to provide postoperative analgesia. It involves the injection of a local anesthetic agent into the plane between the internal oblique and the transversus abdominis muscles muscle layers, with an injection via the triangle of Petit.¹

The nerve supply to anterolateral abdominal wall, which originates from anterior rami of spinal nerves T6–L1,

travels in this plane.² Although originally described using a double loss of resistance technique as the two layers of muscle (external and internal oblique) are penetrated the current standard involves the use of ultrasound technology to visualize the muscle layers and ensure correct placement.

CASE REPORT

A 30 year old female patient with known case of carcinoma esophagus presented in emergency with complains of 1 episode of hematemesis and unable to eat since 2 days. Pulse was 76 beats/min and feeble and blood pressure was 94/62mm Hg. Built was cachectic with weight 35 kg and BMI of 14.4. Patient had history of weight loss of 10kgs in last 1 month. Mild crepitations were present on left side on chest auscultation, and chest x-ray was suggestive of left lung pleural effusion. Patient as anaemic with hemoglobin 8.5 gm/dl. Patient was HbsAg positive. Patient was having coagulopathy having PT of 18.1 and INR of 1.46.

Patient's blood sugar, kidney function and electrolytes were within normal range.

In preoperative room

Patient was nebulized with Ipratropium bromide, Levosalbutamol and Budesonide. Two 18G cannula was secured and fresh frozen plasma were transfused 450ml. After which patient was taken for OT.

Mode of anesthesia

On arrival to operating room patient was connected to standard monitors and was given oxygen supplementation at 4L/min via Hudson mask.

Sedation and analgesia with Inj. Ketamine IV 20 mg (0.5mg/kg)³ paired with Inj. Dexmedetomidine IV 7ugm (0.2ugm/kg) was given, followed by placement of bilateral ultrasound

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Reports of the use of the TAP block instead of general anesthesia		
Author and reference	Demographic	Outcome
Kitaba et al ⁴	33-year-old, 84-kg woman with complex CHD and failing Fontan physiology for placement of a paracentesis catheter to remove ascites.	Sedation with midazolam and ketamine sedation were followed by placement of a right-sided TAP with 10 mL of 0.5% ropivacaine with 1:200,000 epinephrine. A paracentesis catheter was placed and tunneled subcutaneously without complaints or response to surgical manipulation.
Mishra et al ⁵	67-year-old, 55-kg woman with COPD, respiratory failure and peritonitis for laparotomy	Sedation with dexmedetomidine was followed by placement of bilateral TAP blocks. Laparotomy revealed an ileal perforation, which was sealed with omentum without complications.
Vuong et al ⁶	Case series of three adult patients with comorbid conditions: 92-year-old, 64-kg woman with HTN, carotid and CAD, and CVA or extensive stoma revision for large bowel resection 66-year-old, 115-kg man with UC, CAD, severe HF, ICD for loop ileostomy 91-year-old, 70-kg woman with CAD, valvular heart disease, pacemaker, CKD, HTN, GERD, and Parkinson's disease for resection of a cecal adenocarcinoma	Sedation with midazolam and fentanyl followed by placement of bilateral TAP blocks prior to intra-abdominal procedures in the three patients.
Lee et al ⁷	80-year-old man with aspiration pneumonia, HTN, DM, ischemic heart disease, spinal stenosis, and a history of cerebral infarction for open gastrostomy	Local infiltration of the skin was followed by placement of a left TAP block with 20 mL of 0.25% levo-bupivacaine. Fentanyl was required in the middle of the surgery due to patient discomfort. A gastrostomy tube inserted without complication.
Ali and Shehata ⁸	19-year-old, 63-kg man with appendicitis and no comorbid conditions for appendectomy	Sedation with midazolam and fentanyl followed by placement of right-side TAP with 30 mL of 0.5% bupivacaine. Appendectomy performed without complication
O'Connor and Renfrew ⁹	Frail, elderly (age not specified) patient with limited physiological reserve for ileostomy placement	Subcostal TAP block with 20 ml of 0.5% levo-bupivacaine. Remifentanyl infusion was used to provide visceral analgesia

guided TAP block with Inj. Levobupivacaine 0.5 percent 10ml, on both sides (3mg/kg).

Sedation was maintained with intermittent doses of Inj. Ketamine 10mg (0.3mg/kg) paired with Inj. Dexmedetomidine 3.5ugm (0.1ugm/kg) IV bolus every 15-20 minutes and depending upon patients sedation status.

No other analgesia was given intraoperatively.

Surgery was completed in 1.5 hrs.

Patient was hemodynamically stable and woken up successfully after surgery.

DISCUSSION

We present the use of a TAP block instead of general anesthesia or neuraxial anesthesia in an patient with multiple comorbid conditions. When compared with other regional anesthetic techniques, the TAP block may offer an alternative to neuraxial (spinal or caudal epidural) anesthesia especially when such techniques are specifically contraindicated such as increased intracranial pressure, anatomical abnormalities, or coagulation disturbances. The TAP block can be expected to provide superficial cutaneous anesthesia and not visceral coverage.

For visceral pain coverage ketamine paired with dexmedetomidine was used.

Both drugs provide good analgesia have minimal effect on central respiratory drive, preserving spontaneous respiration.

Dexmedetomidine may cause decrease in blood pressure and bradycardia, which is countered by added benefits of ketamine which causes increase arterial blood pressure, heart rate and cardiac output

CONCLUSION

Since TAP block does not cause sympathetic shutdown patient remains hemodynamically stable through out intraoperative period. So it is a better choice, especially in patient who have multiple comorbid conditions.

Since dexmedetomidine and ketamine, both provide good analgesia and with minimal respiratory depression, it is a good choice for visceral pain specially in airway compromised patients.

Thus, transversus abdominus plane block with i.v. sedation by ketamine and dexmedetomidine is alternative option than spinal, epidural and general anesthesia.

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