

Bilateral Transversus Abdominis Plane Block for Managing Pain After a Pancreas Transplant

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Abstract

The authors report the first clinical application of a bilateral transversus abdominis plane block for treating pain after a pancreas transplant. In this case, a 36-year-old chronic opioid user presented postoperatively with severe incisional pain following a pancreas transplant. The pain was not ameliorated with opioids and was successfully treated with the administration of bilateral transversus abdominis plane blocks with 0.5% ropivacaine. Pain relief lasted for 6 hours.

Key words: TAP block, Analgesia, Coagulopathy, Laparotomy

Case Report

A 36-year-old woman (61 kg) presented to the operating suite for a pancreas transplant. Her past medical history was significant for 10 years of poorly controlled diabetes mellitus, resulting in weekly admissions for recurrent hyperglycemia and frequent bouts of diabetic ketoacidosis. Other comorbid conditions included questionable mild steatohepatitis, gastroparesis, hypertension, and chronic bladder pain. In addition to her insulin regimen and antihypertensive medications, she averaged 2 tablets of hydrocodone 7.5 mg/acetaminophen 500 mg daily to control her bladder discomfort.

The patient was premedicated with 2 mg of midazolam. Anesthesia was induced with propofol,

fentanyl, and rocuronium, and maintained with sevoflurane and frequent opioid doses. Total operative time was 151 minutes, during which the patient received 600 mcg fentanyl and 2 mg hydromorphone. Surgery progressed through a midline supraumbilical laparotomy incision. Emergence from anesthesia was unremarkable.

In the postanesthesia recovery unit, the patient immediately began complaining of severe incisional abdominal pain. She rated the score as an 8/10, with 10 representing severe pain. Administration of 1 mg hydromorphone over 15 minutes did not reduce the pain; therefore, after receiving informed consent from the patient, we decided to place bilateral transversus abdominis plane blocks. Using ultrasound guidance, a 22-gauge Tuohy needle was inserted into the fascial plane, between the transversus abdominis and internal oblique muscles bilaterally, and 20 cc 0.5% ropivacaine was injected at each site. The patient noted an immediate decrease in pain and by the time 30 minutes had elapsed, the pain scored 0/10. Pain relief lasted for 6 hours before she required additional opioids. She had no immediate complications associated with anesthesia or the surgery and was discharged from the postanesthesia recovery unit after 3 hours. On postoperative day 2, she developed a nonocclusive arterial thrombus in the tail of the pancreas that we treated with a heparin drip until oral warfarin was therapeutic. She was discharged home 6 days after surgery.

Discussion

Use of transversus abdominis plane blocks for analgesia for incisions involving the anterior abdominal wall have been well documented in the literature¹⁻⁵; however, use of bilateral transversus abdominis plane blocks after a pancreas transplant

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have not been described. A transversus abdominis plane block inhibits the sensory nerve supply to the anterolateral abdominal wall. This approach involves identifying the lumbar triangle of Petit on the lateral abdominal wall.^{1, 6} The triangle is defined by the iliac crest inferiorly, posteriorly by the anterior edge of the latissimus dorsi muscle, and anteriorly by the posterior edge of the external oblique muscle. Neural afferents from T6-12 and L1-21 can be blocked successfully by infiltration of 20-30 mL of local anesthetic into the fascial plane, between the internal oblique and transversus abdominis muscle within the triangle of Petit. A subcostal approach also has been described.^{7, 8} The procedure, first described by Rafi⁹ in 2001, involved a blind technique using tactile cues; this has now largely been replaced by ultrasound guidance. Ultrasound should diminish complications; however, an ultrasound-guided transversus abdominis plane block has been associated with liver injury.¹⁰

Use of transversus abdominis plane blocks has been described only in renal transplant recipients^{11, 12}; however, its use in providing analgesia in a variety of solid abdominal organ transplants merits consideration. While the incidence of pancreatic thrombosis has been reported to be as high as 20%,¹³ routine use of full therapeutic anticoagulation is controversial. Currently, most institutions opt for prophylaxis with various combinations of acetylsalicylic acid, dextran, heparin, and warfarin.¹⁴ Epidural catheter placement is often avoided in these patients owing to the potential of developing catastrophic spinal hematoma should full anticoagulation be needed, as in our case, and most patients are easily treated with patient-controlled opioid analgesia. Theoretically, transversus abdominis plane blocks are safe in coagulopathy patients, because they allow for analgesia to the anterior abdominal wall while avoiding the spinal column. Additionally, the likelihood of individual

nerve injury is small owing to injecting the local anesthetic into the neurofascial plane as opposed to perineurally. Incorporating ultrasound for block placement should diminish the risk of injury visualizing the correct location and avoiding vascular structures.

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