Bilateral rectus sheath block for single-incision laparoscopic tubal ligation in a cardiac patient

Sir,

A 30-year-old, 64 kg, American Society of Anesthesiologists Grade 3 female patient with rheumatic heart disease was posted for laparoscopic bilateral tubal ligation under the family planning program. On preoperative evaluation, patient was a diagnosed case of moderate mitral stenosis (mitral valve area = 1.3 cm², ejection fraction = 40%) with trace aortic and tricuspid regurgitation, in sinus rhythm with occasional ectopics (ventricular premature contractions) with no evidence of congestive cardiac failure or infective endocarditis. She was stable on daily doses of digoxin, furosemide, aspirin, metoprolol, and penicillin injections (every month). A regional technique in the form of bilateral rectus sheath block (RSB) was planned, though all preparations for general anesthesia (GA) with endotracheal intubation were kept ready as a backup plan. Patients’ consent and cooperation were sought before the procedure along with an explanation of risk, possibility of GA, and postoperative intensive care unit (ICU) stay.

After applying standard monitors, skin and subcutaneous infiltration at the site of trocar insertion was done with 2 ml of 2% lignocaine. Fifteen milliliter of 1% lignocaine in 5 ml aliquots on each side was injected slowly after negative aspiration. RSB was supplemented with slow injection of the following intravenous drugs: anxiolytic Midazolam just before giving block (2 mg) and opioid fentanyl citrate just before veress needle insertion (40 mcg). Slow intravenous paracetamol infusion (1 g) and antiemetic agent ondansetron (4 mg), were given just before desufflation. Vigilant monitoring along with hand on the pulse and precordial stethoscope was utilized. All cardiac resuscitation equipment, drugs, airway cart, and monitors were kept ready, in the event of a requirement. Intraoperatively, the patient’s vital parameters remained stable. Total procedure time was 8 min and she tolerated pneumoperitoneum well. Intra-abdominal pressures were limited to 8-10 mmHg and head-down positioning was given only for 2 min. Both insufflation and desufflation of carbon dioxide (CO₂) were done very slowly. 100% O₂ was given via facemask along with end-tidal CO₂ monitoring.

Postoperatively, the patient was observed in the ICU and then shifted out, followed by discharge after cardiologist review. The entire perioperative course was uneventful.

This case highlights the fact that RSB is a very useful regional technique for analgesia as well as anesthesia for short abdominal procedures, especially in high-risk situations. This technique blocks the terminal branches of the 9th 10th and 11th intercostal nerves which run in between the internal oblique and transversus abdominis muscles to penetrate the posterior wall of the rectus abdominis muscle and end in an anterior cutaneous branch supplying the skin of the umbilical area. Even though regional anesthesia offers several advantages over general, we had kept all equipment for GA and invasive monitoring ready if the need arises. The patient was allowed oral liquids after 2 h of observation in the ICU and her usual cardiac medications were continued as per schedule.

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RSBs may be considered as the sole anesthetic agent in select cases of laparoscopic tubal ligations, taking care to avoid local anesthetic overdose\[5\] or local hematoma. Patients with severe heart problems represent a challenge for every anesthetist, even for minor surgical procedures.

Regional techniques like RSB, preferably under ultrasound guidance, can be used only in select cases with full preparation for GA and cardiac resuscitation, whenever required.

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**Conflicts of interest**
There are no conflicts of interest.

Uma Hariharan, Neha Baduni, Bijender Pal Singh
Department of Anesthesia and Intensive Care, ESIC (Employees State Insurance) Hospital and Dental College, Rohini, New Delhi, India

Address for correspondence: Dr. Uma Hariharan, BH-41, East Shalimar Bagh, New Delhi - 110 088, India.
E-mail: uma1708@gmail.com

**References**

1. Azemati S, Khosravi MB. An assessment of the value of rectus sheath block for postlaparoscopic pain in gynecologic surgery. J Minim Invasive Gynecol 2005;12:12-5.
2. Smith BE, Suchak M, Siggins D, Challands J. Rectus sheath block for diagnostic laparoscopy. Anaesthesia 1988;43:947-8.
3. Alexander JI, Hull MG. Rectus sheath and mesosalpinx block for laparoscopic sterilisation. Anaesthesia 1992;47:271.
4. Yarwood J, Berrill A. Nerve blocks of the anterior abdominal wall. Contin Educ Anaesth Crit Care Pain 2010;10:182-6.
5. Yerzingatsian KL. The dosage of dilute lignocaine for the infiltration technique of local analgesia. Ann R Coll Surg Engl 1991;73:201-3.

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