Nerve stimulator-guided thoracic paravertebral block for gynecomastia surgery

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ABSTRACT
Thoracic paravertebral block (TPVB) is gaining popularity for female breast surgeries due to various advantages like less nausea and vomiting and better post-operative pain relief, which helps in early ambulation and discharge from the hospital. Use of nerve stimulator during this block has further enhanced its success and safety profile. Male breast surgery is usually done either under general anaesthesia or local infiltrative anaesthesia combining with intravenous sedation. We postulated that the advantages of TPVB could be helpful for early mobilization and discharge of minor breast surgery in male patients. However, to our knowledge, there is no such report suggestive of TPVB for exclusive male breast surgery. We used nerve stimulator-guided TPVB for gynecomastia surgery in two patients where general anaesthesia was not feasible. Both patients had successful block and showed good post-operative recovery and were discharged on the same day. They had long post-operative pain relief without any block-related complication. A case report of two such cases of gynecomastia surgery (male breast surgery) done under TPVB is presented.

Key words: Gynecomastia, gynecomastia surgery, regional anaesthesia, surgery under thoracic paravertebral block, thoracic para vertebral block

INTRODUCTION
Female mastectomy done under thoracic paravertebral block (TPVB) have shown that it is a promising technique as it provides comfortable surgical field and superior post-operative pain control than conventional techniques. Whether these benefits are also applicable for male breast reduction surgery (gynecomastia surgery) is not known as we could not find any supportive literature. We report two cases where we have used nerve stimulator-guided TPVB for gynecomastia surgery in two male patients to observe its efficacy in providing comfortable anaesthesia and post-operative pain control.

CASE REPORTS
Case 1
A 36-year-old 80-kg male, American society of anesthesiology class-1 (ASA-1), presented with right-sided breast enlargement (idiopathic gynecomastia) and was scheduled for gynecomastia surgery as a day care surgery. During pre-anaesthetic check, he opted for regional anaesthesia as he had an inherent fear of general anaesthesia.

Case 2
A 65-year-old male patient (ASA-2) was scheduled for excision biopsy of hard lump in left breast. He presented with sudden painful enlargement of his left breast that developed over 2 months in a pre-existing small soft nodule on the same side. He was suffering from chronic obstructive pulmonary disease, hypertension and senile tremors.

The anaesthetic procedure was explained and an informed consent was taken from both the patients. In the operation theatre, an intravenous line was established and monitors (ECG, NIBP and SpO₂) were attached. Intravenous sedation was given with 50 and 30 µg Fentanyl and 2 mg Midazolam to get anxiolysis and comfortable positioning during needle insertion. In the sitting position, anatomical landmarks were marked, the point of needle insertion was taken at
2.5 cm lateral to midline at the tip of spinous process on side of operation and level of block was decided by nearest dermatome level of surgery. We selected the T3 and T4 levels, respectively, for Case 1 and Case 2 in our study [Figures 1 and 2]. After infiltration of the needle insertion site with 2 mL 1% lidocaine using a 26G needle, a 10 cm and 22G insulated needle (Stimuplex-A B-Braun Germany) connected to a nerve stimulator (Stimuplex® NHS12, B- Braun, Germany) was inserted perpendicular to the skin and the transverse process of the thoracic vertebra was contacted (4.5 and 4.0 cm distance). Initial setting of nerve stimulator was 1.5 mA current, 100 ms pulse width and 2 HZ frequency. The needle was withdrawn and redirected caudally below the transverse process not more than 1–1.5 cm deeper than the initial insertion and motor stimulation of intercostal muscles were noticed. Muscle contraction was also associated with sensory stimulation or paresthesia in the respective area. The needle was repositioned till the best stimulation was achieved with minimum current strength, e.g. 0.5–0.6 mA. The position was further confirmed correct if 1 mL 2% lidocaine abolished the sensory and motor stimulation.

After that, the total intended local anaesthetic was injected in 3 mL aliquots with repeated aspiration to avoid accidental vascular injection. In the first case, 20 mL (1:1 mixture) of 2% lidocaine with adrenaline (1:200000) and 0.5% bupivacaine and the in second case, 10 mL 2% lidocaine with adrenaline (1:200000) and 5 mL 0.5% bupivacaine was given. Patients were positioned for surgery and additional sedation with Injection Fentanyl 25–50 µg and Midazolam 1–2 mg was given. Adequacy of anaesthesia was checked by sensory loss in surgical field to pinprick sensation before incision. Both surgeries were done through a semicircular incision below the swelling and excessive tissue was excised and closure was done. Oral analgesics (Tab Paracetamol 500 mg and Tramadol 100 mg) were prescribed and the patients were discharged 2–4 h after surgery. Phone numbers were provided for contact if required. Both patients had successful and complete anaesthesia and showed very stable haemodynamics. The surgery lasted for 45 min in the first case and 1 h in the second case. At the end of surgery, patients were awake and pain free (VAS 0/10) [Figure 3]. Both patients took their first analgesic at bed time, although pain was minimal (VAS 2-3/10). Anaesthesia was uneventful as no minor complications (nausea or vomiting) or major complications like accidental intravascular injection, nerve injury or pneumothorax, occurred.

**DISCUSSION**

With the introduction of newer techniques of surgery and pain management, gynecomastia surgery is now done as an office procedure under local anaesthesia with sedation, and results in satisfactory outcome.\(^\text{[2-3]}\)
At our hospital, we prefer general anaesthesia (GA) even for minor breast surgery done on a day care basis as our surgeons are not conversant and comfortable with the regional technique for breast surgery. However, at times, residual sedation, pain, nausea and vomiting preclude early mobilization and discharge of patients after such surgery.\(^4,5\) We used TPVB in two of our cases of gynecomastia surgery as GA was refused by the first patient and we thought that the regional technique (TPVB) may be an alternative in the second case. TPVB, which is age old technique, is now revisited for its clinical efficacy in various surgeries including breast surgery,\(^6,7\) and we are also using this technique successfully for female breast surgery for the last few months at our hospital. In female mastectomy surgery, it provides better haemodynamic stability, reduces blood loss and provides superior post-operative pain control than other pain management techniques.\(^8,9\)

Although it is an invasive technique and its role is debatable for minor breast surgery, recent reviews have shown that it is a safe technique.\(^8,9\)

We used nerve stimulator to locate the target point instead of other conventional methods, e.g. loss of resistance because it is easy, functionally more accurate and safer than loss of resistance.\(^10\)

Moreover, with the help of a nerve stimulator, the specific area of the breast can be blocked if excision biopsy is the objective of surgery.\(^11\) Both our cases showed satisfactory intra-operative anaesthesia and post-operative recovery as there was no pain, nausea and vomiting after surgery. TPVB also provided long post-operative pain relief for >12 h.

We report two successful gynecomastia surgeries under TPVB as it is interesting to note that there is enough literature to support the use of TPVB for female breast surgery.\(^6-8\) However, to our knowledge, there is no reported literature for its exclusive use in male breast surgery.

**CONCLUSION**

With the results of two successful cases of male breast surgery under TPVB, we conclude that this technique can safely be used for breast surgery in males. However, to justify its routine use, more numbers of studies are required.

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