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# Quality of recovery-comparing segmental thoracic spinal anesthesia and general anesthesia in breast surgeries

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## Abstract:

*Breast surgeries are commonly performed procedures worldwide, and ensuring optimal postoperative recovery remains a crucial clinical priority. Traditionally, general anesthesia (GA) has been widely used for these surgeries; however, regional anesthesia techniques, particularly segmental thoracic spinal anesthesia (STSA), have gained increasing attention due to their beneficial physiological effects, reduced opioid consumption, and superior postoperative recovery. This prospective comparative study aimed to evaluate the quality of postoperative recovery among patients undergoing breast surgeries under STSA versus GA. One hundred female patients, aged 18–65 years, scheduled for elective breast surgery were enrolled and divided into two groups: Group A receiving STSA and Group B receiving GA. Quality of recovery was assessed using the validated Quality of Recovery-40 (QoR-40) questionnaire at 6, 24, and 48 hours postoperatively. Secondary outcomes included intraoperative hemodynamic stability, postoperative nausea and vomiting (PONV), analgesic requirement, time to ambulation, patient satisfaction, and anesthesia-related complications. Results showed that the STSA group had significantly higher QoR-40 scores at all postoperative intervals compared with the GA group, indicating better overall recovery. Patients receiving STSA experienced fewer episodes of PONV, lower pain scores, reduced opioid consumption, shorter time to ambulation, and higher satisfaction levels. Hemodynamic stability was superior in the STSA group, with fewer fluctuations in blood pressure and heart rate. No major complications were reported in either group. The use of STSA also contributed to early discharge criteria fulfillment. These findings suggest that STSA offers a safer and more effective alternative to GA for breast surgery, promoting enhanced recovery and reduced postoperative morbidity. This study highlights the importance of*

*incorporating regional anesthesia techniques into breast surgery protocols to improve patient-centered outcomes and overall healthcare efficiency.*

## *Keywords:*

***Segmental Thoracic Spinal Anesthesia, General Anesthesia, Breast Surgery, Quality of Recovery, QoR-40, Postoperative Pain, PONV, Enhanced Recovery***

## Introduction:

Breast surgeries, including lumpectomy, mastectomy, and reconstructive procedures, are among the most frequently performed surgeries worldwide, affecting millions of women each year. The choice of anesthetic technique plays a significant role not only in the safety and success of the surgical procedure but also in determining the patient's postoperative recovery and long-term outcomes. General anesthesia (GA) remains the most commonly employed technique due to its practicality and widespread acceptance. However, it is associated with postoperative nausea and vomiting (PONV), prolonged recovery room stay, hemodynamic fluctuations, opioid requirement, and delayed ambulation, all of which may adversely affect patient satisfaction and postoperative quality of life. As healthcare increasingly adopts enhanced recovery after surgery (ERAS) protocols, alternative anesthetic modalities such as regional anesthesia have come into focus. Segmental thoracic spinal anesthesia (STSA) is a safe and effective regional technique that involves administering a low dose of local anesthetic at the thoracic level to provide targeted anesthesia for breast surgeries. STSA avoids airway manipulation, reduces systemic anesthetic exposure, and provides superior analgesia, thus aligning with the principles of ERAS. Several studies have reported improved postoperative outcomes with regional anesthesia, including reduced PONV, early mobilization, decreased hospital stay, and overall better quality of recovery. Despite these advantages, STSA is underutilized, primarily due to concerns regarding potential complications such as high spinal block. However, recent evidence suggests that with proper technique, STSA is safe and well tolerated. The Quality of Recovery-40 (QoR-40) questionnaire is a validated patient-centered tool that measures recovery across five dimensions: physical comfort, emotional state, psychological support, physical independence, and pain. Using QoR-40 allows comprehensive evaluation of postoperative recovery beyond traditional clinical parameters. This study aims to compare the quality of recovery in patients undergoing breast surgeries under STSA versus those receiving GA, focusing on patient-centered outcomes and aligning with modern surgical care standards. Understanding how these techniques influence recovery will support clinicians in choosing the most suitable anesthetic approach for optimizing perioperative outcomes and enhancing patient satisfaction.

## Materials and Methods:

This prospective comparative study was conducted in the Department of Anesthesiology at a tertiary care teaching hospital from 20 November 2023 to June 2024. After Institutional Ethics Committee approval and informed consent, 100 adult female patients aged 18–65 years scheduled for elective breast surgeries such as lumpectomy or modified radical mastectomy were enrolled. Patients were allocated into two groups of 50 each: Group A received segmental thoracic spinal anesthesia (STSA), while Group B received general anesthesia (GA). Inclusion criteria included ASA physical status I–III, BMI 18–30 kg/m², and willingness to participate. Exclusion criteria were coagulopathy, infection at puncture site, severe spinal deformities, known allergy to study drugs, anticipated difficult airway (for safety comparison), and refusal of regional anesthesia. Preoperative evaluation included detailed history, physical examination, laboratory investigations, and anesthetic fitness assessment. Patients were instructed on the QoR-40 scoring system preoperatively. In Group A, STSA was performed in the sitting position under aseptic precautions at T4–T5 or T5–T6 interspace using a 25G pencil-point spinal needle. Low-dose hyperbaric bupivacaine (5 -- 7.5 mg) combined with fentanyl (10–15 μg) was administered to achieve segmental block. Sensory block to T2–T8 dermatomes was confirmed before surgery. Sedation, if required, was provided with low-dose midazolam. Hemodynamic parameters including HR, BP, $SpO_2$, and ECG were continuously monitored. In Group B, patients received standard GA with induction using propofol and fentanyl, airway secured via endotracheal intubation, and maintenance with inhalational agents and muscle relaxants as per institutional protocol. Intraoperative analgesia was standardized in both groups. Pain scores were recorded using VAS at 2, 6, 12, 24, and 48 hours. Primary outcome was QoR-40 score at 6, 24, and 48 hours postoperatively. Secondary outcomes included PONV incidence, opioid requirement, hemodynamic stability, time to ambulation, patient satisfaction (5-point Likert scale), and complications. Statistical analysis was performed using SPSS v26, with p-value $<0.05$ considered significant.

## Results:

The demographic characteristics of both groups were comparable with no significant differences in age, BMI, ASA status, or duration of surgery. The mean QoR-40 scores were significantly higher in the STSA group at 6 hours (162 ± 8 vs 146 ± 10), 24 hours (178 ± 6 vs 160 ± 7), and 48 hours (188 ± 4 vs 170 ± 6) compared to the GA group. Pain scores were significantly lower in the STSA group at all intervals, with reduced postoperative opioid consumption. PONV incidence was markedly lower in Group A (10%) compared to Group B (42%). Patients receiving STSA demonstrated faster ambulation times (3.2 ± 1.1 hours vs 6.8 ± 2.3 hours) and earlier fulfillment of discharge criteria. Hemodynamic parameters remained stable in both groups, but fluctuations were notably less in the STSA group. Patient satisfaction scores were significantly higher in Group A. No serious complications such as high spinal block, respiratory depression, or cardiac instability were reported.

# Discussion:

This study demonstrates that segmental thoracic spinal anesthesia provides significantly better quality of postoperative recovery compared with general anesthesia in breast surgeries. STSA improved patient comfort, reduced pain, minimized PONV, stabilized hemodynamics, and facilitated early ambulation. These findings align with enhanced recovery principles and support expanding the use of regional anesthesia in breast surgery. Improved QoR-40 scores confirm superior patient-centered outcomes with STSA. With increasing emphasis on safer and faster recovery, STSA emerges as an effective alternative to GA.

## Summary:

This comparative study evaluated recovery quality in breast surgery patients receiving segmental thoracic spinal anesthesia versus general anesthesia. STSA resulted in significantly higher QoR-40 scores, lower postoperative pain and opioid requirements, reduced PONV, improved hemodynamic stability, and faster ambulation. No major complications occurred, and overall patient satisfaction was higher in the STSA group. These results indicate that STSA is a superior anesthetic technique for breast surgeries and supports its inclusion in enhanced recovery protocols to optimize perioperative outcomes.

# References:

1. *Bromage PR. Epidural Analgesia. Saunders; 1978.*
2. *Liu SS, McDonald SB. Regional anesthesia and postoperative outcome. Anesthesiology. 2001;95:823–38.*
3. *Neal JM et al. Regional anesthesia: safety update. Reg Anesth Pain Med. 2018;43:1–11.*
4. *Faccenda KA, Finucane BT. Complications of regional anesthesia. Can J Anaesth. 2001;48:91–98.*
5. *Ruppen W et al. Complications of spinal anesthesia. Acta Anaesthesiol Scand. 2006;50:888–9.*
6. *El-Boghdadly K et al. Regional anesthesia in breast surgery: review. Anaesthesia. 2019;74:672–83.*
7. *Hocking G, Wildsmith JA. Intrathecal drug spread. Br J Anaesth. 2004;93:568–78.*
8. *Kulkarni B et al. Thoracic spinal anesthesia in breast surgery. Indian J Anaesth. 2019;63:881–7.*

9. *Apfel CC. PONV mechanisms and prevention. Lancet. 2012;379:2253–64.*
10. *Myles PS et al. QoR-40 scale validation. Br J Anaesth. 2000;84:11–15.*
11. *Dahl JB, Kehlet H. Pain control and recovery. Br J Anaesth. 2011;107:30–9.*
12. *Imbelloni LE et al. Thoracic spinal anesthesia safety. J Anesth. 2010;24:281–6.*
13. *Pardal N et al. Spinal anesthesia advantages. Rev Bras Anestesiol. 2013;63:12–21.*
14. *Kehlet H. ERAS principles. Anesthesiology. 2005;102:371–87.*
15. *Gupta K et al. Comparison of GA and regional anesthesia outcomes. Indian J Anaesth. 2017;61:309–15.*