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## Study Of Comparison Between General Anesthesia Vs Superficial Cervical Plexus Block For Thyroid Nodule Excision.

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### ABSTRACT

Thyroid nodule excision surgery commonly employs general anesthesia, but alternatives like superficial cervical plexus block (SCPB) offer potential advantages. Our study aimed to compare outcomes between the two approaches. A prospective, randomized controlled trial over one year included 60 participants (divided into 2 groups each 30 patients) undergoing thyroid nodule excision. Intraoperative variables (surgical time, complications) and postoperative outcomes (pain, analgesic use, oral intake, hospital stay) were assessed. SCPB showed shorter surgical times ( $72.6 \pm 10.8$  vs.  $78.4 \pm 12.1$  minutes) and fewer intraoperative complications (3.3% vs. 6.7%). Postoperatively, SCPB led to lower pain scores, reduced analgesic requirements (46.7% vs. 66.7%), shorter time to oral intake ( $5.3 \pm 1.2$  vs.  $6.8 \pm 1.5$  hours), and shorter hospital stay ( $1.6 \pm 0.5$  vs.  $1.9 \pm 0.6$  days) compared to general anesthesia. SCPB demonstrates favorable intraoperative and postoperative outcomes compared to general anesthesia for thyroid nodule excision surgery, including shorter surgical times, reduced postoperative pain, and faster recovery. These findings highlight SCPB as a promising alternative anesthesia technique for optimizing patient outcomes in thyroid surgery.

**Keywords:** Thyroid surgery, superficial cervical plexus block, general anesthesia, postoperative outcomes.

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## INTRODUCTION

Thyroid nodule excision surgery is a common procedure, often performed under general anesthesia [1]. However, concerns regarding the associated risks and complications have led to exploration of alternative anesthetic techniques, such as superficial cervical plexus block (SCPB). SCPB offers potential advantages including reduced intraoperative and postoperative complications, shorter recovery times, and improved patient satisfaction [2, 3]. Despite these potential benefits, the comparative effectiveness of SCPB versus general anesthesia for thyroid nodule excision remains understudied. Our study aims to address this gap by systematically evaluating the outcomes, including surgical efficacy, safety, patient comfort, and recovery, associated with both anesthetic approaches [4]. Such insights hold significant implications for clinical practice, potentially guiding anesthetic selection to optimize patient outcomes and healthcare resource utilization in thyroid surgery.

## METHODOLOGY

Our study methodology comprised a prospective, randomized controlled trial conducted over the course of one year, with a sample size of 60 participants (divided into 2 groups, each 30 patients). Patients scheduled for thyroid nodule excision surgery were randomly assigned to either the general anesthesia group or the superficial cervical plexus block (SCPB) group using computer-generated randomization.

Participants in the general anesthesia group received standard anesthesia induction with intravenous agents followed by endotracheal intubation. Anesthesia was maintained using volatile agents and muscle relaxants as per institutional protocols. In contrast, participants in the SCPB group underwent ultrasound-guided administration of local anesthetic agents to the superficial cervical plexus region. The efficacy of the block was confirmed by sensory testing in the distribution area of the cervical plexus.

Intraoperative variables, including surgical time, intraoperative complications, and hemodynamic stability, were recorded for both groups. Postoperative outcomes such as pain scores, analgesic requirements, time to first oral intake, and length of hospital stay were also assessed.

Data analysis was conducted using appropriate statistical methods, including chi-square tests for categorical variables and independent t-tests or Mann-Whitney U tests for continuous variables as per their distribution. Results were considered statistically significant at a p-value less than 0.05. Additionally, subgroup analyses were performed to explore potential differences in outcomes based on factors such as age, gender, and comorbidities.

## RESULTS

**Table 1: Demographic Characteristics of Study Participants**

Variable	General Anesthesia Group	Superficial Cervical Plexus Block Group	Test of significance (P - value)
Age (years)	46.5 ± 8.2	45.8 ± 7.6	0.74
Gender (n, %)	15 (50%) Male, 15 (50%) Female	18 (60%) Male, 12 (40%) Female	----
BMI (kg/m <sup>2</sup> )	27.3 ± 3.5	26.9 ± 2.9	0.62
Comorbidities	10 (33.3%)	8 (26.7%)	0.52

The demographic characteristics of the study participants showed comparable age distributions between the general anesthesia and superficial cervical plexus block (SCPB) groups, with mean ages of 46.5 years (±8.2) and 45.8 years (±7.6), respectively.

Gender distribution also showed similarity, albeit with a slightly higher proportion of males in the SCPB group (60% male, 40% female) compared to an even split in the general anesthesia group.

Both groups exhibited similar body mass index (BMI) values, with means of 27.3 kg/m<sup>2</sup> (±3.5) and 26.9 kg/m<sup>2</sup> (±2.9) in the general anesthesia and SCPB groups, respectively.

Comorbidities were present in 33.3% and 26.7% of participants in the general anesthesia and SCPB groups, respectively, indicating a relatively balanced distribution of underlying health conditions between the two cohorts.

**Table 2: Intraoperative Variables**

Variable	General Anesthesia Group	Superficial Cervical Plexus Block Group	Test of significance (P - value)
Surgical Time (minutes)	78.4 ± 12.1	72.6 ± 10.8	0.0031
Intraoperative Complications (n, %)	2 (6.7%)	1 (3.3%)	0.049
Hemodynamic Stability	Stable throughout	Stable throughout	----

Intraoperative variables showed a shorter mean surgical time in the superficial cervical plexus block (SCPB) group compared to the general anesthesia group, with durations of 72.6 minutes (±10.8) and 78.4 minutes (±12.1), respectively. The incidence of intraoperative complications was low in both groups, with 6.7% in the general anesthesia group and a slightly lower rate of 3.3% in the SCPB group. Hemodynamic stability was maintained consistently throughout the surgeries in both groups.

**Table 3: Postoperative Outcomes**

Variable	General Anesthesia Group	Superficial Cervical Plexus Block Group	Test of significance (P - value)
Analgesic Requirements (n, %)	20 (66.7%)	14 (46.7%)	0.0032
Time to First Oral Intake (hours)	6.8 ± 1.5	5.3 ± 1.2	0.048
Length of Hospital Stay (days)	1.9 ± 0.6	1.6 ± 0.5	0.0333
Visual analogue scale [0-10]	7.50	3.25	0.0012

SCPB group demonstrated a shorter time to first oral intake (5.3 ± 1.2 hours) and a slightly shorter length of hospital stay (1.6 ± 0.5 days) compared to the general anesthesia group.

**DISCUSSION**

The findings of our study contribute valuable insights into the comparative effectiveness of general anesthesia versus superficial cervical plexus block (SCPB) for thyroid nodule excision surgery. Our results suggest several notable differences in intraoperative and postoperative outcomes between the two anesthesia techniques, which warrant careful consideration in clinical practice [5-7].

In terms of surgical duration, we observed a shorter mean surgical time in the SCPB group compared to the general anesthesia group. This finding aligns with previous studies that have reported reduced operative times with regional anesthesia techniques, attributed to improved surgical conditions and reduced intraoperative hemodynamic fluctuations compared to general anesthesia. The shorter surgical time associated with SCPB may have implications for operating room efficiency and resource utilization, potentially contributing to cost savings and increased surgical throughput [8, 9].

Regarding intraoperative complications, our results indicate a low incidence in both groups, with slightly fewer complications observed in the SCPB group. While the difference was not statistically significant, it suggests that SCPB may offer comparable safety profiles to general anesthesia in the context of thyroid surgery. This finding corroborates existing literature demonstrating the safety and feasibility of SCPB for various head and neck procedures, including thyroid surgery [10, 11].

Postoperatively, patients in the SCPB group exhibited lower pain scores and reduced analgesic requirements compared to those in the general anesthesia group. The superior analgesic efficacy of SCPB

aligns with previous studies reporting decreased postoperative pain and opioid consumption following regional anesthesia techniques for thyroid surgery [12]. The reduced pain burden associated with SCPB may enhance patient comfort, facilitate early mobilization, and expedite recovery, ultimately contributing to improved patient satisfaction and healthcare resource utilization.

Furthermore, patients in the SCPB group experienced a shorter time to first oral intake and a slightly shorter length of hospital stay compared to those in the general anesthesia group. These findings suggest that SCPB may promote early postoperative recovery and facilitate a faster return to normal oral intake, potentially reducing the length of hospitalization and associated costs. The shorter hospital stay observed in the SCPB group is consistent with previous studies demonstrating the benefits of regional anesthesia techniques in facilitating enhanced recovery after surgery [13, 14].

Despite the promising results observed in this study, several limitations warrant consideration. First, the single-center nature of the study may limit the generalizability of the findings to other healthcare settings with different patient populations and surgical practices. Future multicentred studies involving larger and more diverse cohorts are needed to validate our findings and ensure their applicability across various clinical settings. Second, the study's relatively short follow-up period precluded the assessment of long-term outcomes, such as recurrence rates and long-term patient satisfaction. Longitudinal studies with extended follow-up durations are warranted to evaluate the durability of the observed benefits associated with SCPB and its impact on long-term surgical outcomes. While efforts were made to standardize surgical techniques and perioperative care protocols, variations in individual surgeon preferences and practices may have influenced the study outcomes. Future studies incorporating standardized surgical protocols and blinding of surgical teams to the anesthesia technique may help minimize potential biases and enhance the validity of the results.

## CONCLUSION

In conclusion, our study provides evidence supporting the use of superficial cervical plexus block as a safe and effective alternative to general anesthesia for thyroid nodule excision surgery. SCPB offers several potential advantages, including shorter surgical times, reduced postoperative pain, faster recovery, and shorter hospital stays, compared to general anesthesia. These findings have significant implications for clinical practice, highlighting the importance of individualized anesthetic management strategies tailored to optimize patient outcomes and enhance the quality and efficiency of thyroid surgery. SCPB has an additional advantage of confirming any laryngeal nerve injury intra operatively as patient speech is preserved

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