

The Analgesic Efficacy of Bilateral Superficial Cervical Plexus Block (Ultrasound Guided) versus Local Infiltration after Thyroid Surgeries under General Anaesthesia

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Abstract:

Background: Thyroid operation has long been associated with postoperative pain, particularly during the initial recovery period. Optimal analgesia is thus crucial to enhance case comfort, reduce the use of opioid analgesics, and facilitate early discharge. Among regional techniques employed, bilateral superficial cervical plexus block (BSCPb) has gained popularity owing to its capability to provide selective and prolonged analgesia. With ultrasound guidance, the safety and efficacy of BSCPb may be further optimized. Alternatively, local wound infiltration with local anaesthetics is a simpler method but may offer limited duration of pain relief. **Aim:** to compare the analgesic impact between BSCPb and local infiltration (LI) for thyroid surgeries under general anesthesia (GA). **Subjects and Methods:** This prospective intervention investigation was designed to assess and compare the pain relief effectiveness of ultrasound-guided BSCPb versus local bupivacaine infiltration in patients undergoing thyroid surgeries with GA. **Results:** Both groups showed no significant differences in baseline characteristics, diagnosis, thyroid mass size, procedure duration, intraoperative heart rate, or mean arterial pressure. Group 1 had significantly diminished postoperative pain scores, delayed need for rescue analgesia, and reduced morphine use within 24 h contrary to Group 2. Group 1 also experienced less postoperative nausea and vomiting and elevated case satisfaction, with similar respiratory complications. **Conclusion:** Ultrasound-guided BSCPb provides superior postoperative analgesia contrary to LI in cases undergoing thyroid surgeries.

Key words: Analgesia, Bupivacaine, Cervical plexus block, Thyroid surgeries, Ultrasound-guided anesthesia

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Introduction

Thyroid disorders represent a significant and widespread global health issue, with an alarming 15.8% of the global population affected by goiter, a condition most prevalent in Africa, where the incidence reaches an estimated 28.3% ⁽¹⁾.

The cervical plexus, composed of spinal nerves C1, C2, C3, and C4, plays a crucial role in innervating the neck region, supplying both motor and sensory branches to the vertebral and strap muscles of the neck. Additionally, it contributes to the phrenic nerve, which is essential for diaphragmatic movement. When this plexus is blocked, the resulting anesthesia typically targets only the cutaneous branches, leaving the deeper muscle innervation largely unaffected ⁽²⁾.

However, despite the critical role of these interventions in thyroid surgery, post-surgical discomfort is an unavoidable challenge, with cases often experiencing a wide spectrum of pain, ranging from mild to severe at the incision site. ⁽³⁾ Common postoperative complaints also include difficulty swallowing, throat irritation, nausea, and vomiting. These symptoms can arise due to the surgical procedure itself or as a consequence of the general anesthesia (GA) used during the operation. Interestingly, the majority of cases report these symptoms on the first day following surgery ⁽⁴⁾.

To mitigate these postoperative effects, both anesthesiologists and surgeons have explored various pharmacological and procedural strategies. These include the use of opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), and additional loco-regional anesthesia techniques, all of which aim to minimize discomfort during and after the procedure. Among these methods, bilateral superficial cervical plexus blocks (BSCPb) and local wound infiltration (LWI) have emerged as particularly promising, showing significant efficacy in reducing both intraoperative and postoperative pain ⁽⁵⁾.

The BSCPb is a targeted anesthesia technique designed specifically to manage post-surgical pain and reduce the patient's reliance on systemic analgesics ⁽⁶⁾.

This approach, which is frequently performed under ultrasound guidance, targets several key nerves, including the transverse cervical, larger auricular, lesser occipital, and supraclavicular nerves. By injecting a local anesthetic near the lateral border of the sternomastoid muscle, BSCPb provides comprehensive pain relief, offering substantial benefits in terms of both immediate and long-term comfort ⁽⁷⁾.

This investigation aimed to evaluate and compare the analgesic effects of ultrasound (US)-guided BSCPb and local anesthetic infiltration (LAI) in cases undergoing thyroid surgeries under GA, seeking to refine methods for enhanced postoperative pain control.

Patients and Methods

This prospective intervention investigation was designed to assess and compare the pain relief effectiveness of ultrasound-guided BSCPb versus local bupivacaine infiltration in cases undergoing thyroid surgeries with GA. Conducted at the General Surgeries Department of Benha University Hospitals from August 2023 to July 2024, the investigation received ethical approval (MS 18-10-2023) and followed the Declaration of Helsinki guidelines.

Despite the common use of both methods, the relative effectiveness of BSCPb versus local infiltration for managing postoperative pain in thyroid surgeries is still uncertain. The lack of conclusive evidence and clinical uncertainty led the researchers to investigate the analgesic benefits of each method in order to provide clearer insights.

A total of 80 cases scheduled for thyroid surgeries were recruited and randomly assigned into two equal groups (n=40 each):

- **Group 1 (Block Group):** Cases in this group underwent BSCPb, which involved the administration of 10 ml of 0.25% bupivacaine on each side under ultrasound guidance, after anesthesia induction. The cases were positioned supine with slight neck extension. A high-frequency linear ultrasound probe was used to locate the cervical plexus behind the sternocleidomastoid muscle. A 22-gauge needle was inserted in-plane, targeting the area between the prevertebral fascia and deep cervical fascia's investing layer. Bupivacaine was distributed as follows: 2 ml at the midpoint, 4 ml upward, and 4 ml downward. Immediate complications such as hematoma, local anesthetic toxicity, or nerve injury were carefully monitored.
- **Group 2 (Infiltration Group):** In this group, cases received a local infiltration (LI) of 20 ml of 0.25% bupivacaine after surgeries. Following anesthesia induction and surgical site preparation, the anesthetic was injected along the incision line and surrounding tissues using a 22-gauge needle. Immediate adverse effects, including bleeding or allergic reactions, were observed.

All cases underwent comprehensive evaluations, including demographic data collection (age, sex, BMI, ASA physical status classification), as well as intraoperative monitoring of heart rate and blood pressure. Postoperative pain was evaluated using the Numerical Rating Scale (NRS), a 10-point scale with 0 indicating no pain and 10 the worst pain. Pain levels were recorded in the post-anesthesia care unit (PACU) and at 3, 6, 12, and 24 h post-surgeries. The time until the first analgesic request and total morphine consumption during the first 24 h were also recorded.

Anesthesia was induced with 2 mg midazolam, 1 µg/kg fentanyl, 2 mg/kg propofol, and 0.5 mg/kg atracurium as a loading dose. Anesthesia maintenance used 1 MAC of isoflurane and 0.25 mg/kg

atracurium every 25 min . To reduce the risk of postoperative nausea and vomiting (PONV), 10 mg of dexamethasone was given during induction. Standard endotracheal intubation and continuous intraoperative monitoring were carried out. The investigation's outcome measures were divided into primary and secondary categories. Primary outcomes included intraoperative heart rate, mean arterial pressure, and postoperative pain intensity, measured using the NRS at 3, 6, 12, and 24 h. Secondary outcomes included total morphine consumption within 24 h post-surgeries, incidence of PONV, occurrences of over-sedation, and respiratory complications detected in the postoperative period.

Statistical Analysis

Statistical analysis was conducted using SPSS v28 (IBM©, Armonk, NY, USA). The Shapiro-Wilks test and histograms were applied to evaluate the normality of the data distribution. For parametric data, results were exhibited as means with standard deviations (SD) and analyzed with the unpaired Student's t-test. Non-parametric data were presented as medians with interquartile ranges (IQR) and analyzed using the Mann-Whitney test. Qualitative variables were expressed as frequencies and percentages (%) and assessed using the Chi-square test or Fisher's exact test, depending on the context. A P value of less than 0.05 (two-tailed) was considered statistically significant.

Results

Both groups had comparable baseline characteristics. **Table 1**

The intraoperative HR at 20, 30, 40, 50, 60, 70 min and at the end of surgeries) were significantly elevated in group 2 contrary to group 1 at all measurement times except at baseline and at 10 min.

Table 2

The intraoperative MAP at 20, 30, 40, 50, 60, 70 min and at the end of surgeries) were significantly elevated in group 2

contrary to group 1 at all measurement times except at baseline and at 10 min

Table 3

The postoperative NRS at PACU, 3, 6, 12 and 24 h was significantly diminished in group 1 contrary to group 2 ($P<0.05$), with comparable values at PACU. **Table 4**

Regarding the postoperative analgesic requirement, time of first rescue analgesic request was significantly delayed in group 1 contrary to group 2 ($P<0.001$). The Total

morphine consumption at first 24hrs was significantly diminished in group 1 contrary to group 2 ($P<0.001$). **Table 5**

Table shows that there was a significant difference between both groups regarding satisfaction that was elevated in group 1 contrary to group 2 ($P<0.001$).

Table 1: Baseline characteristics of the studied groups

		Group 1 (n=40)	Group 2 (n=40)	P value
Age (years)	Mean± SD	29.8 ± 8.61	31.2 ± 8.62	0.469
	Range	18 - 45	18 - 45	
Sex	Male	31 (77.5%)	33 (82.5%)	0.576
	Female	9 (22.5%)	7 (17.5%)	
Weight (Kg)	Mean± SD	74.12 ± 8.79	74.97 ± 9.46	0.678
	Range	60 - 90	60 - 90	
Height (m)	Mean± SD	1.68 ± 0.05	1.67 ± 0.05	0.379
	Range	1.6 - 1.76	1.6 - 1.76	
BMI (Kg/m ²)	Mean± SD	26.40 ± 3.53	26.98 ± 3.5	0.464
	Range	20.24 - 32.02	21.01 - 33.98	
ASA	ASA I	20 (50%)	23 (57.5%)	0.501
	ASA II	20 (50%)	17 (42.5%)	

BMI: body mass index, ASA: American society of anaesthesiologists.

Table 2: Intraoperative heart rate (beats/min) of the studied groups

		Group 1 (n=40)	Group 2 (n=40)	P value
Baseline	Mean± SD	82.9 ± 7.21	82.4 ± 7.48	0.739
	Range	70 - 95	69 - 95	
10 min	Mean± SD	82.7 ± 7.51	82.3 ± 7.76	0.782
	Range	69 - 95	70 - 95	
20 min	Mean± SD	79.9 ± 7.6	88± 8.16	<0.001*
	Range	69 - 95	72-100	
30 min	Mean± SD	81.1 ± 7.68	87.9± 8	<0.001*
	Range	69 - 95	73-100	
40 min	Mean± SD	81.4 ± 7.82	88.1± 7.85	<0.001*
	Range	69 - 95	71-100	
50 min	Mean± SD	81.8 ± 8.41	88.08± 7.31	<0.001*
	Range	69 - 95	74-100	
60 min	Mean± SD	81.1 ± 7.25	87.88± 7.6	<0.001*
	Range	69 - 95	73-99	
70 min	Mean± SD	83.2 ± 8.05	87.55± 7.86	0.016*
	Range	70 - 95	70-100	
End of surgeries	Mean± SD	84.6 ± 6.63	87.45± 7.61	0.030*
	Range	69 - 95	71-100	

Table 3: Intraoperative mean arterial pressure (mmHg) of the studied groups

		Group 1 (n=40)	Group 2 (n=40)	P value
Baseline	Mean± SD	84.73± 9.15	84.38± 8.94	0.863
	Range	70-98	70-100	
10 min	Mean± SD	84.2± 9.13	86.45± 9.36	0.279
	Range	70-100	70-100	
20 min	Mean± SD	81.18± 7.23	89.08± 8.84	<0.001*
	Range	70-96	72-103	
30 min	Mean± SD	85.15± 8.58	89.28± 9.01	0.039*
	Range	70-100	75-103	
40 min	Mean± SD	84.78± 9.61	88.2± 9.09	0.042*
	Range	70-100	74-103	
50 min	Mean± SD	84.88± 8.54	88.78± 8.95	0.015*
	Range	70-99	76-102	
60 min	Mean± SD	85.03± 8.97	88.85± 9.19	0.033*
	Range	71-100	72-102	
70 min	Mean± SD	85.63± 9.07	89.08± 9.11	0.035*
	Range	71-100	71-102	
End of surgeries	Mean± SD	84.18± 9.03	88.8± 9.21	0.026*
	Range	72-100	73-102	

Table 4: Assessment of postoperative pain severity using numerical rating scale (NRS) of the studied groups

		Group 1 (n=40)	Group 2 (n=40)	P value
At PACU	Median (IQR)	1 (0 - 1)	1 (1 - 2)	0.017*
3 h	Median (IQR)	2 (1 - 3)	3 (3 - 4)	<0.001*
6 h	Median (IQR)	3 (2 - 3.25)	4 (2 - 5)	0.010*
12 h	Median (IQR)	1 (1 - 3)	3 (3 - 5)	<0.001*
24 h	Median (IQR)	1 (1 - 2)	3 (2 - 4)	<0.001*

NRS: numerical rating scale, IQR: interquartile range, PACU: post anaesthetic care unit, *: statistically significant as p value <0.05.

Table 5: Postoperative analgesic requirement of the studied groups

		Group 1 (n=40)	Group 2 (n=40)	P value
Time of first rescue analgesic request (hr)	Mean± SD	11.3 ± 4.78	4.7 ± 1.51	<0.001*
	Range	6 - 24	3 - 6	
Total morphine consumption at 24hrs (mg)	Mean± SD	3.7 ± 1.67	8.2 ± 1.62	<0.001*
	Range	0 - 8	5 - 9	

*: statistically significant as p value <0.05.

Table 6: Cases' satisfaction of the studied groups

	Group 1 (n=40)	Group 2 (n=40)	P value
Very dissatisfied	1 (2.5%)	6 (15%)	<0.001*
Dissatisfied	3 (7.5%)	16 (40%)	
Neutral	9 (22.5%)	8 (20%)	
Satisfied	11 (27.5%)	7 (17.5%)	
Very satisfied	16 (40%)	3 (7.5%)	

*: statistically significant as p value <0.05.

Discussion

Effective management of postoperative pain is critical in thyroid surgeries, particularly given the sensitivity of the cervical area. While traditional local infiltration techniques offer only short-term relief, newer approaches aim to provide longer-lasting pain management. This investigation compares LI with US-guided BSCPB, a targeted technique designed to offer extended pain relief by focusing on specific neck nerves. The trial, which included 80 cases, assessed pain scores, morphine consumption, nausea, and overall patient satisfaction to determine which technique resulted in better postoperative outcomes.

The baseline characteristics of the two groups were similar, with no significant differences detected in factors such as age, sex, weight, height, BMI, and ASA classification. Additionally, the diagnosis, thyroid mass size, and surgery duration were comparable between the groups. These findings align with the research conducted by Woldegerima, 2020⁽³⁾, who examined the effectiveness of BSCPB in thyroid surgeries under GA. Their investigation, involving 74 cases, had half of the participants receiving BSCPB with 10 ml of 0.25% bupivacaine prior to induction, while the other half did not. Similar to our results, they exhibited no significant differences between the block and no-block groups concerning baseline characteristics, diagnosis, thyroid mass size, or surgery duration⁽³⁾.

Regarding hemodynamics, our research exhibited no significant differences in

intraoperative HR at any time point (baseline, 10, 20, 30, 40, 50, 60, 70 min, and at the end of surgery) between the two groups. Likewise, MAP remained comparable across all time points, showing no significant variation between the groups. However, in terms of postoperative pain management, our research demonstrated that the NRS scores at 3, 6, 12, and 24 h were significantly diminished in the BSCPB group (group 1) contrary to the LI group (group 2) ($P < 0.05$). Interestingly, no significant difference was exhibited between the groups at the PACU, indicating that the immediate postoperative phase did not show a notable contrast in pain relief between the two methods.

Similarly, Woldegerima, 2020⁽³⁾ conducted a research that demonstrated significant reductions in pain scores within the Block group at all assessed postoperative time points, including immediate, 2nd, 6th, 12th, and 24th h. The p-values detected ranged from <0.001 to 0.001, indicating a statistically significant improvement in pain control when comparing the two groups, with the Block group showing more effective pain management across all time intervals⁽³⁾.

This finding is consistent with numerous other investigations that have explored the efficacy of BSCPB in thyroid surgeries. These studies have consistently shown that

BSCPb is an effective method for reducing postoperative pain, decreasing opioid and overall analgesic consumption, and extending the duration of pain relief when contrary to other techniques^(9,10)

A meta-analysis encompassing 14 individual studies with a total of 1154 cases further supports the positive outcomes of BSCPb, demonstrating that this technique significantly reduces the need for additional analgesics, leads to a decrease in Visual Analog Scale (VAS) scores, and extends the time until cases request pain relief for the first time⁽⁹⁾. Moreover, in the research by Çanakçı.,2015⁽⁹⁾, BSCPb was significantly associated with a reduced length of postoperative hospital stay, with those receiving the block having an average stay of 2.4 ± 0.6 days, contrary to 4.7 ± 1.6 days for the non-block group ($p < 0.05$) (2.4 ± 0.6 vs 4.7 ± 1.6 ; $p < 0.05$)⁽⁹⁾.

In contrast, there are some studies that have raised questions regarding the overall effectiveness of BSCPb in thyroid surgeries. These investigations exhibited no significant reduction in pain scores or opioid consumption, although they did observe a longer time to the first request for analgesia. The lack of significant improvement was attributed to factors such as pain originating from deeper muscle structures, discomfort related to patient positioning during surgery, and the presence of wound drainage. These factors may have overshadowed the superficial pain that BSCPb is primarily designed to address⁽¹¹⁾. However, it is well-established in the literature that pain following thyroidectomy has a significant superficial component, which is where BSCPb is most effective⁽¹²⁾. The divergent results detected in some studies could be attributed to a variety of factors, including differences in drug regimens, variations in injection volumes, differences in technique, and the length of postoperative follow-up. Some studies followed cases for as little as 36 h, which may not have been sufficient to capture the

full range of postoperative pain relief, potentially contributing to the conflicting findings regarding the long-term effectiveness of BSCPb⁽¹³⁾.

Another investigation reached an equivocal conclusion, stating that while BSCPb effectively reduced pain intensity and analgesic requirements, it was not sufficient to provide optimal pain relief on its own. In fact, 65% of the cases still required additional analgesia⁽¹⁴⁾. One potential reason for this inconclusive outcome could be the timing of the block, which was administered after the surgery had already been completed. This delayed administration may have diminished its effectiveness, as the patient was already experiencing pain at the time of the block. Similarly, a different investigation exhibited that although cases in the block group showed reduced VAS scores, the duration of hospital stay and postoperative analgesic consumption were comparable between the block and control groups. These differences were likely attributed to the relatively short 4-day follow-up period, which may not have been long enough to fully assess the lasting effects of the nerve block⁽¹⁵⁾.

In our research, we employed an ultrasound-guided technique for the SCPb, whereas Woldegerima.,2020⁽³⁾ performed all blocks using the landmark technique. In their research, the local anesthetic was administered subcutaneously along the posterior borders of the sternocleidomastoid muscles on both sides of the neck⁽³⁾. In an investigation conducted by Hassan and Hashim.,2017⁽¹⁶⁾ in Egypt, which contrary the landmark and ultrasound-guided techniques, no significant differences were exhibited in terms of effectiveness and safety⁽¹⁶⁾. In contrast, another investigation by Senapathi.,2017⁽¹⁷⁾ exhibited that the ultrasound-guided technique was superior, citing the ability to directly visualize the nerves, adjacent structures, and needle movement. This direct visualization allowed for a faster, denser, and longer-

lasting block, resulting in more effective pain management ⁽¹⁷⁾.

Administering regional nerve blocks and integrating multi-modal analgesic strategies before the surgical incision has been consistently shown to significantly reduce both intraoperative and postoperative opioid consumption. This approach not only reduces the need for opioids but also plays a crucial role in decreasing primary hyperalgesia, an increased sensitivity to pain, and helps to diminish central sensitization, a condition where the nervous system becomes more responsive to stimuli. Moreover, these strategies help prevent the development of chronic pain after surgery, which can become a long-term complication for cases ⁽¹⁰⁾. Administering regional nerve blocks and integrating multi-modal analgesic strategies before the surgical incision has been consistently shown to significantly reduce both intraoperative and postoperative opioid consumption. This approach not only reduces the need for opioids but also plays a crucial role in decreasing primary hyperalgesia, an increased sensitivity to pain, and helps to diminish central sensitization, a condition where the nervous system becomes more responsive to stimuli. Moreover, these strategies help prevent the development of chronic pain after surgery, which can become a long-term complication for cases ⁽¹⁸⁾.

Senapathi.,2017⁽¹⁷⁾ conducted a comparison between ultrasound-guided (US) and landmark (LM) techniques for performing BSCPb in thyroidectomy, demonstrating that the US-guided approach was superior in reducing pain both during and after surgery contrary to the LM technique ⁽¹⁷⁾.

This research aligns with previous findings suggesting that BSCPb, when administered correctly, can be a highly effective pain management strategy. Additionally, thyroidectomy procedures that did not involve BSCPb were found to be three times more likely to result in

neuropathic pain than those where BSCPb was employed ⁽¹⁹⁾. In our investigation, BSCPb was administered after anesthesia induction as part of the overall analgesic regimen. However, Woldegerima.,2020⁽³⁾ chose to perform BSCPb preoperatively, just prior to the induction of anesthesia, as part of their multimodal analgesia approach ⁽³⁾. This difference in the timing of the block could have important implications for its effectiveness. Preoperative blocks may offer more immediate pain relief during surgery and may also contribute to better postoperative outcomes by preventing the onset of pain, whereas postoperative blocks, while still effective, may not provide immediate relief and may not be as effective in preventing pain during the early stages of recovery. Despite some concerns raised by surgeons regarding the potential for disruption of surgical anatomy due to the application of the block, other investigations have shown that surgical conditions remained optimal during thyroidectomies where BSCPb was used. These studies reported that no significant issues were encountered during surgery, suggesting that the procedure can be performed safely without compromising the surgical process ⁽¹²⁾.

An ultrasound-guided investigation indicated that performing BSCPb either preoperatively or postoperatively was equally effective. Similarly, the landmark technique was exhibited to be effective in reducing VAS scores, regardless of whether it was administered before or after surgeries ⁽¹⁵⁾. An ultrasound-guided investigation indicated that performing BSCPb either preoperatively or postoperatively was equally effective. Similarly, the landmark technique was exhibited to be effective in reducing VAS scores, regardless of whether it was administered before or after surgeries ⁽²⁰⁾. However, Herbland.,2006⁽¹³⁾ raised concerns regarding the effectiveness of BSCPb as an analgesic option for thyroidectomy, regardless of whether the

injection was administered preoperatively or postoperatively. They attributed their findings to incomplete sensory block, which occurs when the anesthetic solution does not spread sufficiently through the investing fascia due to its limited reach and the high vascularity of the area. This incomplete block may prevent the anesthetic from providing comprehensive pain relief, limiting the overall effectiveness of the procedure⁽¹³⁾.

In our research, we observed significant improvements in postoperative pain management with the use of BSCPb. Specifically, the time to the first request for rescue analgesia was significantly delayed in Group 1 (BSCPb) contrary to Group 2 (local infiltration), with a p-value of <0.001 . This indicates that the BSCPb group experienced prolonged pain relief before needing additional analgesics. Furthermore, the total morphine consumption within the first 24 h was significantly reduced in Group 1 contrary to Group 2 ($P<0.001$), which further highlights the effectiveness of BSCPb in reducing opioid requirements and improving overall patient comfort during the recovery period.

Wound infiltration is another technique frequently used for postoperative pain management in thyroid surgeries. However, studies comparing wound infiltration with BSCPb have demonstrated that BSCPb is a more effective analgesic option. El-Taleb.,2016⁽²¹⁾ showed that the time to the first request for analgesia was 162 ± 124 min for the control group, 544 ± 320 min for the wound infiltration group, and 860 ± 59 min for the BSCPb group, with a p-value of <0.001 ⁽²¹⁾. The analgesic duration for BSCPb was notably longer than that observed in our investigation, which may be attributed to differences in the drug regimen used in the studies. In El-Taleb's research, 15 ml of 0.5% bupivacaine was administered, whereas in our investigation, 10 ml of 0.25% bupivacaine was used. These variations in

drug volume and concentration could explain the difference in analgesic duration observed between the two studies.

Two recent randomized controlled trials (RCTs) have further highlighted the limitations of wound infiltration in managing postoperative pain following thyroidectomy, even when adrenaline was added to the solution⁽²²⁾.

In line with our findings, Woldegerima.,2020⁽³⁾ reported that the time to the first request for analgesia was significantly longer in the Block group, with an average of 132.3 ± 71.5 min, contrary to 71.4 ± 60.0 min in the Non-block group ($p=0.009$). This further strengthens the evidence supporting the superior efficacy of BSCPb in alleviating postoperative pain following thyroid surgeries⁽³⁾.

In a similar vein, Karakis.,2019⁽²³⁾ observed a significant reduction in opioid consumption and postoperative pain intensity in cases undergoing thyroid surgeries, underscoring the positive impact of regional anesthesia techniques such as SCPb in improving pain management and minimizing opioid dependence⁽²³⁾. Similarly, Messner.,2007⁽²⁴⁾ highlighted that SCPb was not only safe and straightforward to perform but also highly effective in reducing morphine use and enhancing pain relief following carotid endarterectomy under GA. Their findings further emphasize the efficacy of SCPb in improving postoperative outcomes, particularly in terms of reducing the need for potent analgesics like morphine⁽²⁴⁾. On the other hand, Eti.,2006⁽¹¹⁾, who administered either 30 mL of 0.25% bupivacaine or 20 mL of 0.25% bupivacaine combined with local wound infiltration, found that neither technique effectively reduced opioid consumption or pain scores following thyroid surgeries. These findings contrast with those of studies using regional blocks like SCPb, suggesting that local wound infiltration, while commonly used, may not offer the same level of efficacy in controlling

postoperative pain or minimizing opioid requirements⁽¹¹⁾.

In the present work, there was a significant difference between both groups regarding satisfaction that was elevated in group 1 contrary to group 2 ($P < 0.001$).

Finally, BSCPB has become a go-to method for managing pain after thyroid surgeries. Numerous investigations have highlighted its ability to reduce anesthetic needs, offer extended postoperative analgesia, and significantly diminished pain scores, the need for rescue analgesics, and overall opioid use in the first 24 h after surgeries^(9,10). This not only reduces the risk of opioid-related side effects but also helps cut down on associated costs⁽²⁵⁾. Moreover, BSCPB is regarded as a simple, safe, and cost-effective approach for post-thyroidectomy pain management⁽²⁶⁾. However, despite its widespread use, some investigations have pointed out its limitations and ineffectiveness in certain cases^(11,13).

Conclusion

US-guided BSCPB provides superior postoperative analgesia contrary to local infiltration in cases undergoing thyroid surgeries. This technique not only reduces pain severity and opioid consumption but also minimizes the incidence of PONV and enhances case satisfaction. Incorporating BSCPB into the analgesic regimen for thyroidectomy can significantly improve postoperative outcomes inspite of respiratory affection.

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