

Assessing the Safety of Day Care Thyroidectomy in Indian Population: A Prospective Study

Devender Singh¹, Yashwant S Rathore², Sandeep Jain³, Gaurav Joshi⁴, Gurpremjit Singh⁵, Vitish Singla⁶

ABSTRACT

In the era of improved surgical and anesthetic techniques, the day care thyroidectomies have been found to be associated with improved patient performance and convenience, and reduced exposure to hospital-acquired complications leading to reduced overall morbidity. However, these benefits are still questioned due to certain postoperative complications.

Aim: The aim of this study was to observe the follow-up of patients undergoing day care thyroidectomy operations and determine the safety of day care thyroidectomy in Indian population.

Materials and methods: This was a single center, in-hospital, prospective, uncontrolled observational study. A total number of 50 patients were included in the study. The study was conducted in the Department of Surgical Disciplines, All India Institute of Medical Sciences (AIIMS), New Delhi, with the duration from January 2016 to September 2017. After assessing the inclusion and exclusion criteria, proper workup and taking informed written consent, patients were taken up for day care thyroidectomy. These patients were observed and followed up on day 0, day 7, and day 30 postoperatively for any thyroidectomy-related complications.

Results: The mean age for the study population was 35.6 ± 11.27 years (18–60 years). Out of 50, 35 (70%) were females and the female-to-male ratio was 2.25:1. Out of 50 (2%), 1 patient had a postoperative hematoma formation, 2/50 (4%) patients had postoperative transient hypocalcaemia, and 1/50 (2%) patient had postoperative voice changes.

Conclusion: This study showed that day care thyroidectomy is a safe and feasible approach with a supporting caregiver and accessible emergency services.

Clinical significance: In a developing country like India with limited resources, day care thyroidectomy can provide a safe and better cost-effective alternative to the routinely practiced in-patient thyroidectomy.

Keywords: Postoperative hypocalcemia, Thyroid, Thyroidectomy.

World Journal of Endocrine Surgery (2020): 10.5005/jp-journals-10002-1272

INTRODUCTION

In this era of improved surgical and anesthetic techniques, a number of day care surgeries have been increased tremendously. A day care surgery is defined as admission and discharge of a patient on the same day. The benefits of day care thyroidectomy are improved patient performance and convenience, and reduced exposure to hospital-acquired complications leading to reduced overall morbidity. However, these benefits are still questioned due to certain postoperative complications. The primary complications related to day care thyroidectomies that challenge day care management are hematoma or bleeding, airway compromise, hypocalcemia, and voice changes due to recurrent laryngeal nerve (RLN) palsy. The purpose of this study was to assess the safety of day care thyroidectomy operations in Indian population.

MATERIALS AND METHODS

This was a single institution, in-hospital, prospective, uncontrolled observational study. The patients who presented to surgery outpatient department, AIIMS, New Delhi, were recruited in the study. Ethical approval was obtained from the AIIMS Ethics Committee. The study was carried out in the Department of Surgical Disciplines and Department of Pathology, AIIMS, New Delhi, from January 2016 to September 2017. The number of patients recruited in the study was 50. These patients were observed and followed up at postoperative day 0, day 7, and day 30 to assess for any postoperative complications.

¹⁻⁶Department of Surgical Disciplines, All India Institute of Medical Sciences, New Delhi, India

Corresponding Author: Yashwant S Rathore, Department of Surgical Disciplines, All India Institute of Medical Sciences, New Delhi, India, Phone: +91 991 1337726, e-mail: dryashvant.r@gmail.com

How to cite this article: Singh D, Rathore YS, Jain S, *et al.* Assessing the Safety of Day Care Thyroidectomy in Indian Population: A Prospective Study. *World J Endoc Surg* 2020;12(1):14–17.

Source of support: All India Institute of Medical Sciences, New Delhi, India

Conflict of interest: None

The inclusion criteria were patient of age 18–60 years who gave informed written consent for the study, a patient seen in pre-admission assessment clinic (by an anesthesiologist) and cleared for surgery, euthyroid patients, cases of a solitary thyroid nodule, multinodular goiter, and carcinoma thyroid. Exclusion criteria were patients with features of hyperthyroidism/hypothyroidism, patients with retrosternal or intrathoracic extension of the thyroid, patient unfit for general anesthesia, and patients who were in need of thyroidectomy with modified radical neck dissection.

All patients underwent a comprehensive multidisciplinary endocrine evaluation preoperatively, which included preoperative indirect laryngoscopy to rule out any vocal cord deformity, routine ultrasonography (USG) neck to evaluate the thyroid swelling, endocrinology evaluation for euthyroid/hyperthyroid assessment,

Table 1: Criteria for patient discharge

1	The patient was awake and alert and oriented about to commands.
2	The patient was able to ambulate with/ without minimal assistance.
3	There were no complaints of nausea, vomiting, respiratory distress, bleeding or neck swelling.
4	The patient was discharged with a responsible family adult member.
5	Modified PA-DSS was 9 or >9
6	The patient was hemodynamically stable with room air SpO ₂ is >95%.

and preoperative fine needle aspiration cytology (FNAC) of thyroid swelling. They were reported as per the Bethesda reporting system.

All patients were provided with a patient information leaflet and were counseled regarding the concept of day care thyroidectomy, the benefits of day care thyroidectomy, the risks of day care thyroidectomy, the need for at least 30 days follow-up, the need to stay at 20–30-minute travel time distance to the hospital.

Complete history and physical examination were performed after the admission of the patient. The decision for surgical procedures was made on the basis of clinical examinations, radiological findings of USG neck, and pathological findings of FNAC. Technique of different surgical procedures employed were hemithyroidectomy, total thyroidectomy, near-total thyroidectomy, and completion thyroidectomy. No drain was placed after any of the surgical procedures. Patient was extubated with the help of direct video laryngoscopy for documentation for any vocal cord dysfunction.

In the immediate postoperative period, the patients were kept in the recovery room. For the initial 6 hours, the patients were kept nil per orally, on intravenous fluids. The patients were shifted to the ward after a proper evaluation and clearance from the expert anesthetic. The patients were started on oral liquids after 6 hours of the postoperative period in the ward. Then patient subsequently introduced on semisolid and solid foods. The patients who underwent total thyroidectomy and completion thyroidectomy were started on prophylactic supplementation of oral calcium and vitamin D for 2 weeks. The further doses were continued only if patients had a clinical suspicion of hypocalcaemia. On discharge, all patients were prescribed oral analgesics for pain management. The criteria for discharging the patients are given in Table 1.

Patients were examined and assessed at postoperative days 0, 7, and 30 for various postthyroidectomy complications. Postoperative bleeding and hematoma formation were assessed as if the patients had any recent onset neck swelling, bleeding from neck incision, or any compressive symptoms. Compressive symptoms like dyspnea, dysphonia, stridor, or choking were also assessed. Postoperative voice changes were assessed subjectively as if the patients had any hoarseness of voice or if there was any change in intensity or pitch of the voice. Postoperative hypocalcemia was assessed as if the patients had paresthesia in extremities or any tingling sensations in extremities.

RESULTS

Out of the 50 patients, 35 (70%) were females and the female-to-male ratio was 2.25:1.

Table 2: Preoperative diagnosis and the procedure performed in the study population

S. no.	Preoperative diagnosis	Total number (n = 50)	Operation performed
1	Solitary thyroid nodule	32 (64%)	Hemithyroidectomy
2	Multinodular goiter	3 (6%)	Near total thyroidectomy
3	Papillary thyroid carcinoma	12 (24%)	Total thyroidectomy
4	Papillary thyroid carcinoma status posthemithyroidectomy	3 (6%)	Completion thyroidectomy

Table 3: Postoperative complications found in study population (n = 50)

Complication	After discharge			
	Day 0	Day 7	Day 30	
Postoperative hematoma	–	1	–	–
Postoperative respiratory difficulty	–	1	–	–
Voice changes	18	18	4	1
Hypocalcemia	–	–	2	–

Mean age for the study population was 35.6 ± 11.27 years (18–60 years). Preoperative diagnosis and procedure performed in the study population are given in Table 2.

The various complications in the study population are summarized in Table 3.

Only one patient, 28 years old male, had a postoperative hematoma formation and respiratory depression. The patient was discharged on postoperative day 0 after optimal postoperative recovery. However, he presented to emergency with swelling at the surgical site and respiratory distress. The surgical site was immediately reexplored and airway restoration was achieved. Clotted blood was evacuated. There were areas of minor ooze from strap muscle edges. Hemostasis achieved, and the drain was placed. Then after, the patient had an uneventful recovery. The patient also had an uneventful follow-up on postoperative days 7 and 30. Hence, the frequency for hematoma formation was 1/50 (2%).

Postoperative voice changes were assessed subjectively. Out of 50, 18 (36%) complained of postoperative voice changes on day 0. Out of 50, 17 (34%) patients had a complete recovery of normal voice by day 30, but 1/50 (2%) patient continued to have same voice changes as postoperatively without a sign of improvement even at day 30. Therefore, the frequency of persistent voice change was 2% in this study population.

In the study population, two patients who underwent total thyroidectomy and completion thyroidectomy, respectively, complained of hypocalcemia symptoms (perioral tingling and numbness) on day 7 postoperatively on follow-up, for which serum calcium was measured and found to be between 8 mg/dL and 9 mg/dL. Both patients were managed by increasing their doses for oral calcium and vitamin D. On day 30 postoperatively, both patients had a complete recovery of the hypocalcemia symptoms.

DISCUSSION

In the past two decades, there has been a shift in the momentum as the increasing number of surgeries, which were previously preferred

to be managed as in-patient settings, are now preferably managed as an outpatient approach. Thyroid surgeries can be performed in the majority of cases without the need for hospitalization after recovery from anesthesia. Both improved surgical and anesthesia techniques have led to improved patient management and facilitated the day care thyroidectomies.

Undoubtedly, day care surgeries have advantages for both patients and surgeons as they are convenient, safe, and cost-effective. Still, thyroid surgeries are associated with a small risk of specific life-threatening complications, principally airway obstruction from hemorrhage, RLN palsy, and tetany from severe hypocalcemia, which should be closely monitored.

A postoperative hematoma is a potentially life-threatening complication after thyroidectomy. The incidence of postoperative hematoma is 0.9–2.1.^{1–8} It is also the leading cause of mortality in the early postoperative period following thyroidectomy. In recent literature, Synder et al.⁹ in his study of 1,064 day care thyroidectomies showed that only 0.2% of patients had hematoma formation.⁹ Similarly, Inabnet et al.¹⁰ ($n = 180$) showed a rate of 0.4% hematoma formation.¹⁰ The highest incidence of hematoma formation was reported in Terris et al.¹¹ ($n = 52$), which had shown hematoma formation rates of 1.9%,¹¹ whereas Sklar et al.¹² and Houlton et al.¹³ did not have any complications regarding hematoma formation in their studies.^{12,13} In this study, only one patient, 28 years old male, had postoperative hematoma formation and respiratory depression. So, our frequency for hematoma formation was 2%.

Hypocalcemia is a common complication following total thyroidectomy and completion thyroidectomy rather than a hemithyroidectomy. The common cause for hypocalcemia is an injury to parathyroid gland vascular supply. The postoperative hypocalcemia may be transient or permanent. Fortunately, transient hypocalcemia is more common and it responds to oral calcium and vitamin D supplementation. Hypocalcemia may manifest as mild (paresthesia around lips, mouth, hands, and feet) or moderate (muscle twitches or frank cramps) to severe (trismus or tetany). Synder et al. in his 1,064 study patients, out of which 58 were total thyroidectomies, showed hypocalcemia in 5.2% patients.⁹ Seybt et al.¹⁴ showed a 1.9% incidence in 208 outpatient thyroidectomy patients, out of which 38 underwent total thyroidectomy.¹⁴ However, Houlton et al.¹³ ($n = 95$) showed the absence of transient hypocalcemia in a study in spite of all patients underwent total thyroidectomy.¹³ This shows that meticulous dissection with the preservation of parathyroid glands and prophylactic oral calcium may prevent postoperative hypocalcemia even in total thyroidectomy patients. In this study population, only two patients had hypocalcemia symptoms. Both of the patients had undergone total thyroidectomy and completion thyroidectomy, respectively, and had hypocalcemia symptoms at postoperative day 7 of follow-up. The dosages of oral calcium were increased, and following this, the patients had a complete recovery from these symptoms. Overall, the frequency of transient hypocalcemia in our population was 4%. In this study population, all patients who underwent total thyroidectomy and completion thyroidectomy were prescribed the prophylactic oral calcium and vitamin D supplementation as a standard protocol. This may be the explanation for the low incidence of the transient hypocalcemia at an immediate postoperative period in our study population. Hence, this shows that the prophylactic supplementation of oral calcium with vitamin D may be advised in total and completion thyroidectomies done in a day care setting.

Postoperative voice change is a well-recognized complication of thyroidectomy. Voice changes mostly present as hoarseness of voice. Transient hoarseness of voice may be due to vocal cord edema because of endotracheal intubation or vocal cord paresis due to nerve injury. Persistent hoarseness of voice may be due to vocal cord dysfunction due to nerve injury. In literature, studies have also shown the higher incidence of temporary voice changes and transient nerve paresis. One of the recent meta-analyses of five studies with 1,717 cases of outpatient thyroidectomy showed the incidence of temporary RLN palsy 0–4%. Similarly, a rate of 0–2% permanent RLN palsy was reported in ten studies with 2,505 cases.¹⁵ Snyder et al.⁹ ($n = 1,063$) showed a temporary RLN palsy frequency of 3.7% (39 patients) and permanent nerve injury rate 0.4% (4 patients).¹ Mazeh et al.¹⁶ ($n = 87$) and Sahmkow et al.¹⁷ ($n = 171$) showed temporary RLN nerve palsy rates of 2% and 1%, respectively. However, both the studies did not show any permanent nerve injury.^{16,17} In this study population, 18 patients complained of postoperative voice changes on day 0, out of which 16 patients had a husky voice and 2 patients complained of reduced intensity of voice. Subsequently, 9 patients showed improvement in voice at postoperative day 7, whereas 5 patients had complete recovery of the voice symptoms. Four patients continued to have the voice changes at postoperative day 7. One patient continued to have same voice changes as postoperatively without a sign of improvement even at day 30. The patient was evaluated by indirect laryngoscopy and found to have normal vocal cords. Hence, at postoperative day 30, the frequency of voice changes was 2%. As most of the immediate and early postoperative voice changes were attributed to postintubation vocal cords edema, most of the patients with voice changes had either improvement or complete resolution of the symptoms in the follow-up of 30 days. So, on postoperative day 30, the frequency of voice changes was 2%. None of the patients had stridor, choking, or aspiration due to nerve palsy. Similarly, none of the patients had bilateral nerve palsy or unilateral nerve palsy on immediate postextubation direct laryngoscopy. Overall, this can be emphasized that postoperative voice changes in day care thyroidectomy do not usually prohibit the discharge of the patient.

Hence, a low rate of complications suggests that thyroid surgery can be performed as a day care procedure with acceptable complication rates. Most of the day care thyroidectomies can be performed as per established standard protocols, but if life-threatening complications like hematoma formation or respiratory depression occurs, patient must be managed immediately in inpatient setting.

CONCLUSION

It was found that day care thyroidectomy offers comparable postoperative outcomes in terms of standard care thyroidectomy. With a supportive caregiver and accessible emergency services, day care thyroidectomy is feasible with minimum complications.

CLINICAL SIGNIFICANCE

In a developing country like India with limited resources, day care thyroidectomy can provide a safe and better cost-effective alternative to the routinely practiced in-patient thyroidectomy.

ACKNOWLEDGMENT

Research was approved by ethics committee.

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