

Clinical and Surgical Outcomes of Thyroidectomy in Patients with Thyroid Disease

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DOI: <https://doi.org/10.36347/sasjs.2026.v12i09.003>

| Received: 11.07.2026 | Accepted: 08.09.2026 | Published: 15.09.2026

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Abstract

Original Research Article

Background: Thyroid disorders are increasingly detected through advances in screening and imaging. Thyroidectomy remains an important treatment for selected benign and malignant conditions, with outcomes influenced by disease extent, comorbidities, and surgical approach. This study aimed to evaluate the clinical and surgical outcomes, postoperative complications, and recovery of patients undergoing thyroidectomy. **Methods:** This prospective observational study included 35 patients undergoing thyroidectomy at Narsingdi Sadar Hospital, Bangladesh, from January to December 2025. Clinical, radiological, cytological, operative, and histopathological findings were assessed. Surgical outcomes included operative time, blood loss, hospital stay, postoperative pain, complications, calcium levels, and recovery. Data were analyzed using descriptive statistics, with ethical approval and informed consent obtained. **Results:** Among 35 patients, the mean age was 42.6 ± 11.8 years and 80.0% were female. Multinodular goiter was the commonest preoperative diagnosis, and 68.6% underwent total thyroidectomy. Histopathology showed benign disease in 71.4% and malignancy in 28.6%, predominantly papillary carcinoma. Mean hospital stay was 2.7 ± 1.1 days, with 77.1% discharged within 3 days. Postoperative complications occurred in 22.9%, mainly transient hypocalcemia and temporary hoarseness. No permanent hypocalcemia, recurrent laryngeal nerve palsy, or reoperation was required. Overall, 91.4% achieved excellent or good outcomes at follow-up. **Conclusion:** Thyroidectomy demonstrated favorable clinical and surgical outcomes, with most patients achieving excellent or good recovery and relatively low postoperative morbidity. Transient hypocalcemia and temporary voice changes were the main complications, with no permanent major complications or reoperations. Careful patient selection, meticulous surgical technique, and appropriate postoperative monitoring can further improve outcomes.

Keywords: Thyroidectomy, Thyroid Disease, Clinical Outcomes, Surgical Outcomes.

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INTRODUCTION

In recent years, the occurrence of thyroid disorders has risen significantly, as improvements in screening and imaging have enabled earlier detection and intervention [1]. The thyroid is a tiny endocrine gland responsible for producing hormones that control different metabolic functions. Its main role is to generate triiodothyronine (T3) and thyroxine (T4), both of which are vital for proper growth, development, and metabolic processes [2]. Thyroid conditions are generally categorized as benign or malignant, with frequent benign issues being thyroiditis, goiter, and thyroid adenoma [3].

Thyroid issues can lead to irregularities in cholesterol levels, heart rate, and blood pressure. Frequent issues consist of hypothyroidism, hyperthyroidism, structural irregularities, thyroid neoplasms, and subclinical thyroid impairment.

Individuals might also face tiredness, inadequate sleep, and discomfort in muscles and joints, which can continue even with sufficient thyroid hormone therapy [4,5]. Total thyroidectomy is recommended for specific patients with larger tumors, compressive symptoms, suspected or confirmed cancer, regional or distant metastases, or a history of head and neck radiation, especially in cases of extensive disease [6,7]. Surgical results are evaluated through factors including surgical duration, blood loss, duration of hospital stay, post-surgery pain, complications, need for reoperation, recovery, and disease management. In carefully chosen patients, outpatient and minimally invasive thyroid surgery can offer safe management, quicker recovery, and positive aesthetic results [8,9].

A worldwide study indicated that total thyroidectomy correlated with higher risks of recurrent laryngeal nerve damage and hypoparathyroidism,

whereas another extensive national study discovered that greater surgical volume was linked to fewer complications and reduced hospitalization duration [10,11]. In Bangladesh, thyroidectomy is typically linked to positive results; however, postoperative complications might occur more often in patients with comorbid conditions like diabetes, hypertension, and obesity. These individuals might also face extended surgery duration, increased hemorrhage, longer hospitalizations, and slower recuperation. A different study from Bangladesh found early postoperative complications such as hematoma, temporary hypocalcemia, recurrent laryngeal nerve injury, and airway blockage, emphasizing the need for careful surgical technique and vigilant postoperative observation [12,13].

Consequently, assessing the clinical and surgical results of thyroidectomy is crucial for determining treatment efficacy, recognizing postoperative issues, and enhancing perioperative management. This study aimed to assess the clinical features, surgical results, postoperative issues, and recovery of patients who underwent thyroidectomy for thyroid conditions.

MATERIALS AND METHODS

Study Design and Setting

This prospective observational study was conducted in the Department of Otorhinolaryngology, Narsingdi Sadar Hospital, Narsingdi, Bangladesh, from January to December 2025. A total of 35 consecutive patients with thyroid disease requiring surgical treatment were included.

Patient Assessment and Surgical Management

All patients underwent clinical evaluation, thyroid function tests, ultrasonography of the thyroid and neck, and fine-needle aspiration cytology (FNAC) when indicated. Depending on the clinical, radiological, and cytological findings, patients underwent total thyroidectomy or hemithyroidectomy/lobectomy. Neck dissection was performed when indicated for suspected or confirmed malignancy. Operative time, estimated blood loss, intraoperative complications, and type of surgery were recorded. All resected specimens were subjected to histopathological examination.

Postoperative Assessment and Follow-up

Patients were monitored for postoperative pain, hospital stay, oral feeding, return to routine activities, wound healing, and postoperative complications. Postoperative hoarseness was assessed clinically, with laryngoscopic evaluation when indicated to identify vocal cord paresis. Serum calcium levels were monitored postoperatively, particularly following total thyroidectomy. Hypocalcemia that resolved during

follow-up was considered transient, and calcium supplementation and the lowest corrected serum calcium level were recorded.

Patients were followed clinically for voice changes, calcium-related complications, wound problems, and overall recovery. Overall clinical outcome was categorized as follows:

- **Excellent:** Marked clinical improvement, satisfactory wound healing, return to routine activities, and absence of significant complications.
- **Good:** Satisfactory recovery with minor or transient postoperative complications.
- **Fair:** Partial clinical improvement or delayed recovery with non-major residual problems.
- **Poor:** Inadequate improvement, persistent major complications, significant functional impairment, or need for reoperation.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics. Continuous variables were expressed as mean $\pm$ standard deviation, while categorical variables were presented as frequencies and percentages. Descriptive statistics were used to summarize the clinical and surgical outcomes.

Ethical Considerations

Ethical approval was obtained from the appropriate institutional authority. Written informed consent was obtained from all participants, and confidentiality of patient information was maintained throughout the study.

RESULTS

Baseline characteristics of the study participants

A total of 35 patients with thyroid disease undergoing thyroidectomy were included in the study. The mean age of the participants was 42.6 ± 11.8 years, with an age range of 21–68 years. Most patients were female (28, 80.0%), while 7 (20.0%) were male. The majority of patients belonged to the 31–50-year age group (19, 54.3%). The mean duration of thyroid disease was 3.8 ± 2.6 years.

Table 1 shows clinical presentation, neck swelling was the most common presenting complaint (31, 88.6%), followed by dysphagia (9, 25.7%) and neck discomfort (7, 20.0%). Four patients (11.4%) presented with symptoms of pressure or respiratory discomfort. Thyroid function assessment showed that 27 (77.1%) patients were euthyroid, 5 (14.3%) were hyperthyroid, and 3 (8.6%) were hypothyroid at the time of surgery. Fine-needle aspiration cytology (FNAC) was performed in all patients, and the commonest preoperative diagnosis was multinodular goiter (18, 51.4%).

Table 1: Baseline demographic and clinical characteristics of the study participants (n=35)

Characteristics	n (%) / Mean $\pm$ SD
Age (years)	42.6 $\pm$ 11.8
Age group	
≤30 years	6 (17.1)
31–50 years	19 (54.3)
>50 years	10 (28.6)
Sex	
Male	7 (20.0)
Female	28 (80.0)
Duration of thyroid disease (years)	3.8 $\pm$ 2.6
Presenting symptoms	
Neck swelling	31 (88.6)
Dysphagia	9 (25.7)
Neck discomfort/pain	7 (20.0)
Respiratory/pressure symptoms	4 (11.4)
Thyroid functional status	
Euthyroid	27 (77.1)
Hyperthyroid	5 (14.3)
Hypothyroid	3 (8.6)
Preoperative diagnosis based on clinical/FNAC assessment	
Multinodular goiter	18 (51.4)
Solitary thyroid nodule	8 (22.9)
Thyroid carcinoma/suspicious malignancy	6 (17.1)
Graves' disease	2 (5.7)
Other thyroid disease	1 (2.9)

Operative characteristics

Table 2 presents among the 35 patients, 24 (68.6%) underwent total thyroidectomy, while 11 (31.4%) underwent hemithyroidectomy/lobectomy. Neck dissection was performed in 4 patients (11.4%), all of whom had an indication related to suspected or confirmed malignancy. The mean operative time was 104.3 $\pm$ 28.6 minutes, ranging from 60 to 175 minutes.

The recurrent laryngeal nerve was identified intraoperatively in all patients. Intraoperative nerve monitoring was not routinely used. Parathyroid glands were identified and preserved whenever possible. The mean estimated intraoperative blood loss was 42.7 $\pm$ 18.9 mL. Most patients (30, 85.7%) had an uncomplicated operative course without intraoperative adverse events.

Table 2: Operative characteristics of the study participants (n=35)

Operative characteristics	n (%) / Mean $\pm$ SD
Type of thyroidectomy	
Total thyroidectomy	24 (68.6)
Hemithyroidectomy/lobectomy	11 (31.4)
Neck dissection performed	4 (11.4)
Recurrent laryngeal nerve identified	35 (100.0)
Intraoperative nerve monitoring	0 (0.0%)
Mean operative time (minutes)	104.3 $\pm$ 28.6
Estimated blood loss (mL)	42.7 $\pm$ 18.9
Intraoperative complications	
None	30 (85.7)
Minor bleeding controlled intraoperatively	4 (11.4)
Another intraoperative event	1 (2.9)

Histopathological findings

Table 3 shows histopathological examination showed that 25 patients (71.4%) had benign thyroid disease, whereas 10 (28.6%) had malignant pathology. Multinodular colloid goiter was the most frequent benign histopathological diagnosis (14, 40.0%). Follicular

adenoma was identified in 4 (11.4%) patients and Hashimoto thyroiditis in 3 (8.6%). Among malignant cases, papillary thyroid carcinoma was the predominant diagnosis (8, 22.9%), while follicular carcinoma was identified in 2 (5.7%) patients.

Table 3: Histopathological findings after thyroidectomy (n=35)

Histopathological diagnosis	n (%)
Benign disease	25 (71.4)
Multinodular colloid goiter	14 (40.0)
Follicular adenoma	4 (11.4)
Hashimoto thyroiditis	3 (8.6)
Thyroid cyst/cyst/another benign lesion	4 (11.4)
Malignant disease	10 (28.6)
Papillary thyroid carcinoma	8 (22.9)
Follicular thyroid carcinoma	2 (5.7)
Total	35 (100.0)

Postoperative clinical outcomes

Table 4 shows the overall postoperative recovery was satisfactory. The mean duration of hospital stay was 2.7 ± 1.1 days, with a range of 1–6 days. Twenty-seven patients (77.1%) were discharged within 3 days. The mean time to return to routine daily activities was 8.6 ± 3.2 days. Postoperative pain was generally

mild to moderate, with a mean pain score of 3.2 ± 1.4 on the first postoperative day, which decreased to 1.5 ± 0.9 by discharge. Oral feeding was resumed within 24 hours in 33 (94.3%) patients. No patient required reoperation because of postoperative bleeding or airway compromise.

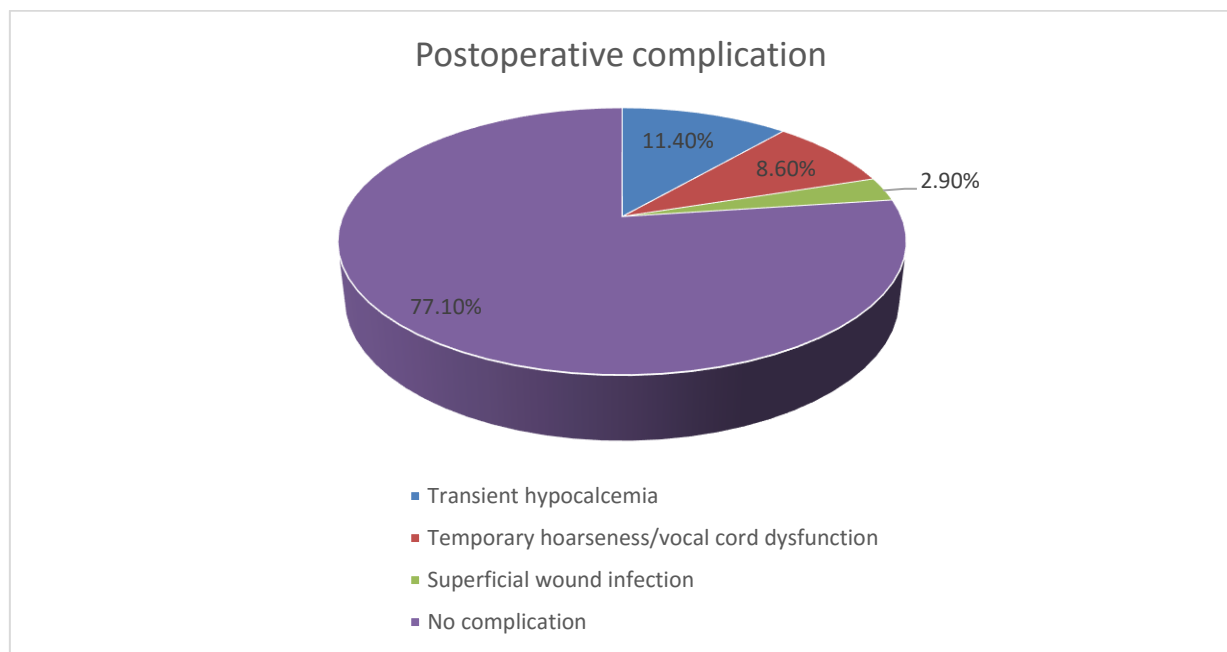
Table 4: Early postoperative clinical outcomes (n=35)

Clinical outcome	Finding
Mean postoperative hospital stay (days)	2.7 ± 1.1
Hospital stay ≤ 3 days	27 (77.1%)
Mean pain score on postoperative day 1	3.2 ± 1.4
Mean pain score at discharge	1.5 ± 0.9
Oral feeding within 24 hours	33 (94.3%)
Return to routine activity (days)	8.6 ± 3.2

Postoperative complications

Figure I show postoperative complications occurred in 8 (22.9%) patients, while 27 (77.1%) had no documented postoperative complication. The figure 1 shows that transient hypocalcemia was the most frequently observed postoperative complication (4,

11.4%), followed by temporary hoarseness/vocal cord dysfunction (3, 8.6%) and superficial wound infection (1, 2.9%). No patient developed permanent hypocalcemia, permanent recurrent laryngeal nerve palsy, postoperative neck hematoma requiring surgical evacuation, or bilateral vocal cord paralysis.

**Figure I: Distribution of postoperative complications among the study participants (n=35)**

Postoperative voice and calcium outcomes

Table 5 shows all 35 patients had a normal voice preoperatively. Following thyroidectomy, postoperative hoarseness was observed in 3 patients (8.6%), all of whom were found to have unilateral vocal cord paresis.

Transient hypocalcemia occurred in 4 patients (11.4%), with a mean lowest corrected serum calcium level of 7.6 ± 0.3 mg/dL among affected patients. All patients with hypocalcemia received calcium supplementation, and none required long-term calcium supplementation.

Table 5: Postoperative voice and calcium-related outcomes

Outcome	n (%) / Mean $\pm$ SD
Preoperative normal voice	35 (100.0)
Postoperative hoarseness	3 (8.6)
Unilateral vocal cord paresis	3 (8.6)
Transient hypocalcemia	4 (11.4)
Lowest corrected serum calcium among affected patients (mg/dL)	7.6 ± 0.3
Calcium supplementation required	4 (11.4)
Long-term calcium supplementation required	0 (0.0)

Follow-up outcomes

Figure II shows the overall clinical outcomes at follow-up among the study participants. Of the 35 patients, 22 (62.9%) had an excellent outcome, 10

(28.6%) had a good outcome, and 3 (8.6%) had a fair outcome. Overall, 32 patients (91.4%) achieved an excellent or good clinical outcome, while no patient had a poor outcome.

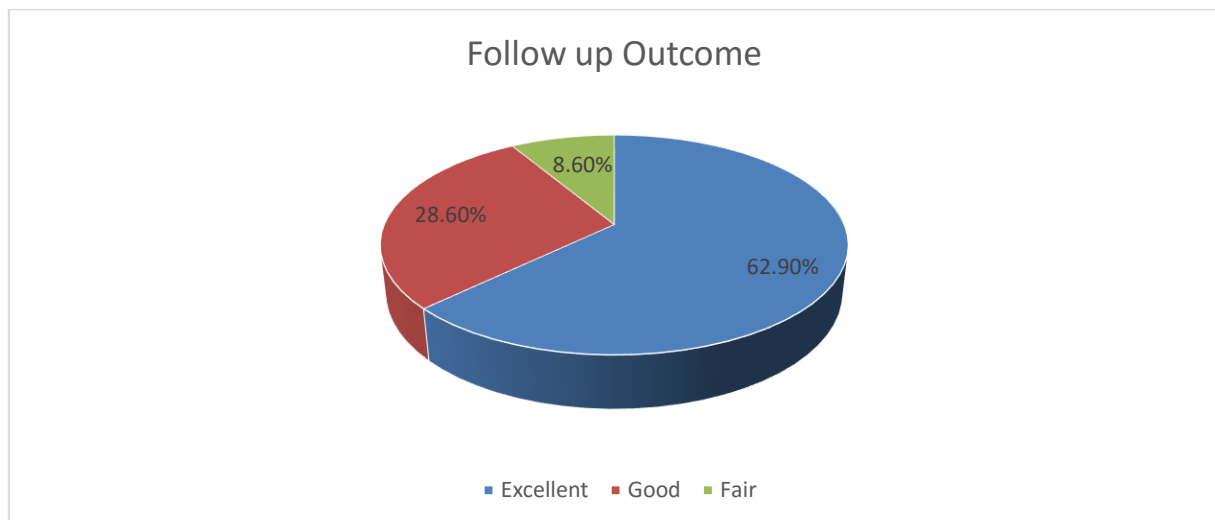


Figure II: Overall clinical outcome at follow-up among the study participants (n=35)

DISCUSSION

In this study, the average age was 42.6 ± 11.8 years, with the majority of patients aged 31–50 years, and there was a higher number of females. Neck swelling was the most frequent presentation, with 77.1% being euthyroid, and multinodular goiter was the prevalent preoperative diagnosis. The results were comparable to an earlier study conducted at Dhaka Medical College Hospital, indicating that 52.7% were aged 31–40 years, the average age was 38.7 ± 6.4 years, and females represented 69.4%. All patients exhibited neck swelling, with the most prevalent condition being thyroid nodule (71.7%), followed by papillary carcinoma (18.9%) and follicular carcinoma (8.3%) [14]. Both studies reveal a majority of middle-aged women as patients with neck swelling being the primary clinical symptom.

In this study, total thyroidectomy was conducted on 68.6% of patients, with an average surgical

duration of 104.3 ± 28.6 minutes and mean blood loss of 42.7 ± 18.9 mL; the recurrent laryngeal nerve was located in every case, and 85.7% experienced an uncomplicated surgery. These results aligned with a recent comparative study that reported an operative time of less than 60 minutes in 70.8% of cases and intraoperative bleeding in 56.7% of patients [15]. The reduced complication rate in this study might indicate variations in patient attributes and surgical methods.

In the present study, benign lesions predominated, with multinodular colloid goiter being the most common, while malignancy accounted for 28.6%, mainly papillary thyroid carcinoma. These findings were similar to a previous study, where papillary carcinoma was the most common thyroid neoplasm (34.2%), followed by follicular adenoma [16]. Overall, papillary thyroid carcinoma was the predominant malignant lesion in both studies.

In the present study, postoperative recovery was satisfactory, with a mean hospital stay of 2.7 ± 1.1 days, 94.3% resuming oral feeding within 24 hours, and pain decreasing from 3.2 ± 1.4 to 1.5 ± 0.9 by discharge. These findings are consistent with a recent randomized trial showing that early oral intake after thyroid surgery was safe and improved patient comfort. Similarly, a systematic review reported that wound infiltration effectively reduced post-thyroidectomy pain and analgesic requirements [17,18]. Overall, early recovery and effective pain control were observed in the present study.

In this study, postoperative complications arose in 22.9%, with transient hypocalcemia as the most frequent, followed by temporary hoarseness. No lasting hypocalcemia or repeated laryngeal nerve paralysis was noted. These results were similar to a prospective study indicating hypocalcemia and nerve-related issues as frequent postoperative occurrences following thyroid surgery [19]. In general, complications were primarily temporary and controllable.

In the present study, postoperative hoarseness with unilateral vocal cord paresis occurred in 8.6%, while transient hypocalcemia occurred in 11.4%; none required long-term treatment. Similarly, a recent study found reduced postoperative PTH in 37.6% and hypocalcemia in 28.4% of patients [20]. Another study reported that voice symptoms may persist after thyroidectomy, particularly with more extensive surgery [21]. Overall, the present findings indicate that most voice and calcium disturbances were transient and manageable.

In the present study, 91.4% of patients achieved excellent or good outcomes at follow-up, with no poor outcome. These favorable results are consistent with previous studies reporting low complication rates and satisfactory recovery after thyroidectomy [15,18,19]. Overall, the present findings suggest that thyroidectomy was associated with favorable short-term clinical outcomes.

CONCLUSION

Thyroidectomy showed positive clinical and surgical results in the study group, with most patients experiencing excellent or satisfactory recovery and a comparatively low incidence of postoperative complications. The majority of patients experienced a brief hospitalization, prompt initiation of oral feeding, and a swift return to their normal activities. The primary postoperative complications included transient hypocalcemia and temporary changes in voice, with no cases of permanent hypocalcemia, lasting recurrent laryngeal nerve palsy, bilateral vocal cord paralysis, or the need for reoperation noted. These results indicate that thyroidectomy is a safe and effective option for suitably chosen patients with thyroid disorders. Thorough preoperative evaluation, proper surgical planning,

precise operative technique, safeguarding the recurrent laryngeal nerves and parathyroid glands, and sufficient postoperative observation are crucial for reducing complications and enhancing functional recovery.

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