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Original Research Article

Clinical and surgical outcome of hemi thyroidectomy in low-risk papillary carcinoma thyroid

Muhammad Ali Azad[1]*, A. K. M. Mashiul Munir[2], Mohammad Misbah Al Kabir Sumon[3], Lailanur[4], Mohammad Nesar Uddin[5]

[1]Department of Oncosurgery, ENT, Head Neck Surgery, Combined Military Hospital (CMH), Dhaka Cantonment, Bangladesh
[2]Combined Military Hospital (CMH), Dhaka Cantonment, Bangladesh
[3]Department of ENT, Head Neck Surgery, Combined Military Hospital (CMH), Dhaka Cantonment, Bangladesh
[4]Dhaka Cantonment, Bangladesh
[5]Department of ENT, Head & Neck Surgery, BNS Potenga, Bangladesh Navy, Bangladesh

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***Correspondence:**
Dr. Muhammad Ali Azad,
E-mail: publications971@gmail.com

ABSTRACT

Background: Hemi thyroidectomy involves removing one lobe of the thyroid gland and is often considered for patients with low-risk papillary carcinoma of the thyroid. The surgical outcome generally includes a reduced risk of complications and a shorter recovery time comparing total thyroidectomy. This study aimed to assess the clinical and surgical outcomes of hemi thyroidectomy in individuals with low-risk papillary thyroid carcinoma.
Methods: This cross-sectional study was conducted in the department of ENT & Head Neck Surgery, Combined Military Hospital (CMH), Dhaka Cantonment, Dhaka, Bangladesh from 26 March 2021 to 21 July 2023. In this study, 67 patients with low-risk papillary carcinoma of the thyroid (PCT) who had undergone hemi-thyroidectomy were purposively selected. The preoperative ultrasound, FNAC and post-thyroidectomy histopathology report for all participants were documented. The data were processed & analyzed.
Results: Female patients contributed the majority at 67.2%, and 52% belonged to 31-40 yeas age group. Clinical outcomes showed that 93% of patients achieved symptom relief, while 88% were surgically cured, with a 12% recurrence rate. Complications included transient recurrent laryngeal nerve issues in 3%, permanent recurrent laryngeal nerve problems in 1.5%, transient hypothyroidism in 3%, permanent hypothyroidism in 1.5%, and hematoma in 1.5%.
Conclusion: Females are predominantly prone to low-risk papillary thyroid carcinoma. Both clinical and surgical outcomes of hemi thyroidectomy for this condition are satisfactory, making it an effective and safe treatment method.

Keywords: Hemi thyroidectomy, Low-risk papillary carcinoma thyroid, Microcarcinoma, Surgical outcome, Thyroglobulin

INTRODUCTION

Low-risk papillary thyroid carcinoma (PTC) is a type of thyroid cancer with a favorable prognosis, low recurrence, and minimal mortality risk. Typically, it is defined by small tumor size, often less than 1 cm, especially in papillary thyroid microcarcinoma (PTMC).[1,2] The tumors grow slowly with a very low mortality risk, less than 1% over 20 years post-surgery.[3,4] The cancer remains confined to thyroid without local invasion or distant metastasis.[5] Management now emphasizes personalized plans, often recommending active surveillance for very low-risk tumors, involving regular imaging and serum thyroglobulin monitoring instead of immediate treatment.[2] Treatment options, if necessary, include total or hemi thyroidectomy, based on

tumor and patient factors, while generally avoiding prophylactic lymph node dissection.[6] The prognosis for patients is excellent, with studies indicating no significant increase in mortality or disease progression among those under active surveillance.[1]

Aggressive intervention is typically unnecessary as the recurrence risk is extremely low. A retrospective study of 109 patients who underwent hemi thyroidectomy showed that only 3.7% experienced persistent disease at one-year post-treatment, and all were disease-free at their final visit after an average 8.6-year follow-up.

The cohort mainly comprised females (84.4%) with micro carcinomas (81.9%) and low recurrence risk per the American Thyroid Association (ATA) guidelines.[7] Comparisons between hemi thyroidectomy and total thyroidectomy indicated no significant differences in persistent disease rates, overall mortality, or disease status at the final follow-up.[7]

However, a systematic review reported a pooled recurrence rate of 9.0% for hemi thyroidectomy patients, suggesting a notable recurrence risk. Nearly half of the patients initially treated with hemi thyroidectomy might eventually require completion thyroidectomy due to contralateral lobe disease found later.[8,9]

Recent ATA guidelines now recommend hemi thyroidectomy for well-defined low-risk PTCs measuring 1–4 cm without extra thyroidal extension or lymph node involvement, deviating from past practices favoring total thyroidectomy for PTCs over 1 cm.[10]

This change is supported by evidence showing no significant difference in survival rates between both procedures in low-risk groups, aiming to reduce surgical morbidity associated with more extensive surgeries.[11] The objective of this current study was to assess the clinical and surgical outcomes of hemi thyroidectomy in individuals with low-risk papillary thyroid carcinoma.

METHODS

Study type

This was a cross-sectional study.

Study place

This cross-sectional study was conducted in the department of ENT & Head Neck Surgery, Combined Military Hospital (CMH), Dhaka Cantonment, Dhaka, Bangladesh.

Study duration

The study duration was from 26 March 2021 to 21 July 2023.

Sample size

In this study, 67 patients with low-risk papillary carcinoma of the thyroid (PCT) were selected for hemi-thyroidectomy. The low-risk status was confirmed via FNAC (Bethesda Classification IV to VI), USG of Thyroid gland (TI-RADS classification) & postoperative histopathological assessment.

Inclusion criteria

Inclusion criteria were patient's age up to 50 years, with tumors confined to one lobe, sized between 1 to 4 cm, and no extra thyroidal extension (ETE) or lymph node metastasis.

Exclusion criteria

Exclusion criteria included high-risk features such as being over 50 years of age, tumors larger than 4 cm, bilateral nodularity, evident lymph node metastases, history of neck irradiation, or a positive family history of thyroid cancer. Patients who were lost during the follow-up period were excluded from the study.

Before surgery, a preoperative discussion took place with all patients to obtain informed consent, highlighting the possibility of needing secondary interventions either in the first postoperative week or during follow-ups. The hemi thyroidectomy procedure adhered to the following principles: a direct thyroidectomy incision of 4–5 cm to minimize postoperative pain and avoid unnecessary neck exploration.

Additional exposure was achieved by dissecting the fascia over the anterior surface of the sternomastoid muscle, which allowed for comfortable lateral traction of the infrahyoid muscles. During the procedure, the tracheal surface above and below the isthmus is dissected, and the isthmus is divided to enhance thyroid lobe mobility.

The para tracheal space is accessed to ensure early identification and protection of the recurrent laryngeal nerve and parathyroid glands. The thyroid lobe is excised using the extra capsular technique. After discharge, patients attended monthly follow-up visits, concluding with a final follow-up in the 12th month. The collected data were processed and analyzed.

RESULTS

The age distribution of our study showed that the majority of patients were in the 31–40-year range, followed by nearly one-fourth in the 21-30-year range. As per the gender distribution, females constituted a significant majority at 67.2%, compared to 32.8% males. Regarding tumor size, the majority (64.2%) of patients had tumors measuring 3-4 cm, while 25.4% had tumors of 2-3 cm, and 10.4% had tumors of 1-2 cm. Fifty eight

percent (58.20%) of patients had Bethesda category-VI, whereas 10.44% had Bethesda category-IV in FNAC findings. In the outcomes analysis, clinical results showed that symptom relief was achieved in nearly 93% of patients. Hypothyroidism occurred in about 4.5%, and hypocalcemia affected 3% of patients. Surgically, 88.1% were cured, with a recurrence rate of 19.9%. Complications included transient recurrent laryngeal nerve (RLN) issues in 3% and permanent RLN complications in 1.5%. Transient hypothyroidism was seen in 3%, with permanent hypothyroidism affecting 1.5%. Hematoma occurred in 1.5% of the patients.

Table 1: Baseline data of patients.

Characteristics	N	%
Age distribution (in years)		
10-20	4	6.0
21-30	17	25.4
31-40	35	52.2
41-50	11	16.4
Gender distribution		
Male	22	32.8
Female	45	67.2
Tumor size (cm)		
1-2	7	10.4
2-3	17	25.4
3-4	43	64.2
FNAC (Bethesda category) report		
Category-IV	7	10.44
Category-V	21	31.34
Category-VI	39	58.20

Table 2: Outcome distribution.

Characteristics	N	%
Clinical outcomes		
Symptom relief	62	92.5
Hypothyroidism	3	4.5
Hypercalcemia	2	3.0
Surgical outcomes		
Cured	59	88.1
Recurrence	8	11.9
Complications		
Transient RLN	2	3.0
Permanent RNL	1	1.5
Transient hypoparathyroidism	2	3.0
Permanent hypoparathyroidism	1	1.5
Hematoma	1	1.5

RLN: Recurrent laryngeal nerve

DISCUSSION

The age distribution revealed that the majority of patients (52.2%) were in the 31–40-year range, with 25.4% in the 21–30-year range. A similar trend in age distribution was observed in another Bangladeshi study.[13] Regarding gender distribution, females constituted a significant majority over males, which is consistent with findings in other studies.[11,14] In terms of tumor size, the majority of patients had tumors measuring 3-4 cm, and one-fourth had tumors measuring 2-3 cm. These findings align with another study.[15] Ten percent (10.44%) had Bethesda category-IV in FNAC findings showed malignancy in histopathology postoperatively with findings commensurate with a study by who also showed that Bethesda category IV has significantly higher rate of malignancy.[12] Regarding outcomes, the clinical analysis indicated that symptom relief was achieved in the majority of cases (93%). Hypothyroidism was reported in about 4.5% of patients, and hypocalcemia affected 3%. Surgically, 88.1% of cases were cured, while the recurrence rate was 11.9%. These outcomes are supported by findings from other previous studies.[13,14]

Our study effectively highlighted the occurrence of certain complications from hemi thyroidectomy, such as transient and permanent recurrent laryngeal nerve (RLN) issues, transient and permanent hypoparathyroidism, and hematoma. The rates of these complications were comparable to those reported in a study by Sharaky et al, which reinforced the reliability of our data.[15] On the other hand, our outcomes aligned with evidence from Suman et al, supporting hemi thyroidectomy as an effective treatment for patients with low-risk PTC, providing excellent disease-specific survival rates.[16]

CONCLUSION

Females are particularly susceptible to low-risk papillary thyroid carcinoma, a common type of thyroid cancer. Clinical and surgical evaluations have shown that hemi thyroidectomy removal of one lobe of the thyroid is an effective and safe treatment option for managing this condition. The outcomes of hemi thyroidectomy are generally satisfactory, offering benefits such as reduced risk of complications compared to more extensive surgeries and potential preservation of thyroid function.

Recommendations

This approach allows for targeted treatment of the cancerous tissue while minimizing the impact on the patient's overall health. By utilizing this surgical method, thyroid surgeons can effectively manage low-risk papillary thyroid carcinoma, thereby improving the quality of life for patients.

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