

An Analysis of Surgically Treated Thyroid in a Tertiary Care Centre

Rohit Yadav

P.G. Resident

Department of General Surgery, Chirayu Medical College and
Hospital, Bhopal, Madhya Pradesh, India - 462030

Amar Jain

Assistant Professor

Department of General Surgery, Chirayu Medical College and
Hospital, Bhopal, Madhya Pradesh, India - 462030

Zeeshanuddin Ahmad

Associate Professor

Department of General Surgery, Chirayu Medical College and
Hospital, Bhopal, Madhya Pradesh, India - 462030

ABSTRACT

Introduction: Thyroid cancer is one of the most common malignant endocrine glands worldwide. Greater than 75% of cases occur in women making this the fifth most common malignancy in women. Although less than 25% of thyroid carcinomas occur in men, men account for 45% of mortality from thyroid carcinoma. Surgery is the mainstay in the management of thyroid cancer. Surgical outcomes need to be tempered against the excellent prognosis of the disease. **Objectives:** This study was carried out to evaluate the demographic features, histologic spectrum, type of surgery performed and postoperative complications of surgically treated thyroid disease. **Material & Methods:** This study was conducted in Department of General Surgery, Chirayu Medical College and Hospital, Bhopal and included those patients who underwent thyroid surgery from January 2018 to March 2022. **Results:** A total of 123 thyroidectomies (in 104 females and 19 males) for various thyroid disorders were performed, of which total thyroidectomy was the predominant surgery in 64% of patients. The commonest malignancy and benign lesion encountered was follicular variant of papillary thyroid carcinoma and multinodular goitre respectively. **Conclusions:** Thyroid cancer, even with advanced disease, is eminently treatable. Surgery forms the crux of treatment of thyroid diseases. Aggressive histology, the extent of thyroid surgery, distant metastasis and age are important factors, which should be factored in the algorithm of thyroid cancer management.

Keywprds: Thyroid cancer, Thyroid surgery, Complications of thyroid surgery

INTRODUCTION

Thyroid cancer is one of the most common malignant endocrine glands worldwide. Greater than 75% of cases occur in women making this the fifth most common malignancy in women. Although less than 25% of thyroid carcinomas occur in men, men account for 45% of mortality

from thyroid carcinoma. Incidence of thyroid diseases rose 12 times for females and 1.5 times for males in United States over 6 decades ^[1,2]. In the western world, most of the newly diagnosed cancers are microcarcinomas. However, in India, we see a combination of both early and advanced presentation of thyroid cancers. Majority of people diagnosed with thyroid malignancies, have no significant risk factors and the remaining may have one or two of them. Risk factors for thyroid diseases include iodine deficiency, ionizing radiation, hereditary factors and obesity ^[3]. Surgery is the mainstay in the management of thyroid cancer. Surgical outcomes need to be tempered against the excellent prognosis of the disease. Although till the 20th century postoperative complications prevented its evolution and diffusion but this rate has drastically come down now. Mortality of thyroid surgery is almost nil and overall morbidity is less than 3%.

OBJECTIVES

This study was carried out to evaluate the demographic features, histologic spectrum, type of surgery performed and postoperative complications of surgically treated thyroid disease in Chirayu Medical College and Hospital, Bhopal.

MATERIALS & METHODS

This study was conducted in Department of General Surgery, Chirayu Medical College and Hospital, Bhopal and included those patients who underwent thyroid surgery for both benign and malignant diseases from January 2018 to March 2022. All patients were evaluated by clinical examination. Thyroid-specific investigations were done, these included serum T3, T4, TSH, ultrasound of the neck, FNAC of thyroid swelling, contrast enhanced computed tomography (CECT) neck and thorax, and positron emission tomography with ct (PET-CT) when indicated. The 8th edition of AJCC TNM staging system was followed and accordingly patients were treated by hemithyroidectomy or total thyroidectomy depending on various factors. The treatment decisions regarding neck dissection and central compartment clearance were taken based on the findings of cect neck, intraoperative assessment, frozen section diagnosis and poor prognostic features of the thyroid cancer. Patients were usually discharged by 2-3 days postoperatively. The data was collected on a pre-designed proforma and entered & analysed with a statistical program.

RESULTS

A total of 123 thyroidectomies for various thyroid disorders were performed which included 104 females and 19 males with female to male ratio of 5.47:1 (Table 1). The patient's age ranged from 18 to 73 years. About 46.35% (57) of the patients in our study had malignant lesions, compared to 53.65% (66) of patients who had benign lesions (Table 2). The most frequent malignant thyroid lesion, follicular variant of papillary thyroid carcinoma, was found to be present in 30 patients or 24.39% of all thyroid lesions and the other malignant lesions encountered were of papillary thyroid carcinoma, Hurthle cell carcinoma, medullary thyroid carcinoma and poorly differentiated thyroid carcinoma in 13, 6, 3 and 2 patients respectively. 1 case each of follicular thyroid carcinoma, plasma cell neoplasm of thyroid and anaplastic thyroid carcinoma were also seen. The most prevalent benign pathology, multinodular goitre was seen in 31 patients, followed by colloid goitre and follicular adenoma in 14 and 12 patients respectively. We also encountered 9 patients of lymphocytic thyroiditis. 64% (78) of patients had a total thyroidectomy, compared to 36% (45) who had a hemithyroidectomy (Fig 1). In our study, there was no fatality. A recurrent laryngeal nerve damage in eight patients (in 7 patients

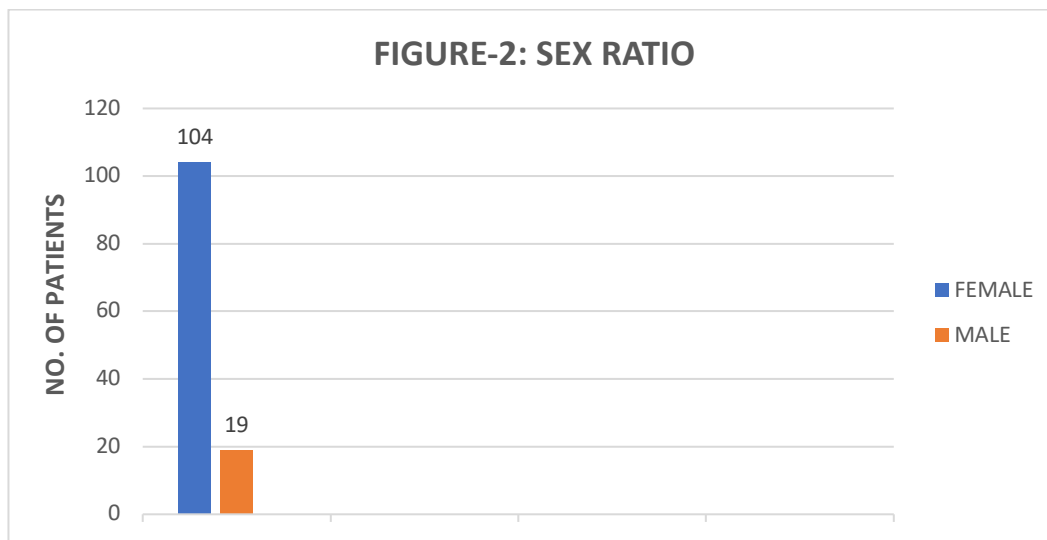
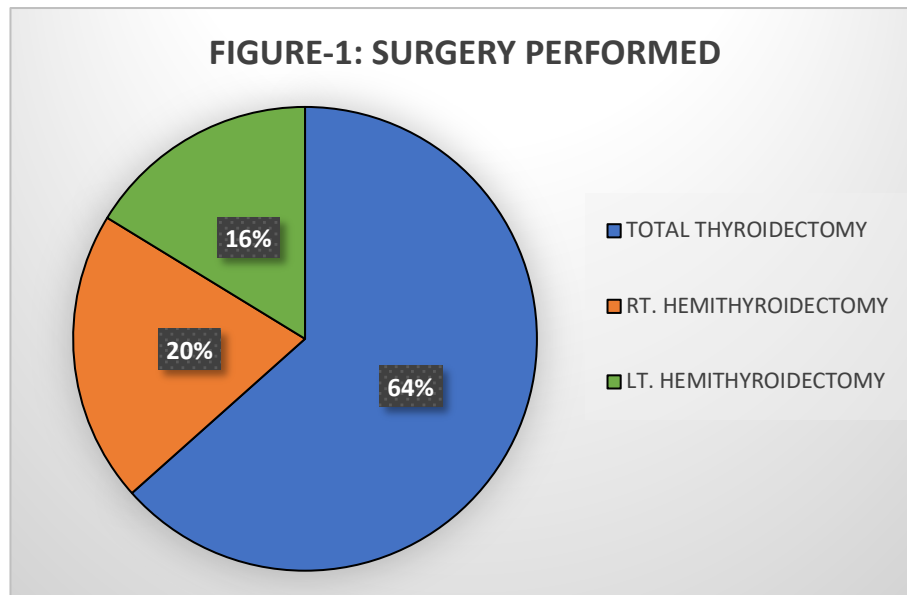
unilateral and in 1 patient bilateral) resulted in vocal cord paralysis which was a significant morbidity. The most frequent postoperative consequence affecting 20 patients was hypocalcaemia, of which 12 patients had transient hypocalcemia. Other issues included 10 patients who had hematoma and 5 patients had a wound infection.

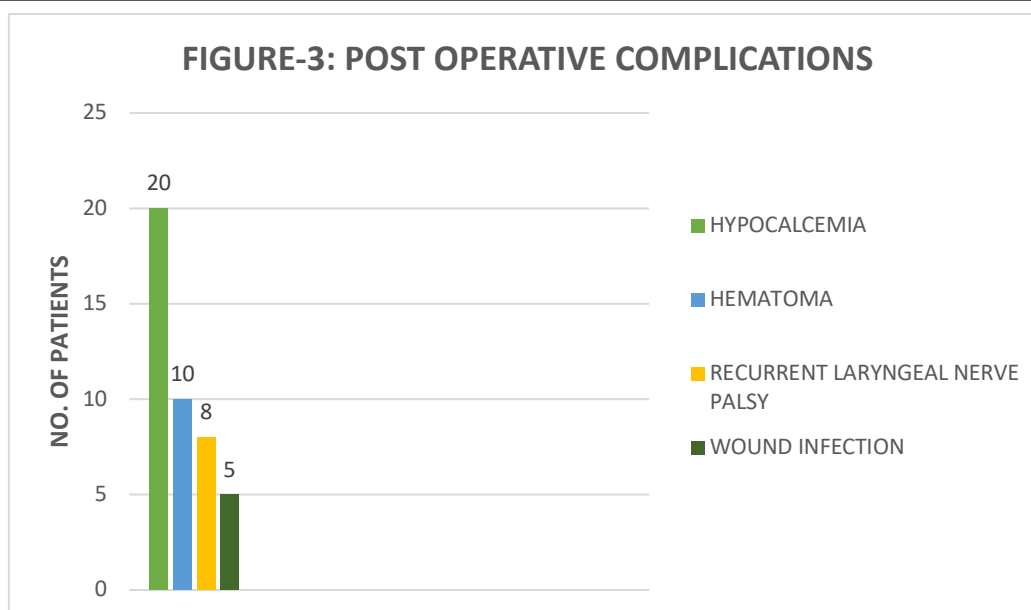
Table 1: Demographics

CHARACTERISTICS	No. of patients
AGE (years)	
<55	73
>55	50
Mean age	45
GENDER	
Male	
Female	19
COMORBIDITIES	104
Hypertension	20
Diabetes	12
Respiratory distress	04

Table 2: histologic spectrum

DIAGNOSIS	NUMBER OF PATIENTS	PERCENT (%)
FOLLICULAR VARIANT OF PAPILLARY CA	30	24.39
CLASSICAL PAPILLARY CA	13	10.56
MULTINODULAR GOITRE	31	25.20
COLLOID GOITRE	14	11.38
FOLLICULAR ADENOMA	12	9.75
LYMPHOCYTIC THYROIDITIS	9	7.31
HURTHLE CELL CA	6	4.87
MEDULLARY CA	3	2.43
POORLY DIFFERENTIATED CA	2	1.62
FOLLICULAR CA	1	0.81
ANAPLASTIC CA	1	0.81
PLASMA CELL NEOPLASM	1	0.81
Total	123	





DISCUSSION

Incidence of both neoplastic and non-neoplastic thyroid swellings in surgically treated patients varies from one part of the world to the other based on the risk factors [4,5]. Thyroid surgery is precise due to the presence of crucial anatomic structures, namely, the recurrent laryngeal nerve and the parathyroid glands. The damage to these structures during surgery can lead to dreadful long-term consequences that cannot be justified taking into consideration the indolent nature of disease. The surgeon has to strike a delicate balance between the adequacy of the surgery vis-a-vis overtreatment.

Thyroid lesions were predominant in females in our study which was consistent with studies from Hyderabad, Karachi, Saudi, and the rest of the world reporting a striking female preponderance [6,7,8]. Age 21 to 82 were listed by Darwish et al. as the range for thyroid cancer, which is nearly similar to our findings. In our study, the prevalence of benign thyroid tumours was 53.65% compared to up to 46.35% of cases were malignant. Multinodular goitre was the most common benign lesion 25.20%. This is consistent with studies where it was discovered to be the most prevalent benign pathology of the thyroid lesions [9,10,11]. Worldwide, 80% of thyroid malignancies are of papillary origin [7,12]. This is in consistent with the global trend.

In our study there were 8 patients (6.50%) of recurrent laryngeal nerve paralysis. Various studies have reported incidence of 0 -14% [9,13,14]. The hypocalcemia rates depend on various factors and reporting methods. Transient hypocalcemia rates have been reported up to 46% in the literature [15]. Our study had a hypocalcemia rate of 24.60%. The factors identified for hypocalcemia in various studies are malignancy, unintentional parathyroidectomy [16,17] and devascularization of parathyroid glands [18]. The risk increases with the extent of thyroidectomy [19] and reoperative procedures [20,21]. In addition, central compartment neck dissection increases the risk of hypocalcemia [22,23].

CONCLUSION

Thyroid cancer, even with advanced disease, is eminently treatable. Surgery forms the crux of treatment of thyroid diseases and should not be delayed if there is any doubt about the diagnosis. Aggressive histology, the extent of thyroid surgery, distant metastasis and age are important factors, which should be factored in the algorithm of thyroid cancer management. Complications of thyroid surgery can be minimized with meticulous dissection and attention to various details.

References

1. Davies L, Welch HG (2006): Increasing incidence of thyroid cancer in the United States, 1973–2002. *JAMA*, 10:2952164-7.
2. American Cancer Society (2007): Cancer Facts and Figures. Available: <http://www.cancer.org>
3. Schneider AB, Sarne DH (2005): Long-term risks for thyroid cancer and other neoplasms after exposure to radiation. *Nat. Clin. Pract. Endocrinol. Metab.*, 1:82–91.
4. Alagaratnam T. T., Ong G. B. Carcinoma of thyroid. *Br. J. Surg.*, 1979; 66; 558–61.
5. Shield JA, Farringer JL. Thyroid cancer. *Am J Surg* 1977; 133; 211–5.
6. Ahmed J, Hashmi MA, Naveed IA, Hussain A, Amin. Spectrum of malignancy in Faisalabad. 1986–1990, *Pakistan Journal of Pathology* 1995 2:3:103
7. Abdulhkam Aljarbou, Anthony Morgan, Fawaz Alshaalan et al. The Patterns of Surgically Treated Thyroid Disease in Central Rural Region of Saudi Arabia. *The Egyptian Journal of Hospital Medicine*. 2018 ;70 ; 1066-1071.
8. Nazar Hussain et al. Pattern of surgically treated thyroid disease in Karachi. *Biomedica*; Jan-june 2005; vol 21:18-20.
9. Tariq Wahat Khanzada, Waseem Meinon, Abdul Samad. An Audit of Thyroid surgery: The Hyderabad Experience. *Pakistan Armed Forces Medical Journal*; June 2011.
10. Elahi S, Manzoor-Ul-Hassan A, Syed Z, Nazeer L, Nagra SA, Hyder SW. A study of goiter among female adolescents referred to centre for nuclear medicine, Lahore. *Pak J Med Sci* 2005; 21: 56-61.
11. Niazi S, Arshad M, Muneer M. A histopathological audit of thyroid surgical specimens. *Annals King Edward Med Coll* 2007; 13: 51-6.
12. Lai S, Mandel S, Weber R (2010): Management of thyroid neoplasms. In Cummings Otolaryngology Head & Neck Surgery. Volume 2: 5th edition. Philadelphia, PA: Mosby/Elsevier.
13. Bron LP, O'Brien CJ. Total thyroidectomy for clinically benign disease of the thyroid gland. *Br J Surg* 2004; 91: 569-74.
14. Myssiorek D. Recurrent laryngeal nerve paralysis: anatomy and etiology. *Otolaryngol Clin N Am* 2004; 37: 25-44.
15. Mehanna HM, Jain A, Randeva H, Watkinson J, Shaha A. Postoperative hypocalcemia-the difference a definition makes. *Head Neck* 2010;32:279-83.
16. Sippel RS, Ozgul O, Hartig GK, Mack EA, Chen H. Risk and consequences of incidental parathyroidectomy during thyroid resection. *Aust N Z J Surg* 2007;77:33-6.
17. Sitges-Serra A, Gallego-Otaegui L, Suárez S, Lorente-Poch L, Munné A, Sancho JJ, et al. Inadvertent parathyroidectomy during total thyroidectomy and central neck dissection for papillary thyroid carcinoma. *Surgery* 2017;161:712-9.
18. Edafe O, Antakia R, Laskar N, Uttley L, Balasubramanian SP. Systematic review and meta-analysis of predictors of post-thyroidectomy hypocalcaemia. *Br J Surg* 2014;101:307-20.

19. Price DL, Wong RJ, Randolph GW. Invasive thyroid cancer: Management of the trachea and esophagus. *Otolaryngol Clin North Am* 2008;41:1155-68, ix-x.
20. Roh JL, Kim JM, Park CI. Central compartment reoperation for recurrent/ persistent differentiated thyroid cancer: Patterns of recurrence, morbidity, and prediction of postoperative hypocalcemia. *Ann Surg Oncol* 2011;18:1312-8.
21. Vaiman M, Nagibin A, Olevson J. Complications in primary and completed thyroidectomy. *Surg Today* 2010;40:114-8.
22. Henry JF, Gramatica L, Denizot A, Kvachenyuk A, Puccini M, Defechereux T, et al. Morbidity of prophylactic lymph node dissection in the central neck area in patients with papillary thyroid carcinoma. *Langenbecks Arch Surg* 1998;383:167-9.
23. McHenry CR, Speroff T, Wentworth D, Murphy T. Risk factors for postthyroidectomy hypocalcemia. *Surgery* 1994;116:641-7.