International Journal of Medicine
pISSN 1468-3814 | eISSN 2667-7008
https://theinternationalmedicine.com/

Original Researcher Article *DOI: 10.61336/im/26-04-78*

Clinicopathological Spectrum and Surgical Management of Benign Neck Swellings: A Study from a Tertiary Care Teaching Hospital.

Dr. Aravinda Sathya Seelan A P[1], Dr. Nidhi Mohan S[2*], Dr. Srikantha R[3].

[1]Assistant Professor, Department of General Surgery, Sri Madhusudan Sai Institute of Medical Sciences and Research, Karnataka, India.

[2]Assistant Professor, Department of ENT, Sri Madhusudan Sai Institute of Medical Sciences and Research, Karnataka, India.

[3]Assistant Professor, Department of General Surgery, Sri Madhusudan Sai Institute of Medical Sciences and Research, Karnataka, India.

Correspondence:
Dr. Nidhi Mohan S.
Assistant Professor, Department of ENT, Sri Madhusudan Sai Institute of Medical Sciences and Research, Karnataka, India.

Received: 02-03-2026
Revised: 24-03-2026
Accepted: 08-04-2026
Published: 27-04-2026

Abstract

Background: Benign neck swellings comprise a heterogeneous group of congenital, inflammatory, developmental, and neoplastic lesions frequently encountered in general surgery and otorhinolaryngology practice. Although the majority are non-malignant, accurate clinicopathological evaluation is essential because many lesions have overlapping clinical presentations. Appropriate surgical management based on the underlying pathology provides excellent outcomes with minimal morbidity. ***Aim:*** To evaluate the clinicopathological spectrum and surgical management of benign neck swellings in patients presenting to a tertiary care teaching hospital.

Objectives:

1. To study the demographic characteristics, clinical presentation, anatomical distribution, and histopathological spectrum of benign neck swellings.
2. To evaluate the various surgical procedures performed, postoperative complications, and surgical outcomes in patients with benign neck swellings.

Materials and Methods: A hospital-based retrospective observational study was conducted among 100 patients with histopathologically confirmed benign neck swellings who underwent surgical treatment over a five-year period at a tertiary care teaching hospital. Clinical records, radiological investigations, operative notes, histopathological reports, and follow-up data were reviewed retrospectively. ***Results:*** The mean age of patients was 39.8 ± 13.2 years, with the majority (31%) belonging to the 31–40-year age group. Females constituted 58% of the study population. Multinodular goitre (34%) was the most common benign neck swelling, followed by lipoma (18%), thyroglossal duct cyst (16%), benign parotid tumours (12%), branchial cyst (11%), dermoid cyst (5%), and reactive lymphadenopathy (4%). Thyroidectomy was the most frequently performed surgical procedure, followed by excision of lipoma, Sistrunk procedure, selective/superficial parotidectomy, branchial cyst excision, dermoid cyst excision, and excision biopsy. Postoperative complications were uncommon and included seroma (4%), transient nerve injury (3%), wound infection (3%), and haematoma (2%). Overall, 95% of patients achieved complete recovery, 92% had excellent cosmetic outcomes, 98% remained disease-free during follow-up, and the recurrence rate was 2%. ***Conclusion:*** Benign neck swellings encompass a wide clinicopathological spectrum, with thyroid disorders constituting the most common surgically managed lesions in adults. Accurate clinical evaluation supported by imaging, FNAC, and histopathological examination is fundamental for appropriate diagnosis and treatment planning. Surgical management tailored to the specific pathology provides excellent outcomes with low postoperative morbidity, high cosmetic satisfaction, and minimal recurrence. The findings of the present study support the continued role of standardized surgical techniques and multidisciplinary clinicopathological assessment in achieving optimal patient outcomes in tertiary care centres.

Keywords: Benign neck swellings; Clinicopathological spectrum; Thyroid swelling; Thyroglossal duct cyst; Branchial cyst.

INTRODUCTION

Neck swellings are among the most common clinical presentations encountered in general surgery, otorhinolaryngology, and head-and-neck surgical practice. They encompass a wide spectrum of congenital, inflammatory, developmental, and neoplastic conditions. Benign neck swellings include thyroid nodules and goitre, thyroglossal duct cysts, branchial cleft cysts, lymphangiomas, dermoid cysts, lipomas, benign salivary gland tumours, reactive lymphadenopathy, and vascular

malformations. These lesions may present with cosmetic deformity, pain, dysphagia, airway compression, recurrent infection, or pressure symptoms depending on their size and anatomical location. Accurate diagnosis is essential because benign lesions often mimic malignant diseases, making systematic clinical evaluation and appropriate investigations indispensable. [1] . Globally, benign neck swellings account for a substantial proportion of outpatient visits to general surgery and otorhinolaryngology departments. The incidence and distribution of these lesions vary according to age, geographical region, iodine status, infectious diseases, and socioeconomic factors. Congenital lesions such as thyroglossal duct cysts and branchial cleft anomalies are more frequently encountered in children and young adults, whereas thyroid swellings, lipomas, and benign salivary gland tumours are commonly observed in middle-aged and elderly individuals. Although the majority of neck swellings are benign, differentiation from malignant cervical lymphadenopathy or metastatic disease remains a major diagnostic challenge. [2]

A thorough history, meticulous clinical examination, and anatomical localization of the swelling remain the foundation of diagnosis. Modern imaging modalities, including ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI), and Doppler studies, have significantly improved the preoperative characterization of neck masses. Fine-needle aspiration cytology (FNAC) has become an indispensable, minimally invasive investigation with high sensitivity and specificity for differentiating benign from malignant lesions and guiding surgical planning. Histopathological examination following excision remains the definitive diagnostic modality and provides valuable information regarding the exact nature of the lesion and any unexpected pathological findings.[3] The management of benign neck swellings depends upon the underlying pathology, size, anatomical location, associated symptoms, cosmetic concerns, and risk of recurrence.

While reactive inflammatory swellings are generally managed conservatively, congenital cysts, benign thyroid disorders, salivary gland tumours, lipomas, dermoid cysts, and branchial cleft anomalies usually require surgical excision. Standard surgical procedures such as the Sistrunk procedure for thyroglossal duct cysts, superficial or selective parotidectomy for benign parotid tumours, thyroidectomy for thyroid disorders, and complete excision of congenital cysts have demonstrated excellent long-term outcomes with low recurrence when meticulous surgical techniques are employed.[4]. In India, benign neck swellings constitute a significant proportion of patients attending tertiary care hospitals because of the high prevalence of thyroid disorders, congenital cervical anomalies, chronic inflammatory conditions, and benign salivary gland diseases. Universal salt iodization has reduced iodine deficiency disorders; however, multinodular goitre and thyroid nodules continue to be common indications for surgery. Increasing availability of ultrasonography, FNAC, and advanced histopathological services has facilitated earlier diagnosis and more appropriate surgical management. Nevertheless, regional variations in disease patterns continue to exist, highlighting the need for institution-based clinicopathological studies to understand local epidemiology and optimize patient care.[5]

Clinicopathological evaluation plays a crucial role in correlating clinical presentation, radiological findings, cytological diagnosis, operative findings, and final histopathological diagnosis. Such correlation not only improves diagnostic accuracy but also assists in selecting the most appropriate surgical procedure, predicting prognosis, identifying rare pathological entities, and minimizing postoperative complications. Furthermore, institutional audits of benign neck swellings provide valuable information regarding disease patterns, recurrence rates, complication profiles, and treatment outcomes, thereby contributing to evidence-based clinical practice.6,7. A comprehensive study evaluating the clinicopathological spectrum and surgical management of benign neck swellings at a tertiary care teaching hospital is therefore essential for understanding the demographic characteristics, clinical profile, pathological diversity, operative procedures, and postoperative outcomes of these conditions. Such studies facilitate comparison with national and international literature, improve diagnostic protocols, refine surgical decision-making, and ultimately enhance patient outcomes. Therefore, the present study entitled "Clinicopathological Spectrum and Surgical Management of Benign Neck Swellings: A Study from a Tertiary Care Teaching Hospital" was undertaken to comprehensively evaluate the demographic profile, clinical presentation, histopathological spectrum, surgical management, and postoperative outcomes of benign neck swellings in patients managed at a tertiary care teaching institution.

Aim

To evaluate the clinicopathological spectrum and surgical management of benign neck swellings in patients presenting to a tertiary care teaching hospital.

Objectives

1. To study the demographic characteristics, clinical presentation, anatomical distribution, and histopathological spectrum of benign neck swellings.
2. To evaluate the various surgical procedures performed, postoperative complications, and surgical outcomes in patients with benign neck swellings.

MATERIALS AND METHODS

Study Design
Hospital-based retrospective observational study.

Study Population
Patients diagnosed with benign neck swellings who underwent surgical management during the study period.

Sample Size
A total of 100 patients were included in the study.

Inclusion Criteria
- Patients aged ≥18 years.
- Clinically and histopathologically confirmed benign neck swellings.
- Patients who underwent definitive surgical treatment.
- Complete medical records and histopathological reports available

Exclusion Criteria
- Malignant neck swellings.
- Metastatic cervical lymphadenopathy.
- Recurrent neck swellings previously operated elsewhere.
- Incomplete medical records.
- Patients managed conservatively without surgery.

Data Collection
Data were retrospectively collected from inpatient case records, operation theatre registers, pathology reports, radiological investigations, and follow-up records using a structured data collection proforma.

RESULTS

Table 1. Demographic profile of patients (n=100)

Variable	Frequency	Percentage
Age group (years)		
18–30	24	24.0
31–40	31	31.0
41–50	22	22.0
51–60	15	15.0
>60	8	8.0
Mean age	39.8 ± 13.2 years	
Gender		
Male	42	42.0
Female	58	58.0

Interpretation
Most patients belonged to the 31–40-year age group (31%), with a mean age of 39.8 ± 13.2 years. Females constituted 58% of the study population, indicating a slight female predominance.

Table 2. Clinicopathological spectrum of benign neck swellings

Diagnosis	Frequency	Percentage
Multinodular goitre	34	34.0
Thyroglossal duct cyst	16	16.0
Branchial cyst	11	11.0
Lipoma	18	18.0
Benign parotid tumour	12	12.0
Dermoid cyst	5	5.0
Reactive lymphadenopathy	4	4.0

Interpretation
Multinodular goitre (34%) was the commonest benign neck swelling, followed by lipoma (18%) and thyroglossal duct cyst (16%).

Table 3. Surgical procedures performed according to diagnosis

Diagnosis	Definitive surgical procedure	Number
Multinodular goitre	Hemithyroidectomy/Total thyroidectomy	34
Thyroglossal duct cyst	Sistrunk procedure	16
Branchial cyst	Complete cyst excision	11
Lipoma	Simple excision	18
Benign parotid tumour	Selective/Superficial parotidectomy	12
Dermoid cyst	Excision	5
Reactive lymphadenopathy	Excision biopsy	4

Interpretation
All patients underwent appropriate surgery according to the underlying pathology, with thyroidectomy being the most commonly performed procedure.

Table 4. Postoperative complications according to type of surgery

Complication	Thyroid surgery (n=34)	Other surgeries (n=66)	P value
Seroma	2 (5.9%)	2 (3.0%)	0.602
Wound infection	1 (2.9%)	2 (3.0%)	0.981
Transient nerve injury	2 (5.9%)	1 (1.5%)	0.218
Hematoma	1 (2.9%)	1 (1.5%)	0.641
No complications	28 (82.3%)	60 (90.9%)	0.238

Interpretation
Postoperative complications were uncommon and did not differ significantly between thyroid surgery and other procedures ($p>0.05$), indicating overall safe surgical management.

Table 5. Overall surgical outcomes

Outcome	Frequency	Percentage
Complete recovery	95	95.0
Minor complications	5	5.0
Recurrence	2	2.0
Excellent cosmetic outcome	92	92.0
Disease-free during follow-up	98	98.0

Interpretation
The overall surgical outcomes were excellent, with 95% of patients achieving complete recovery. The recurrence rate was 2%, postoperative complications were minimal, and 92% of patients reported excellent cosmetic outcomes, demonstrating the effectiveness and safety of surgical management for benign neck swellings at a tertiary care teaching hospital.

DISCUSSION

The present study evaluated the clinicopathological spectrum and surgical management of benign neck swellings in a tertiary care teaching hospital. The findings demonstrated that benign neck swellings predominantly affected young and middle-aged adults, with a slight female predominance. Thyroid swellings constituted the largest group of lesions, followed by lipomas, thyroglossal duct cysts, benign salivary gland tumours, and branchial cysts. Surgical management based on the underlying pathology resulted in excellent outcomes with minimal postoperative morbidity and a low recurrence rate. These findings are consistent with previously published national and international studies on benign neck masses.[8]

The mean age of patients in the present study was 39.8 ± 13.2 years, with the majority (31%) belonging to the 31–40-year age group. Similar findings were reported by Pynnonen et al., who observed that benign neck masses commonly present during the third and fourth decades of life, particularly thyroid swellings, congenital cysts, and benign soft-tissue tumours.[9] Likewise, Gleeson et al. reported that patients with benign cervical swellings had a mean age of approximately 38–42 years, reflecting the age distribution observed in the present study.[10]

Females constituted 58% of our study population, indicating a slight female predominance. This finding is comparable to the study by Unnikrishnan and Menon, who reported a higher prevalence of benign thyroid disorders among women owing to hormonal influences and the greater incidence of autoimmune thyroid disease.[11] Similar female predominance has also been reported in studies evaluating benign salivary gland tumours and congenital thyroid anomalies.

The present study demonstrated that multinodular goitre (34%) was the commonest benign neck swelling, followed by lipoma (18%), thyroglossal duct cyst (16%), benign parotid tumours (12%), and branchial cysts (11%). Similar observations were reported by Watkinson, who found thyroid swellings to be the leading cause of surgically treated benign neck masses in adults, whereas congenital cysts predominated among younger patients.[12] The high prevalence of thyroid lesions in our study may be explained by the continued burden of thyroid disorders in developing countries despite universal salt iodization.

Thyroglossal duct cysts represented 16% of the benign neck swellings in our series. Mondin et al. similarly reported thyroglossal duct cysts as the most common congenital cervical anomaly, accounting for nearly 70% of congenital neck masses, with most patients presenting during the second and third decades of life.[13] Likewise, branchial cleft cysts constituted 11% of our cases, which is comparable to previous reports demonstrating branchial anomalies as the second most common congenital neck lesion in adults.

Benign parotid tumours accounted for 12% of the study population, with pleomorphic adenoma being the predominant histopathological subtype. Similar findings were reported by Foresta et al., who documented pleomorphic adenoma accounting for approximately 70–80% of benign parotid neoplasms and emphasized that conservative surgical approaches provide excellent functional outcomes with low recurrence. [14]

Appropriate surgical procedures were performed according to the underlying pathology. Thyroidectomy was the commonest operation, followed by simple excision of lipomas, Sistrunk procedure for thyroglossal duct cysts, superficial or selective parotidectomy for benign parotid tumours, and complete excision of branchial cysts. Similar management strategies have been recommended in contemporary head and neck surgical guidelines, where complete surgical excision remains the definitive treatment for most benign neck swellings.[9, 12] Postoperative complications in the present study were infrequent. Seroma occurred in 4%, transient nerve injury in 3%, wound infection in 3%, and postoperative haematoma in 2%, while 88% of patients experienced no complications. These findings compare favourably with the study by Adam et al., who reported overall complication rates below 10% following elective surgery for benign neck lesions when meticulous surgical techniques and appropriate perioperative care were employed.[15]

The present study demonstrated 95% complete recovery, 92% excellent cosmetic outcomes, and a recurrence rate of only 2%. Comparable findings were reported by McGurk et al., who observed recurrence rates below 5% following complete excision of benign neck lesions, emphasizing that meticulous surgical dissection significantly reduces recurrence while improving cosmetic outcomes and patient satisfaction.[16] Similar results have also been described by O'Brien, who highlighted excellent long-term outcomes following standardized surgical management of benign head and neck lesions.[17] Overall, the findings of the present study demonstrate that the clinicopathological profile of benign neck swellings in our institution is comparable with both Indian and international literature. Early diagnosis using clinical examination, ultrasonography, and FNAC followed by appropriate surgical management resulted in excellent outcomes, low postoperative morbidity, and very low recurrence. These observations reinforce the importance of accurate clinicopathological evaluation, individualized surgical planning, and meticulous operative technique in achieving optimal management of benign neck swellings. [8–17].

CONCLUSION

The present study demonstrated that benign neck swellings are common surgical conditions, predominantly affecting young and middle-aged adults, with a slight female predominance. Multinodular goitre was the most common benign neck swelling, followed by lipoma, thyroglossal duct cyst, benign parotid tumours, and branchial cysts. Clinicopathological correlation using clinical examination, imaging, fine-needle aspiration cytology, and histopathological evaluation played a crucial role in establishing an accurate diagnosis and guiding appropriate surgical management. Surgical treatment tailored to the underlying pathology resulted in excellent clinical outcomes with minimal postoperative complications, low recurrence rates, and high patient satisfaction. The findings of the present study emphasize that meticulous surgical technique, comprehensive preoperative evaluation, and routine histopathological examination are essential for achieving optimal outcomes in patients with benign neck swellings. This study also provides valuable epidemiological and clinicopathological data that may assist clinicians in improving diagnostic accuracy and surgical decision-making in tertiary care settings.

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