

Original Article

Pleomorphic Adenoma of the Parotid Gland: A Retrospective Observational Case Series of 21 Patients at a Tertiary Care Centre

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ABSTRACT

Background: Pleomorphic adenoma is the most common benign neoplasm of the salivary glands and predominantly affects the parotid gland. It generally presents as a slowly growing, painless swelling. Surgical excision remains the definitive treatment for resectable disease. For appropriately selected tumours confined to the superficial lobe, superficial parotidectomy remains an established surgical approach. Preservation of the facial nerve is an important objective, although temporary facial nerve dysfunction is a recognised postoperative complication.

Aim: To evaluate the demographic profile, laterality, preoperative cytological diagnosis, surgical management and short-term postoperative outcomes of patients with pleomorphic adenoma of the parotid gland treated at a tertiary care centre.

Materials and Methods: A retrospective observational case series was conducted at ESIC Medical College & Hospital, Kalaburagi, Karnataka, India. Records of patients with histopathologically confirmed pleomorphic adenoma of the parotid gland who underwent surgery between January 2024 and December 2024 were reviewed. Demographic characteristics, laterality, tumour location, FNAC findings, surgical procedure, postoperative complications and six-month follow-up outcomes were recorded. Descriptive statistics were used for analysis.

Results: Twenty-one patients were included. The mean age was 45 years. There were 8 males (38.1%) and 13 females (61.9%), giving a female-to-male ratio of 1.63:1. The right parotid gland was involved in 15 patients (71.4%) and the left gland in 6 patients (28.6%). All tumours were located in the superficial lobe. FNAC was suggestive of pleomorphic adenoma in all 21 cases. All patients underwent superficial parotidectomy. Four patients (19.0%) developed postoperative complications. Temporary facial nerve injury occurred in 2 patients (9.5%), while flap necrosis and wound infection occurred in 1 patient each (4.8%). No recurrence was documented during six months of postoperative follow-up.

Conclusion: In this institutional series, pleomorphic adenoma predominantly affected females and was more frequently located on the right side. All patients had superficial-lobe tumours and underwent superficial parotidectomy. The overall documented postoperative complication rate was 19.0%, with temporary facial nerve injury being the most frequent complication. No recurrence was observed during six months of follow-up. Longer surveillance is necessary to determine long-term recurrence outcomes because pleomorphic adenoma can recur after several years.

Keywords: Pleomorphic adenoma; parotid gland; superficial parotidectomy; facial nerve injury; FNAC; postoperative complications; salivary gland tumour; retrospective observational study.

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INTRODUCTION

Pleomorphic adenoma (PA), also known as benign mixed tumour, is the most common benign neoplasm of the salivary glands and most frequently involves the parotid gland. It accounts for approximately 50–60% of parotid tumours and demonstrates considerable histological diversity, with epithelial and myoepithelial components embedded within variable stromal elements. [1]

Clinically, pleomorphic adenoma usually presents as a slowly enlarging, painless mass in the parotid region. Despite its benign nature, appropriate treatment is important because incomplete excision is associated with local recurrence. Long-standing lesions also carry a small risk of malignant transformation. Recurrence may occur several years after the initial treatment and can present as multifocal or multinodular disease. [1,2]

Fine-needle aspiration cytology (FNAC) is commonly used in the preoperative assessment of parotid swellings. It provides useful information regarding the likely nature of the lesion and assists in surgical planning. Histopathological examination following excision remains important for definitive diagnosis.

Surgical excision is the standard treatment for resectable pleomorphic adenoma. For tumours arising in the superficial lobe, superficial parotidectomy has traditionally been an established surgical procedure. The principal objectives are adequate tumour clearance and preservation of facial nerve function.

The surgical management of superficial pleomorphic adenoma has evolved over time. Limited approaches such as extracapsular dissection have been investigated for selected small and appropriately located tumours. However, the choice of surgical technique depends on tumour characteristics, anatomical location, relationship to the facial nerve and surgeon expertise. Recent systematic reviews suggest that extracapsular dissection and superficial parotidectomy may have comparable recurrence outcomes in carefully selected patients, although postoperative complication profiles differ. [3,4]

Facial nerve dysfunction remains one of the most important complications following parotid surgery because the facial nerve traverses the parotid gland. Other complications include skin-flap necrosis, wound infection, hematoma, seroma, sialocele and Frey's syndrome. Reported rates of facial nerve dysfunction vary considerably depending on the extent of surgery, tumour characteristics and timing of postoperative assessment. [5,6]

The present study describes the demographic characteristics, laterality, FNAC findings, surgical management and short-term postoperative outcomes of patients with pleomorphic adenoma treated at ESIC Medical College & Hospital, Kalaburagi.

AIM

To evaluate the demographic profile, clinical characteristics, surgical management and short-term postoperative outcomes of patients with pleomorphic adenoma of the parotid gland at a tertiary care centre.

OBJECTIVES

- To determine the age distribution of patients with pleomorphic adenoma.
- To determine the sex distribution of the study population.
- To assess the laterality of parotid gland involvement.
- To evaluate the preoperative FNAC findings.
- To document the anatomical location of the tumours.
- To assess the surgical management by superficial parotidectomy.
- To determine the incidence of postoperative facial nerve injury.
- To document other postoperative complications.
- To assess recurrence during six months of postoperative follow-up.

MATERIALS AND METHODS

Study Design

This was a retrospective observational case series.

Study Setting

The study was conducted jointly by the Department of Otorhinolaryngology and Head & Neck Surgery and Department of General Surgery, ESIC Medical College & Hospital, Kalaburagi, Karnataka, India.

Study Period

The study period was from 1 January 2024 to 31 December 2024.

Study Population

Patients diagnosed with pleomorphic adenoma of the parotid gland who underwent surgical management at the study centre during the study period were considered for inclusion. A total of 21 patients with histopathologically confirmed pleomorphic adenoma were included.

Inclusion Criteria

- Had a parotid gland tumour diagnosed as pleomorphic adenoma.
- Underwent superficial parotidectomy at the study centre.
- Had postoperative histopathological confirmation of pleomorphic adenoma.
- Were treated during the study period.
- Had documented six-month postoperative follow-up.

Exclusion Criteria

- Had malignant parotid neoplasms.
- Had tumours arising from salivary glands other than the parotid.
- Had undergone primary surgery at another institution.
- Had incomplete records regarding diagnosis or postoperative outcome.

Data Collection

Data were retrospectively collected from patient case records, outpatient records, operative notes, FNAC reports, histopathology reports and postoperative follow-up records.

The following variables were assessed:

- Age
- Sex
- Side of parotid involvement
- Tumour location
- FNAC diagnosis
- Surgical procedure
- Postoperative facial nerve status
- Skin-flap status
- Wound status
- Recurrence during follow-up

Preoperative Evaluation

All patients underwent clinical assessment and FNAC as part of their preoperative evaluation. FNAC was reported as suggestive of pleomorphic adenoma in all 21 patients. All tumours were clinically and/or radiologically assessed as being located in the superficial lobe.

Surgical Management

All patients underwent superficial parotidectomy. The facial nerve was identified and dissected during surgery, with preservation attempted in all cases. The tumour was excised along with the involved superficial parotid tissue.

Histopathological Examination

The final diagnosis was established by postoperative histopathological examination. Only patients with histopathologically confirmed pleomorphic adenoma were included in the final analysis.

Assessment of Postoperative Complications

Postoperative complications documented in the medical records were recorded. Facial nerve injury was classified as temporary based on subsequent clinical recovery documented during follow-up. Flap necrosis and wound infection were recorded when clinically documented. Formal House-Brackmann grading was not available in the retrospective dataset.

Follow-up

Patients were followed clinically for six months following surgery. During follow-up, patients were assessed for postoperative complications and clinical evidence of recurrence. No recurrence was documented during the six-month follow-up period.

Statistical Analysis

Categorical variables were expressed as frequencies and percentages. Age was expressed as mean age. Given the small sample size and descriptive nature of the study, inferential statistical testing and multivariable analysis were not performed.

RESULTS

Demographic Characteristics

A total of 21 patients with histopathologically confirmed pleomorphic adenoma were included. The mean age of the study population was 45 years. There were 8 males (38.1%) and 13 females (61.9%), resulting in a female-to-male ratio of 1.63:1.

Variable	Number	Percentage
Total patients	21	100%
Male	8	38.1%
Female	13	61.9%
Mean age	45 years	—

Laterality

The right parotid gland was involved in 15 patients (71.4%), while the left gland was involved in 6 patients (28.6%).

Side	Number	Percentage
Right	15	71.4%
Left	6	28.6%
Bilateral	0	0%
Total	21	100%

Tumour Location and FNAC

All 21 tumours were located in the superficial lobe of the parotid gland. FNAC was suggestive of pleomorphic adenoma in all 21 patients.

Variable	Number	Percentage
Superficial-lobe tumour	21	100%
Deep-lobe tumour	0	0%
FNAC suggestive of pleomorphic adenoma	21	100%

Surgical Management

All 21 patients underwent superficial parotidectomy.

Procedure	Number	Percentage
Superficial parotidectomy	21	100%

Postoperative Complications

Four patients developed at least one postoperative complication, giving an overall documented complication rate of 19.0%. Temporary facial nerve injury was observed in 2 patients (9.5%). Flap necrosis occurred in 1 patient (4.8%), while wound infection occurred in 1 patient (4.8%).

Complication	Number	Percentage
Temporary facial nerve injury	2	9.5%
Flap necrosis	1	4.8%
Wound infection	1	4.8%
Patients with ≥ 1 complication	4	19.0%
No documented complication	17	81.0%

Six-Month Follow-up

All 21 patients had six months of postoperative follow-up. No clinical recurrence was documented during this period.

Outcome	Number	Percentage
No documented recurrence	21	100%
Documented recurrence	0	0%
Follow-up duration	6 months	—

DISCUSSION

The present retrospective observational case series describes 21 patients with pleomorphic adenoma of the parotid gland treated at ESIC Medical College & Hospital, Kalaburagi, during 2024.

The mean age of presentation in our series was 45 years. Pleomorphic adenoma is commonly diagnosed during the fourth and fifth decades of life, although it may occur across a broad age range.

A female predominance was observed, with 13 females (61.9%) and 8 males (38.1%). The female-to-male ratio was 1.63:1. Female predominance has been described in several published series of pleomorphic adenoma and benign parotid tumours. [5,6]

The right parotid gland was involved in 15 patients (71.4%), compared with 6 patients (28.6%) involving the left gland. The apparent right-sided predominance in our series should be interpreted cautiously because of the small sample size. There is insufficient evidence from this study to suggest a biological predilection for right-sided disease. All tumours in our series were located in the superficial lobe. This finding was consistent with the surgical approach adopted, as all patients underwent superficial parotidectomy.

FNAC was suggestive of pleomorphic adenoma in all 21 cases. The 100% concordance observed in this series is noteworthy; however, it should not be interpreted as a formal estimate of FNAC sensitivity or specificity. Since only histopathologically confirmed pleomorphic adenomas were included, the study lacked a control group comprising other benign and malignant parotid lesions.

Superficial parotidectomy was performed in all patients. The procedure remains an established treatment for appropriately selected superficial-lobe pleomorphic adenomas. The fundamental surgical objectives are complete tumour removal and preservation of the facial nerve.

The literature regarding the extent of surgery for pleomorphic adenoma has evolved. Contemporary studies have evaluated extracapsular dissection and partial superficial parotidectomy as alternatives in selected small, superficial lesions. A 2014 meta-analysis comparing extracapsular dissection with superficial parotidectomy reported differences in recurrence, facial nerve paralysis and Frey's syndrome, although the authors emphasised the heterogeneity of the available literature. [3] More recent evidence suggests that, in carefully selected small pleomorphic adenomas, recurrence may be similar between extracapsular dissection and superficial parotidectomy, with lower rates of transient facial nerve palsy following extracapsular dissection. [4]

However, our study was not designed to compare surgical techniques. Therefore, the findings should be interpreted as an institutional experience with superficial parotidectomy rather than evidence supporting its superiority over alternative approaches.

The overall postoperative complication rate in our study was 19.0%. Temporary facial nerve injury was the most common complication, occurring in 2 patients (9.5%). Both injuries were temporary.

Facial nerve dysfunction is a recognised complication of parotid surgery. Its reported incidence varies substantially according to the timing of assessment and the criteria used to define dysfunction. A prospective study of 79 patients undergoing superficial parotidectomy for pleomorphic adenoma reported facial paresis in 77.2% at one week, with 94.9% recovering facial function by six months and complete recovery by 12 months. [5]

Another study of 235 consecutive parotidectomies for benign parotid tumours reported temporary facial nerve dysfunction in 26.3% and permanent dysfunction in 1.7% of patients. [6]

The 9.5% temporary facial nerve injury rate in our series therefore falls within the range reported in published literature. The fact that both injuries were temporary is clinically reassuring. Nevertheless, because House-Brackmann grades and exact time to recovery were not available, further quantitative comparison with studies using standardised facial nerve grading is not possible.

Flap necrosis occurred in one patient (4.8%). Skin-flap viability is an important consideration following parotidectomy. Preservation of the subdermal vascular plexus, avoidance of excessive flap thinning and careful wound closure can help minimise this complication.

Wound infection occurred in one patient (4.8%). Although postoperative wound infection is relatively uncommon following parotid surgery, careful aseptic technique, appropriate perioperative management and postoperative wound care are important for prevention and early treatment.

No recurrence was documented during six months of follow-up. This represents a favourable short-term outcome but should not be interpreted as evidence of long-term recurrence-free survival. Pleomorphic adenoma is characterised by the potential for late recurrence, and recurrence can occur years after apparently adequate initial treatment. A systematic review identified tumour-related factors such as myxoid histology, incomplete or thin capsule, pseudopodia and satellite nodules, as well as surgical factors including positive margins and tumour spillage, as variables associated with recurrence. [1]

Published literature also indicates that recurrence may occur 2–15 years after initial surgery, underscoring the importance of prolonged follow-up. [1] Therefore, continued surveillance of the present cohort beyond six months would be valuable.

The principal strength of this study is the uniformity of the surgical approach and the histopathological confirmation of all cases. The study also provides institution-specific data from a tertiary care teaching hospital.

Limitations

- The retrospective design makes the study dependent on the completeness and accuracy of existing medical records.
- The sample size was small, with only 21 patients, limiting the precision and generalisability of the findings.
- This was a single-centre study and all patients had superficial-lobe tumours treated by superficial parotidectomy. Consequently, the findings cannot be extrapolated to deep-lobe tumours or alternative surgical approaches.
- The study did not include a comparison group and therefore cannot establish the superiority or inferiority of superficial parotidectomy compared with extracapsular dissection or other procedures.
- Detailed tumour dimensions, margin status, capsule characteristics, histological subtypes, tumour spillage and operative duration were not available for analysis.
- Although all patients had six-month follow-up, this duration is insufficient to reliably assess long-term recurrence of pleomorphic adenoma.
- Facial nerve dysfunction was recorded as temporary injury, but standardised House-Brackmann grading and exact time to recovery were not available.

CONCLUSION

Pleomorphic adenoma of the parotid gland in this institutional series demonstrated a female predominance, with a female-to-male ratio of 1.63:1 and a mean age of 45 years. The right parotid gland was involved in 71.4% of patients. All tumours were located in the superficial lobe, FNAC was suggestive of pleomorphic adenoma in all cases, and all patients underwent superficial parotidectomy.

The overall documented postoperative complication rate was 19.0%. Temporary facial nerve injury was the most frequent complication, occurring in 9.5% of patients, while flap necrosis and wound infection occurred in 4.8% each. No recurrence was documented during six months of follow-up. However, because pleomorphic adenoma can recur after prolonged intervals, long-term follow-up is essential.

This institutional experience demonstrates favourable short-term outcomes following superficial parotidectomy for superficial-lobe pleomorphic adenoma, while highlighting temporary facial nerve dysfunction as an important postoperative complication. Larger studies with longer follow-up and standardised facial nerve assessment are required to establish long-term functional and oncological outcomes.

DECLARATIONS

Ethics Approval

The study was conducted following approval from the Institutional Ethics Committee of ESIC Medical College & Hospital, Kalaburagi, Karnataka, India.

Consent for Participation

As this was a retrospective observational study based on existing medical records, the requirement for individual informed consent should be reported according to the decision of the Institutional Ethics Committee.

Consent for Publication

Not applicable. No personally identifiable patient information is presented.

Conflict of Interest

The authors declare that they have no conflict of interest.

Funding

No external funding was received for this study.

Data Availability

The data supporting the findings of this study are available from the corresponding author, subject to institutional policies and ethical restrictions.

Author Contributions

Dr. Akash Anadure: Conceptualisation, study design, data collection, analysis, interpretation of results, manuscript preparation and final approval.

Dr. Rashmi S N: Data collection, clinical management, interpretation of results, manuscript review and final approval.

Both authors agree to be accountable for all aspects of the work and for ensuring the accuracy and integrity of the study.

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