Original Research Article

Clinical Profile and Management of Parotid Tumours: An Observational Study

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Abstract

Introduction: Parotid tumours are the most common salivary gland tumours. Due to its insidious onset as a slow growing mass, it may remain unnoticed by the patient. Surgery is the mainstay of management. Presence of facial nerve in its close vicinity makes it susceptible to injury and hence facial palsy. **Aims and Objective:** This study aims to enumerate the various clinical presentations, surgery and its complications along with emphasis on methods to mitigate and manage them. **Materials and Methods:** An observational study comprising of 35 patients presenting at Bhagat Phool Singh Government Medical College, Sonipat, above 20 years of age with newly diagnosed parotid tumours requiring parotid surgery were included in the study. Superficial parotidectomy was performed in 77.15 %, Total conservative parotidectomy in 20% cases and total parotidectomy with MRND in 2.85% cases. Special emphasis was paid to preserve facial nerve and posterior branch of greater auricular nerve. Pre - operative tumor assessment was done with the use of imaging modalities like USG, CT/ MRI to know deeper lobe, facial nerve or adjacent structures/ planes involvement. Facial nerve was identified clinically by using markers like posterior belly of digastric and tragal pointer. Other complications were avoided by measures like proper hemostatic measures, aseptic precautions, and antibiotic coverage. **Results:** The most common tumour encountered was Pleomorphic adenoma (57.14%) succeeded by Warthins tumour (20%). In malignant tumours, mucoepidermoid carcinoma was diagnosed in 8.57% cases and adenocystic carcinoma in 5.71% cases. Post operative complications included 14.28% with temporary facial palsy and 5.71% with permanent facial palsy, 11.42% with hypoaesthesia around ear lobule. Hematoma and Frey syndrome was seen in 2.85% patients each.**Conclusion:** Parotid tumours are the most common salivary gland tumours with its insidious onset and usually slow growing nature, it may remain unnoticed by the patient. Surgery is the mainstay of management. Presence of facial nerve in its close vicinity makes it susceptible to injury and hence facial palsy. However, proper clinical, pre-operative imaging assessment and histopathology of the tumor give a better idea about surgical planning and a clear knowledge of the anatomical structures. So with better surgical techniques and care, post operative complications and recurrence can be reduced to improve patient's Quality of life.

Keywords: Parotid Tumours, Surgery, Warthins Tumour, Adenocystic Carcinoma.

Introduction

Salivary gland tumours comprise of approximately 3% of all head and neck malignancies[1]. The most common of them being parotid tumours, followed by submandibular, minor salivary glands and rarely sublingual gland tumors. Most prevalent parotid tumour being Pleomorphic adenoma accounting for 86% of parotid tumours, ensued by Warthin's tumour representing 10%[2].These tumours have an insidious onset and hence remain unnoticed by the patient until they cause discomforting symptoms in the form of a firm painful mass in parotid region or facial weakness. Ulceration on skin and pain are more prevalent in malignant tumours.Investigations for diagnosis include FNAC and imaging techniques like USG and CT scan to know the deeper extent of parotid gland involvement by the tumor i.e. deep lobe and facial nerve involvement. Involvement of adjacent planes, major vasculature and other structures also assessed. In 3 suspicious cases, MRI neck was also performed to assess deeper lobe and facial nerve involvement. FNAC has an accuracy of around

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87%[3]. Surgery remains mainstay treatment in the form of superficial, partial, total or extended parotidectomy. Historically, parotidectomy was first described by German surgeon Lorenz Heister in 1765. George McClellan first performed parotidectomy in 1805. German surgeon Ferdinand Heyfelder first described parotidectomy with preservation of facial nerve thus maintaining its function. Radiotherapy and chemotherapy may be employed in malignancies. Modified Radical Neck Dissection is done in case of lymph node involvement.Post surgically, complications pursue namely haemorrhage, hematoma, infection, cosmetic problems like scar/ keloid, sialoceles, salivary fistulas, Frey's syndrome, most feared being facial nerve dysfunction and tumour recurrence[4]. The close anatomical proximity of the facial nerve to the parotid paves way for increased risk of its injury. In case of neuropraxia, injury may lead to temporary facial palsy. Transecting injuries may lead to permanent facial palsy. Hence a clear knowledge of the anatomical structures is inevitably essential. Apart from this, advanced age, long operation time, large tumour mass and revision cases have a higher risk of developing facial palsy[5]. Recurrences are seen more commonly in malignant tumours, mainly due to incomplete removal or rupture of the capsule of the mass.This study was done to evaluate various clinical, surgical and post operative aspects of parotid tumours. Special emphasis on complications of post parotid surgery is made so that better attention can be paid to patient's Quality of life post operatively.

Materials and Methods

This observational study was conducted on 35 patients, who presented to the ENT OPD at Bhagat Phool Singh Government Medical College, Sonipat, with newly diagnosed parotid tumours. Patients above 20 years of age with newly diagnosed parotid disorders requiring parotid surgery were included in the study. Patients with a recurrence of disease and those who had received radiation therapy previously were excluded. After a detailed clinical examination all 35 patients underwent pre - operative tumor assessment with the use of imaging modalities like USG, CT/ MRI to know deeper lobe, facial nerve or adjacent structures/ planes involvement. In 3 suspicious cases, MRI neck was also performed to assess deeper lobe and facial nerve involvement. After pre-anaesthetic check-up, patients were operated under general anaesthesia. A standard parotidectomy incision i.e. Modified Blairs incision was given and an anterior skin flap containing subcutaneous fat, was raised superficial to parotid fascia. Preservation of posterior division of Greater Auricular nerve was attempted. Facial nerve was identified using markers like posterior belly of digastric and tragal pointer. All its branches were then identified sequentially and meticulously. For deep lobe tumours, Total parotidectomy was done, wherein branches were first segregated from the underlying gland, which was then mobilized and removed. Large tumours >6cm were required reconstruction of skin defect with flap. Modified radical neck dissection was done in case of lymph node involvement. To prevent complications like seroma or salivary fistula, a drain was placed for at least 48hrs. To prevent Frey's syndrome, techniques such as use of superficial temporal artery based temporoparietal vascular flap, raising a thick skin flap, employing Superficial musculoaponeurotic system and rotating sternocleidomastoid flaps were used. To prevent recurrences, the tumour was removed completely without rupturing the capsule.Patients were then followed up for the next 6 months to watch for any complications and give appropriate medical treatment. At 48hrs patient was assessed for hematoma, seroma, infection, ear lobe numbness, facial paralysis; at 1 week for ear lobule numbness, facial paralysis, flap necrosis; and at 1 month/ 3 months/6 months for facial paralysis, Frey's syndrome and salivary fistula.House Brachman grading system was employed whenever required for facial palsy. For diagnosing Frey's Syndrome, Minor Starch Iodine test was used. Histopathological study of tumour masses was also done.

Results

A total of 35 patients were included in his study. Out of them, 14 were male and 21were female (Table 1). The most common age group of presentation of benign parotid tumours was 31-40 years and >50 years for malignant tumours (table 2). Benign tumours accounted for 82.8% of the cases while malignant tumors for 17.1% of the cases (table 2).Majority of the patients i.e. 62% patients with parotid tumours presented with an asymptomatic mass, 57% were benign and 5% malignant. Next common presentation was pain at 31.4%, followed by facial nerve involvement, fixity to skin and lymphadenopathy. (Fig 1).Parotid tumour had involved the superficial lobe in 77.14% cases, deep lobe in 20% and both lobes in 2.85% cases according to imaging findings and intra-operative assessment (Table 3).Superficial parotidectomy was performed in 77.14% while total conservative parotidectomy was performed in 20% cases and total parotidectomy with MRND in 2.85% cases (Table 4).The Facial nerve was carefully identified in all cases using tragal pointer and posterior belly of digastric as landmarks, and its branches were attempted to be preserved. Preservation of posterior branch of Greater Auricular nerve was attempted. However, post operatively, 11.42% patients experienced hypoaesthesia around ear lobule, 14.28% had signs of facial palsy. Out of the 5 patients with facial palsy, 3 had grade II and III which resolved within 6 months post operatively. 2 patients had grade IV and V facial palsy which improved to grade III and IV respectively in 6 months post operatively. Other complications observed were hematoma and Frey's syndrome at 2.85% each. Complications like seroma, wound infection and hypertrophic scar were not observed (Table 5).

The most common tumour encountered histopathologically was Pleomorphic adenoma i.e. 57.14%, followed by Warthins tumour 20%. Monomorphic adenoma, oncocytoma and hemangioma each accounted for 2.8% of cases. In malignant tumours, mucoepidermoid carcinoma was found to be in 8.57% cases and adenocystic carcinoma in 5.71% cases (Table 6).

Table 1: Sex distribution of patients presented with parotid tumor

Sex of patients	No. of cases
Male	14
Female	21

Table 2: Age group distribution of patients presented with parotid tumor and outcome in reference to tumor nature

Age group distribution of patients (years)	No. of cases and tumor outcome	
	Benign	Malignant
21-30	1	0
31-40	11	1
41-50	8	1
51-60	5	2
>60	4	2
Total	29 (82.8%)	6 (17.1%)

Table 3: Extent of parotid gland involvement by the tumor and outcome in reference to tumor nature

Lobe involved	Benign	Malignant	Percentage
Superficial	27	0	77.14%
Deep	2	5	20%
Both	0	1	2.85%

Table 4: Type of surgery performed

Type of surgery	n	%
Superficial parotidectomy	27	77.14%
Total conservative parotidectomy	7	20%
Total parotidectomy + MRND	1	2.85%

Table 5: Post- operative Complications

Complications	n	%
Hematoma	1	2.85%
Seroma	0	0%
Wound infection	0	0%
Numbness over lobule	4	11.42%
Facial palsy (temporary <6months)	5	14.28%
Facial palsy (permanent >6months)	2	5.71%
Frey's syndrome	1	2.85%
Hypertrophic scar	0	0%
Recurrence	0	0%

Table 6: Tumor nature outcome

Histopathology	n	%
Pleomorphic adenoma	20	57.14%
Warthins tumour	7	20%
Monomorphic adenoma	1	2.80%
Oncocytoma	1	2.80%
Hemangioma	1	2.80%
Mucoepidermoid Carcinoma	3	8.57%
Adenocystic carcinoma	2	5.71%

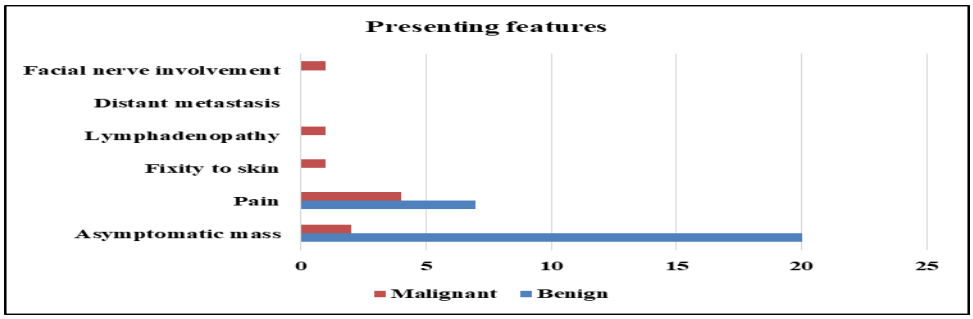

Fig 1: Clinical features of patients presented with parotid tumor

Discussion

In the present study, it was found that the typical age of presentation of benign parotid tumours was the fourth decade and for malignant tumours was >50 years (Table 2). A similar study by Ramdass MJ et al found the mean age of presentation being 48.7 years in Indian population.In the Western population, this mean age was found to be 54 years in a study by Koch M et al[6,7].The present study found the ratio of benign: malignant parotid tumours as 7:1 i.e 82.8 % benign and 17.1 % malignant (Table 2). Studies by CM Eneroth concluded that 18% of parotid tumours are malignant while the rest 82% are benign[8]. A study by Medikeri A et al concluded with benign to malignant parotid tumour ratio as 8:1[9].The most common presenting symptom in the study was as asymptomatic mass (62%) of which 2 were malignant, followed by pain (31%) (Fig 1). This is corroborated in studies by Venkatesh et al that most common presentation of parotid tumour clinically is in the form of a swelling below or in front of the ear. This is succeeded by pain (13.56%), recurrence of tumour (5.09%), ulceration of swelling (3.39%), facial palsy (1.70%) and trismus (1.70%)[10]Our study indicates Pleomorphic adenoma as most common benign parotid tumour followed by Warthins tumour (Table 6), as agreed by multiple studies too. A study by Ghosh A et al shows that the incidence of pleomorphic adenoma was 82% followed by Warthins tumour at 8% [11]. Similar results were concluded in a study by Israel Y et al who found 64% cases of Pleomorphic adenoma, 23% of Warthins tumour, 31% mucoepidermoid carcinoma and 16% adenocystic carcinoma [12]Facial palsy was the most common complication post operatively. 14.28% patients had temporary facial palsy i.e. for < 6months duration and 5.71% patients had permanent facial palsy i.e. of > 6 months duration. Amongst these 8% had undergone superficial parotidectomy (Table 5). Bron LP et al had incidence of temporary facial palsy at 29% and permanent facial palsy at 5.6%[13]The second most common complication seen was numbness over ear lobe i.e. 11.42% (Table 5). As seen in other studies by Brown JS et al this incidence was 17% as compared to Chaudhary VK et al at 13.33%[4].Incidence of Frey's syndrome was found to be 2.8% in the present study due to surgical techniques as described (Table 5). This incidence was found to be decreased as described by Zhao et al by preserving the sub SMAS alone or along with Sternocleidomastoid flap[15].Witt et al concluded that Frey's

syndrome was more common with superficial parotidectomy as compared to Extra capsular dissection[16].To advert the most common complication i.e. facial nerve palsy, measures such as good knowledge of anatomy and careful identification of facial nerve, blunt dissection and avoiding usage of cautery in proximity of the nerve were employed. Study by Lopez et al employed nerve monitoring to reduce risk of facial nerve dysfunction[17]. O' Regan et al used retrograde technique of facial nerve identification and demonstrated a higher incidence of post op facial nerve palsy in contrast to other techniques[18]. Romano et al found that superficial and total parotidectomy had greater incidence of facial palsy, while more wound complications were seen post extra capsular dissection and partial superficial parotidectomy[19]. Conservative treatment with physiotherapy, eye care and patient counselling is essential to be done. Though frequent, complications like hypoaesthesia of ear lobe can be avoided by preserving the posterior division of Greater auricular nerve. A study by Beerens et al demonstrated the use of Botulinium toxin in management of Frey's Syndrome[20]. Less common complications namely hematoma, wound infection can be prevented by proper hemostatic measures, aseptic precautions, and antibiotic coverage.

Conclusion

Parotid tumours are the most common salivary gland tumours with its insidious onset and usually slow growing nature, it may remain unnoticed by the patient. Surgery is the mainstay of management. Presence of facial nerve in its close vicinity makes it susceptible to injury and hence facial palsy. However, proper clinical, pre-operative imaging assessment and histopathology of the tumor give a better idea about surgical planning and a clear knowledge of the anatomical structures. This study was done to evaluate various clinical, surgical and post operative aspects of parotid tumours. So with better surgical techniques and care, post operative complications and recurrence can be reduced. Special emphasis on complications of post parotid surgery is made so that better attention can be paid to patient's Quality of life post operatively.

References

1. Eveson JW, Cawson RA. Salivary gland tumours. A review of 2410 cases with particular reference to histological types, site, age and sex distribution. The Journal of pathology. 1985; 146(1):51-8.
2. Subhashraj K. Salivary gland tumors: a single institution experience in India. British Journal of Oral and Maxillofacial Surgery. 2008; 46(8):635-8.
3. Javadi M, Asghari A, Hassannia F. Value of fine-needle aspiration cytology in the evaluation of parotid tumors. Indian Journal of Otolaryngology and Head & Neck Surgery. 2012; 64(3):257-60.
4. Chaudhary VK, Rawat DS, Tailor M, Verma PC, Aseri Y, Singh BK. Post parotidectomy quality of life in patients with benign parotid neoplasm: a prospective study. Indian Journal of Otolaryngology and Head & Neck Surgery. 2019; 71(1):363-8.
5. Guntinas-Lichius O, Gabriel B, Peter Klussmann J. Risk of facial palsy and severe Frey's syndrome after conservative parotidectomy for benign disease: analysis of 610 operations. Acta oto-laryngologica. 2006; 126(10):1104-9.
6. Ramdass MJ, Maharaj K, Mooteeram J, Dwarika W, Tilluckdharry C, Barrow S. Parotid gland tumours in a West Indian population: Comparison to world trends. Molecular and clinical oncology. 2015; 3(1):167-70.
7. Mantsopoulos K, Koch M, Klintworth N, Zenk J, Iro H. Evolution and changing trends in surgery for benign parotid tumors. The laryngoscope. 2015; 125(1):122-7.
8. Eneroth CM. Salivary gland tumors in the parotid gland, submandibular gland, and the palate region. Cancer. 1971; 27(6):1415-8.
9. Medikeri A, Kamatagi P. Clinical profile of patients with salivary gland tumours. International Journal of Surgery Science. 2020; 4:91-3.
10. Venkatesh S, Srinivas T, Hariprasad S. Parotid gland tumors: 2-year prospective clinicopathological study. Annals of maxillofacial surgery. 2019; 9(1):103.
11. Ghartimagar D, Ghosh A, Shrestha MK, Thapa S, Taiwar OP. Histopathologic Profile of Salivary Gland Tumors among Specimens from a Tertiary Care Hospital: A Descriptive Cross-sectional Study. JNMA: Journal of the Nepal Medical Association. 2020; 58(230):729.
12. Israel Y, Rachmiel A, Ziv G, Nagler R. Benign and malignant salivary gland tumors–clinical and demographic characteristics. Anticancer research. 2016; 36(8):4151-4.
13. Bron LP,Brien CJ. Facial nerve function after parotidectomy. Archives of Otolaryngology–Head & Neck Surgery. 1997; 123(10):1091-6.
14. Brown JS, Ord RA. Preserving the great auricular nerve in parotid surgery. British Journal of Oral and Maxillofacial Surgery. 1989; 27(6):459-66.
15. Zhao HW, Li LJ, Han B, Liu H, Pan J. Preventing post-surgical complications by modification of parotidectomy. International journal of oral and maxillofacial surgery. 2008; 37(4):345-9.
16. Witt RL. The significance of the margin in parotid surgery for pleomorphic adenoma. The Laryngoscope. 2002; 112(12):2141-54.
17. López M, Quer M, León X, Orús C, Recher K, Vergés J. Usefulness of facial nerve monitoring during parotidectomy. Acta otorrinolaringologica espanola. 2001; 52(5):418-21.
18. O'Regan B, Bharadwaj G, Bhopal S, Cook V. Facial nerve morbidity after retrograde nerve dissection in parotid surgery for benign disease: a 10-year prospective observational study of 136 cases. British Journal of Oral and Maxillofacial Surgery. 2007; 45(2):101-7.
19. Romano A, Cama A, Corvino R, Graziano P, Friscia M, Iaconetta G, Califano L. Our experience. Ann. Ital. Chir. 2017; 88(4):295-301.
20. Beerens AJ, Snow GB. Botulinum toxin A in the treatment of patients with Frey syndrome. Journal of British Surgery. 2002; 89(1):116-9.

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