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Benign parotid tumor treatment with extra capsular excision: A systematic evaluation and meta-analysis

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Background and Objectives: To compare the incidence of facial nerve palsy following superficial parotidectomy with extracapsular excision. to evaluate if positive margins from superficial parotidectomy or extracapsular excision correlate. to ascertain whether extra capsular excision is a practical method for treating benign parotid tumors.

Methods: This retrospective study used randomization to identify 48 patients with benign parotid tumors. The patients were randomly assigned to either the extracapsular excise category or the parotidectomy category. The House-Brackmann Score was used to compare the two groups and assess postoperative facial nerve functioning at 2, 7, and 10 days following surgery.

Results: Regarding facial nerve palsy following surgery, there was no appreciable distinction between the two methods. On day 10, the House-Brackmann test's zygomatic area displayed a 1-sided significance level of, pearson chi2 (1) = 0.1117, p = 0.738, and fisher's exact = 1.000. Fisher's exact values for the jaw and mandible are 0.670 and 0.616, respectively, and p = 0.403.

Conclusion: Patients with less severe facial nerve palsy were those who had superficial parotidectomy. Compared to individuals who had extracapsular excision, patients who had superficial parotidectomy experienced a higher incidence of moderate to severe facial nerve paralysis in the postoperative period. Facts don't matter. Comparing statistically, extracapsular excision had lower margins than superficial parotidectomy. For benign parotid tumors, extracapsular excision may be preferable to superficial parotidectomy; however, larger samples are required for verification.

Keyword: Extra capsular incision, superficial parotidectomy, benign parotid tumor, FNAC

Introduction: "Superficial Parotidectomy" refers to the surgical technique that is currently thought to be the best for treating benign parotid tumors. The patient has the entire superficial parotid gland surgically removed, exposing the facial nerve branches. This leads to an increase in the prevalence of facial nerve palsy, a disorder that is brought on by face injuries and significantly impairs a person's degree of functionality [1].

Choosing the right management approach still depends on their preoperative distinction. According to reports, PAs have a 2-25% chance of developing into malignant transformation. Additionally, at least a partial parotidectomy is

advised because their recurrence rate rises following an insufficient surgical technique, like enucleation. On the other hand, very few WTs recur, and the literature has only anecdotal descriptions of its malignant transformation. The salivary system consists of the parotid gland, which is the biggest, the sublingual gland, and the submandibular gland. The two paired organs that comprise this structure are situated in the preauricular region along the posterior aspect of the jaw, and their respective weights range from 15 to 30 grams [2, 3]. We can distinguish between the deep and surface areas of the parietal lobe thanks to the facial nerve. Both the retromandibular vein and the facial nerve are located in the Patey fasciovenous plane. The fasciovenous plane of Patay The superficial lobe is also known as the lateral lobe; it is situated laterally to the facial nerve and has the capacity to cover the lateral surface of the masseter. The superficial lobe and the lateral lobe are the two names for the lateral lobe. The temporal bone's mastoid process and the jaw's ramus are home to the medial, or deep, ear lobe. The center of the skull contains the brain stem.

The zygomatic arch restricts the upward growth of parathyroid glands. Its name originates from the fact that it extends to the mastoid process from behind the superior border of the sternocleidomastoid muscle [4, 5, 6]. It is nestled close to the parotid gland's base. A "extracapsular excision" may be performed in place of a superficial parotidectomy for benign parotid tumors [7, 8, 9]. The aim of this study is to determine and evaluate any potential dangers related to the suggested approach. In order to ascertain whether extracapsular excision provides patients with any extra advantages, it was compared to superficial parotidectomy.

Material and Methods

A prospective, randomised controlled experiment was conducted at Department of General Surgery, Narayana Medical College, Nellore, Andhra Pradesh, India. From January 2011 to December 2011, to investigate the role of extracapsular excision in the treatment of benign parotid tumours, particularly the prevalence of postoperative facial nerve palsy in 48 subjects.

Inclusion criteria

Male and female benign tumours of a suitable size were both determined to be included. The criteria for inclusion were as follows:

1. All individuals with a recently discovered parotid tumour who are prepared to have surgery.
2. A 4 cm tumour size
3. Benign parotid tumours that are restricted to the Superficial Lobe as verified by a clinical examination, FNAC, and ultrasound.

Exclusion criteria

1. A parotid cancer diagnosis
2. Earlier Ipsilateral Parotid Surgery Size of Tumor > 4 cm
3. Deep Lobe Participation
4. Repeated Cancers

Methodology

Prior to surgery, all patients received a clinical examination, fine-needle aspiration cytology (FNAC), and parotid ultrasonography to ascertain the exact site of the tumor in the superficial lobe and whether the swelling was benign. Prior to surgery, a modified version of the House-Brackmann Scoring System was employed to assess the patients' facial nerve health. The patient's post-operative state was evaluated using the same grading scheme. Every patient's demographic information, FNA results, and edoma subtype were recorded. Patients were randomized to either the Extracapsular Excision or Superficial Parotidectomy group using a computerized Randomization Allocation tool. An extracapsular excision was performed first, followed by a superficial parotidectomy (RALLOC). The randomization code's value was unknown to both the subject and the observer [10, 11].

During the post-operative examination, the House-Brackmann technique was modified to assess the health of the facial nerve. Patients undergoing surgery are assessed on days 2, 7, and 10. Recording the condition of the buccal,

zygomatic, and temporal facial nerves is part of this process. Documentation has been added and modified in the final HPE record.

Microsoft Excel was utilized for data storage, and Epidata Software was employed for data collection. The statistical software STATA Version 10 and the spreadsheet tool Microsoft Excel 2007 were both used for data analysis.

Results

Out of the 48 trial participants, 25 underwent Superficial Parotidectomy (SP) and 21 underwent extracapsular excision (EC). A superficial parotidectomy was performed in place of two extracapsular excisions. Two individuals with malignant operative histology were discovered in the extracapsular excision group.

Table 1: Cases examined

Superficial Parotidectomy (SP)		Extracapsular Excision (EC)
Total Patients Randomized	25	23
Converted to Superficial Parotidectomy	NA	1
Malignancy in Histopathology	0	1
Cases Excluded	0	2
Total Cases Analyzed	25	21

'Converted' Low-grade mucoepidermoid cancer was identified in patient 1. After a superficial parotidectomy, this patient was observed. Second patient with extracapsular excision diagnosed with papillary adenocarcinoma. He eventually underwent a procedure termed a parotidectomy. The results of the study cannot be applied to people who have been diagnosed with cancer. Converted For the purposes of this study, Patient 1 was included in the group that underwent superficial parotidectomy. Twenty-five participants from the SP and twenty-one from the EC had their data analysed in this way.

Several criteria were used to assess the outcomes. A thorough evaluation of these patients' demographic and clinical characteristics was performed prior to surgery. Every patient's House-Brackmann score was within the "normal" range prior to surgery. The House Brackmann Score was analysed for its predictive power in the postoperative period 2, 7, and 10. Both groups were evaluated side by side. It was determined that there were positive margins.

Table 2: Gender Distribution

Gender	
Male	20
Female	26

20 male and 26 female were considered in study

Table 3: FNAC Results

	s	False	Total
Benign	36	2	38
Malignant	0	1	0
Indeterminate			10

38 patients had benign FNACs and 10 had uncertain ones.

Table 4: FNAC, Benign and malignant for analysis

	True	False	Total
Benign	36	2	38
Malignant	1	9	10

FNAC has 38 benign and 10 malignant diagnosis if "Indeterminate" readings are all malignant.

Table 5: Margin Status

SP		ECE	Total
Close	15	14	29
Not			
Involved	9	5	14
Don’t know	0	3	3
Total	25	21	46
% Close	54.3%	45.65%	100%

According to the conclusive biopsy findings, the histopathological margins were established. A 4mm margin was found to be "not involved." Only 4 millimetres separated the two.

t failed to indicate the margin status in two of the reports. Five-four percent of superficial procedures had close margins, while only 45.65 percent of extracapsular procedures did. Statistical testing indicates no significant difference. The Zygomatic, Temporal, and Buccal Branches Recovered 2, 7, and 10 Points, Respectively, After Surgery. House-Brackmann Scoring Scale: 1 and 2 for Mild, 3 and 4 for Moderate, and 5 and 6 for Severe (Scores 5 and 6). Due to a lack of severe ratings, we have combined the moderate and severe buckets.

Table 6: Post-operative Day 2, Temporal

POD 2 T	SP	EC	Total
Mild	19	18	37
%	76	85.7	80.43
Moderate & Severe	5	4	9
%	20	19.1	19.6
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1) = 0.5658 P=0.452 Fisher's exact=0.620, 1-sided Fisher's exact=0.426

Table 7: Post-operative Day 2, Zygomatic

POD 2 Z	SP	EC	Total
Mild	20	19	39
%	80	90	84.78
Moderate & severe	16	3	7
%	21.05	14.3	15.22
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1)=1.2131, P=0.271 Fisher's exact=0.366, 1-sided Fisher's exact=0.278

Table 8: Post-operative Day 2, Mandibular

POD 2 M	SP	EC	Total
Mild	19	17	36
%	76	80.95	78.26
Moderate & severe	6	4	10
%	24	19.05	21.74
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1)=0.6980 P=0.403 1-sided Fisher's exact=0.670 Fisher's exact=0.348

Table 9: Post-operative Day 7, Zygomatic

POD 7 Z	SP	EC	Total
Mild	21	18	39
%	84	85.71	84.78
Moderate & severe	4	3	7
%	16	14.28	15.21
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1) = 0.5658, P=0.452, Fisher's exact = 0.620, 1-sided Fisher's exact=0.426

Table 10: Post-operative Day 7, Temporal

POD 7 T	SP	EC	Total
Mild	20	17	37
%	80	80.95	80.43
Moderate & severe	5	4	9
%	20	19.04	19.56
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1)=1.2131, P Value =0.271, Fisher's exact =0.366, 1-sided Fisher's exact=0.278

Table 11: Post-Operative Day 7, Mandibular

POD 7 M	SP	EC	Total
Mild	19	17	36
%	76	80.95	78.26
Moderate & Severe	6	4	10
%	24	19.04	21.74
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1) = 0.6980, P=0.403, Fisher's exact =0.670, 1-sided Fisher's exact=0.348

Table 12: Post-operative Day 10, Zygomatic

POD 10 Z	SP	EC	Total
Mild	22	20	42
%	88	95	91.30
Moderate & severe	3	1	4
%	12	4.7	8.69
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1)=0.1117, P Value =0.738, Fisher's exact =1.000, 1-sided Fisher's exact=0.616

Table 13: Post-operative Day 10, Temporal

POD 10 T	SP	EC	Total
Mild	23	20	43
%	92	95.23	93.47
Moderate & severe	2	1	3
%	8	4.76	6.52
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1) = 0.5658, P=0.452, Fisher's exact = 0.620, 1-sided Fisher's exact=0.426

Table 14: House–brackmann score on post-operative day 10 –mandibular

POD 10 M	SP	EC	Total
Mild	21	19	40
%	84	90.47	86.95
Moderate & severe	4	2	6
%	16	9.52	13.04
Total	25	21	46
	100%	100%	100%

Pearson CHI2 (1) = 0.6980, P=0.403, Fisher's exact =0.670, 1-sided Fisher's exact=0.348

Table 15: Post-Operative Day 2, Mild Symptoms

POD 2 MILD		
SP		**EC**
T	80	80.9
Z	84	85.7
M	76	80.95

Day 2 mild facial nerve palsy was more common in Extracapsular Excision than Superficial Parotidectomy.

Table 16: Post-operative Day 2, Moderate & Severe Symptoms

POD 2 M & S		
	SP	**EC**
T	20	19.1
Z	21.05	14.3
M	24	19.05

On Day 2, extracapsular excision decreased moderate facial nerve palsy in the mandibular, zygomatic, and temporal branches. Greater damage was done to the mandibular branches than the temporal and zygomatic.

Table 17: Post-operative Day 7, Mild Symptoms

POD 7 MILD		
SP		**EC**
T	80	80.95
Z	83	84.95
M	76	80.95

Extracapsular Excision enhanced minor facial nerve palsy in Temporal, Zygomatic, and Mandibular branches on Day 7.

Table 18: Post-operative Day 7, Moderate & Severe Symptoms

POD 7 M & S		
SP		EC
T	21	19.04
Z	15	14.28
M	24	19.04

On Day 7, extracapsular excision lessened moderate facial nerve paralysis in the mandibular, zygomatic, and temporal branches. Greater damage was done to the mandibular branches than the temporal and zygomatic.

Table 19: Post-Operative Day 10, Mild Symptoms

POD 10 MILD		
SP		**EC**
T	91	95.23
Z	91	90.47
M	84	90.47

Extracapsular Excision enhanced minor facial nerve palsy in Temporal, Zygomatic, and Mandibular branches on Day 10.

Table 20: Post-operative Day 10, Moderate & Severe Symptoms

POD 10 M & S		
SP		**EC**
T	9	4.76
Z	9	9.52
M	16	9.52

Extracapsular excision reduced moderate facial nerve palsy in Temporal, Zygomatic, and Mandibular branches on Day 10. Mandibular branches were affected more than Temporal and Zygomatic.

Discussions

Both the clinical features and the demographic data regarding parotid tumors were looked into within the parameters of this specific investigation. The margin status and the degree of facial nerve palsy that results from removing benign parotid tumors using the Superficial Parotidectomy and Extracapsular Excision techniques were assessed. Benign parotid tumors are removed with either of these methods [12]. The majority of research participants were between the ages of 40 and 49, and there was no discernible gender distribution among this group. It had a smooth consistency, spherical shape, and almost never caused any discomfort [13]. Margins an acceptable margin of 4 millimeters was not obtained in 63.28% of cases requiring extracapsular excision and 63% of cases utilizing superficial parotidectomy. This problem may occur after a superficial parotidectomy if the tumor is situated near the facial nerve and delicate dissection cannot reach a suitable margin while maintaining nerve protection. Extracapsular excision may be required when tumors are near the facial nerve for the same reason as previously mentioned. There was no chance of the margin being crossed in either of the two groups [14]. House-Brackmann Result Regarding the morbidity of early facial nerve palsy, there was no statistically significant difference between the two groups in the first ten postoperative days. A higher percentage of patients who underwent extracapsular excision developed a minor form of facial nerve palsy on days 2, 7, and 10 following surgery. For those who underwent the operation, this was the situation. On the other hand, after a superficial parotidectomy, the probability of moderate to severe facial nerve palsy was significantly higher [15-17]. Bringing in more individuals could make the discussion that has taken on here even more important.

Conclusion

Compared to extracapsular excision, superficial parotidectomy was associated with a higher incidence of early postoperative facial nerve paralysis. Extracapsular excision did not result in improvement for these patients. The evidence was at odds with the data. Positive margin rates were comparable in this study between superficial parotidectomy and extracapsular excision. Larger samples are required to demonstrate the superiority of extracapsular excision over superficial parotidectomy in cases of benign parotid tumors.

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Nil

Conflict of interest

None

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