Comparative study of extra capsular dissection versus superficial parotidectomy in management of benign parotid tumors

*Dr. Ritesh Dhanbhar, **Dr. Niranjan Das, ***Dr. Jayant Gadekar

*Resident, **Professor, ***Professor & HOD

Corresponding Author : Dr. Ritesh Dhanbhar

Mail id : riteshgjmptw@gmail.com

Mobile No.: 9730772807

Corresponding Address : Dept. of Surgery, DVVP Medical college, Ahmednagar, 414001

Abstract :

Background : About 80% of salivary gland tumours originate in the parotid gland, where most of them are benign. different methods in surgical management of benign parotid tumours has been subject of controversy for many years, because of the risks of facial nerve injury, capsular rupture and recurrence. Hence there is need of study to evaluate better technique between two most commonly used methods namely superficial parotidectomy and extracapsular dissection. **Aim & objective :** To compare complications of extracapsular dissection Versus superficial parotidectomy in management of benign parotid tumours. **Materials and Methods :** In this study 24 patients with benign tumours of the parotid gland treated between July 2015 and July 2017 in our institute are included. This is prospective observational study. **Results :** Maximum transient facial nerve injury was occurred in 8 patient(33.33%) which undergone superficial parotidectomy . Facial paralysis is noted in 2 patients (8.33%) of superficial parotidectomy. Frey's syndrome was found in 6 patient (25.0%), among these patient 4 patient(16.67%) were undergone superficial parotidectomy and 2 patient (8.33%) ware undergone extracapsular dissection. **Conclusion :** Extracapsular dissection has less complications than superficial parotidectomy. extracapsular dissection has similar recurrence rate to superficial parotidectomy. According to this study extracapsular dissection is better technique.

Introduction : About 80% of salivary gland tumors originate in the parotid gland, where most of them are benign.[1] The surgical management of benign parotid tumours has been the subject of controversy for many years, mainly because of the risks of facial nerve injury, capsular rupture, and recurrence .

Guidelines of surgical treatment for benign parotid tumor have been changed on the course of time. previously there was high recurrance rates of parotid tumors[2-4].Now a days superficial parotidectomy has be came gold standard treatment of parotid tumors at most medical centers.[5-7]

However, complications such as the facial nerve paralysis, Frey's syndrome and cosmetic deformities, arise because of the wide use of superficial parotidectomy. As these post operative complications must not be ignored, several improvements to this surgical technique have been reported over the past several decades, including extra capsular dissection.

Superficial parotidectomy involves removal of parotid neoplasm along with superficial lobe and preservation of branches, and main trunk of facial nerve .[8,9]

Extra capsular dissection involves total excision of benign parotid tumor along with 3-4mm normal parotid tissue without planed dissection of the main trunk of facial nerve.[10] extracapsular dissection should bed ifferentiated from enucleation. Enucleation is a technique which removes the tumor directly at the tumor capsule without any surrounding normal tissue,[10].

Among extracapsular dissection and superficial parotidectomy, which one is the more ideal therapeutic method of benign parotid tumorsis one of the most debatable topic. Supporters of superficial parotidectomy base their evidence on an assumed higher recurrence rate in patients under going extracapsular dissection[11,12] and those who support extra capsular dissection

declare that patients with benign parotidgl and have better clinical outcomes and similar recurrence rates undergoing extracapsular dissection compared to superficial parotidectomy[13]. Hence we have taken study to evaluate better technique between superficial parotidectomy and extracapsular dissection.

Materials and Methods : Patients with benign tumours of the parotid gland treated between July 2015 and July 2017 in our institute are included in this study.

In this study 24 patient are included.

This is prospective observational study.

Diagnosis of parotid tumours was established by ultrasonography, HNF CT scan and FNAC.

Randomization done as even registration had undergone superficial parotidectomy & odd registration no had undergone extracapsular dissection.

Informed consent was given by the patients.

Inclusion criteria:

1. Benign parotid tumour.
2. Tumour located in the superficial portion of the parotid gland.

Exclusion criteria:

1. Recurrent parotid tumour.
2. Parotid tumour that indicates metastasis by involvement of cervical lymph nodes.
3. Parotid gland malignancies.
4. Multifocal tumours.

Procedure:

Superficial parotidectomy : After superficial muscular aponeurotic system was elevated, common trunk of the facial nerve was identified, isolated, and controlled by continuous facial nerve monitoring with a neurostimulator. Anterior to facial nerve removal of parotid neoplasm along with superficial lobe done. Haemostasis achieved using bipolar coagulation, and closure done in layers.

Extracapsular dissection : Attention was paid to maintaining the integrity of the tumor capsule by performing a wide excision of the parenchyma surrounding the wound approximately 3- 4 mm from the tumor but without identification of the facial nerve. After removal of the tumor, haemostasisachieved using bipolar coagulation, and the facial planes and skin were closed.

Results:

1) Age distribution : Study showed that the maximum number of patients were in the 3rd & 4th decade of life (66.67%).There were no patients in the age groups <20year (Table 1).

Table no 1: Age Distribution

Age	Patient no.	Percentage
<20 year	0	0
20-40 year	16	66.67
40-60 year	7	29.16
>60 year	1	4.16

2) Sex distribution : Out of 24 cases, 14 patients (58.33%) were females, and10 patients (41.66%) were males (Table 2).

Table no 2: Sex distribution

Sex	Superficial parotidectomy		Extra capsular dissection	
	Patient no.	Per-centage	Patient no.	Per-centage
Male	4	16.66	6	25.0
Female	8	33.33	6	25.0

3) Tumour size distribution:
In this study maximum number of patient has tumour size 2-3 cm (62.5%) (Table 3).

Table no 3: Tumour size distribution

Size	Superficial parotidectomy		Extra capsular dissection	
	Patient no.	Per-centage	Patient no.	Per-centage
<2 cm	3	12.5	1	4.16
2-3cm	7	29.16	8	33.33
3-4cm	1	4.16	3	12.5
>4cm	1	4.16	0	0

4)Transient facial nerve injury(TFNI) : Out of 24 patient 10 patient(41.67%) had transient facial nerve injury. Maximum TFNI was occurred in patient which undergone superficial parotidectomy i.e. 8 patient (33.33%) (Table 4). Out of 10 patient of TFNI, 90% patient resolved at the end of 1st postoperative month. (Table 5)

Table no. 4: Transient facial nerve injury

	Superficial paro-tidectomy	Extra capsular dissection	Total
Patient no.	8	2	10
Percentage	33.33	8.33	41.67

Table no 5: Duration required to resolve TFNI

duration required to resolve TFNI	Superficial paro-tidectomy	Extra capsular dissection	Percentage
0-15 days	2	1	30.0
15-30 days	5	1	60.0
30-180 days	1	0	10.0

5)Facial paralysis:
Facial paralysis is noted in 2 patients (8.33%) of superficial parotidectomy (Table 6).

Table no 6: No. of patients having facial paralysis after Superficial parotidectomy

	Superficial paro-tidectomy	Extra capsular dissection	Total
Patient no.	2	0	2
Percentage	8.33	0	8.33

6) Frey's syndrome : Postoperatively Frey's syndrome was found in 6 patient (25.0%). Among these patient 4 patient (16.67%) were undergone superficial parotidectomy and 2 patient (8.33%) ware undergone extracapsular dissection (Table 7).

Table no 7: Postoperatively Frey's syndrome

	Superficial paro-tidectomy	Extra capsular dissection	Total
Patient no.	4	2	6
Percentage	16.67	8.33	25.0

7) Other complications: Complications such as seroma formation, salivary fistula, wound infection ware more in superficial parotidectomy. (Table 8)

Table no 8: Complications

Com-plication	Superficial parotidectomy		Extra capsular dissection	
	Patient no.	Per-centage	Patient no.	Per-centage
seroma formation	2	8.33	1	4.16
salivary fistula	1	4.16	0	0
Wound infection	4	16.67		

8) Recurrence: Recurrence rate was similar in both surgeries. In our study after average 6 month followup period, 2 patients (8.33%) ware had recurrence (Table 9).

Table no 9: Recurrence rate

Age	Patient no.	Percentage
<3 month	1	0
3 - 6 month	0	1
> 6 month	0	0
percentage	4.16	4.16

Discussion : In our study maximum number of patients were in the 3rd & 4th decade of life (66.67%).There were no patients in the age groups <20year. In our study mean age was 38 years. In Maria Giulia Cristofer etal study mean age was 50.97 years.[14]

In our study 14patients (58.33%) were females, and10 patients (41.66%) were males. Out of these 4 male(16.66%) and 8 female(33.33%) has undergone superficial parotidectomy 6 male(25.0%) and 6 female(25.0%) has undergone extracapsular dissection. In Maria Giulia Cristoforo etal study extracapsular dissection was performed in 153 patients (77.27%), 80 males and 73 females), and an superficial parotidectomy was performed in 45 patients.[14]

Our study shows maximum number of patient has tumor size 2-3 cm (62.5%). In Maria Giulia Cristofaro etal study mean size was 3 cm.[14]

This study shows that maximum transient facial nerve paralysis was occurred in patient which undergone superficial parotidectomy (33.33%) than extracapsular dissection (8.33%) . Maria Giulia Cristofaro etal study shows incidance of transient facial nerve injury was more after superficial parotidectomy (20%) than after extra capsular dissection (4.5%).[14] Our incidence of transient facial nerve injury was significantly more than stated in Maria Giulia Cristofaro etal study for superficial parotidectomy. This complication does not necessarily result from a branch of nervous neurontmesis. It may results from surgical manipulation that causes a transient nerve injury, and it is proportional to the length of time the nerve is exposed during the surgery.

Permanent facial nerve damage rate was higher in our data (8.33%) after superficial parotidectomy versus 0% after extracapsular dissection) than reported in the N. Papadogeorgakis study. In N. Papadogeorgakis study showed that Permanent facial nerve damage rate was 4% after superficial parotidectomy versus 3.5% after extracapsular dissection[15].

Frey's syndrome was observed higher (16.67%) after superficial parotidectomy than (8.33%) after extracapsular dissection. Similar rate are stated in J. d. Maynard, R. L. Witt etal, T. Yamashita etal and P. Zbaren etal studies [16-19].

In our study superficial parotidectomy & extracapsular dissection both shows recurrance in 1(4.16 %) patient. According to systematic review and meta-analysis of G. d. Orabona etal recurrance rate are similar in both parotidectomy. [20] However period of observation of recurrance was small in our study.

Advantages of extracapsular dissection include the removal of mass with adequate margins of healthy parotid tissue and a reduction in the side effects after surgery, thus preserving the parotid salivary function.

Conclusion : Extracapsular dissection has less complications of transient facial nerve injury, facial nerve palsy, frey's syndrome, seroma formation, salivary fistula and wound infection than superficial parotidectomy. Extracapsular dissection has similar recurrance rate to superficial parotidectomy. According to this study extracapsular dissection is better technique. However for firm conclusion needs further study.

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