BULLETIN OF STOMATOLOGY AND MAXILLOFACIAL SURGERY
Volume 21, Issue 9

DOI: 10.58240/1829006X-2025.21.9-223

EXTRACAPSULAR DISSECTION OF THE PAROTID GLAND VERSUS SUPERFICIAL PAROTIDECTOMY FOR BENIGN TUMORS MANAGEMENT

Anas H. Abed[1]*, Ahmed Orkhan Hasan[2]

[1] **F.I.B.M.S. , B.D.S.,** Department of Oral Maxillofacial Surgery, College of Dentistry, University of Anbar.

[2] **F.I.B.M.S. , B.D.S.,** Head of Oral and Maxillofacial Surgery Department, Azadi Teaching Hospital, Health Directory, Ministry of Health, Kirkuk,

Corresponding author*: Anas H. Abed[1]Department of Oral Maxillofacial Surgery, College of Dentistry, University of Anbar**,** E-mail: den.enease_ebede@uoanbar.edu.iq Telephone no.: +9647721434760

Received: *Aug 20. 2025;* ***Accepted:*** *Sep 20, 2025;* ***Published:*** *Oct 3, 2025*

Background: Superficial parotidectomy can result in significant complications as facial paralysis. This study aimed to analyze the outcome of extracapsular dissection of benign parotid tumors in terms of recurrence and morbidity in comparison with superficial parotidectomy.

Materials and methods: The sample for this study consisted of 20 patients with benign parotid tumors, 10 of them were treated by extracapsular dissection and followed up for about ten years postoperatively and 10 patients with similar pathology who are treated by superficial parotidectomy in Azadi teaching hospital in Kirkuk. All the 20 subjects aged 30-60 years-old and had different benign parotid tumors but the vast majority of these tumors were pleomorphic adenomas. The definitive diagnosis was made by histopathologic examination. Post-operative follow up depended on the clinical (and radiological examinations in some cases).

Results: the present study data showed that the extracapsular dissection has very less postoperative complications as permanent and temporary paralysis of facial nerve, salivary fistula, sialocele, Frey's syndrome, and cosmetic defect with hollowing of the facial contour behind the mandible in comparison with superficial parotidectomy and no recurrence discovered over 10 years of follow-up provided that meticulous dissection around the tumor capsule is undertaken without disruption of the tumor's capsule and excising tumor including a normal cuff of salivary tissue surrounding the tumor.

Conclusions: extracapsular dissection is a good substitute for superficial parotidectomy in case of benign tumors.

Keywords*:* Extracapsular dissection; Superficial parotidectomy; Benign parotid tumors; Adenoma; Warthin's tumour

INTRODUCTION

Hippocrates was firstly described the structural anatomy for parotid gland [1]. The largest gland among all three (parotid, submandibular, sublingual) glands in the facial region is the parotid gland which is predominantly serous gland [2]. The parotid gland surgery mostly complicated by neural damage. Thorough knowledge of surgical anatomy is imperative [3].

The motor portion of the facial nerve (seventh cranial nerve) and its branches are embedded within the substance of the parotid gland and Where the gland is divided almost to two lobes (bilobular); the deep part and the superficial or lateral part (which are connected by an isthmus) the parotid gland into two lobes (bilobular) a superficial lobe and a deep lobe (which are connected by an isthmus), as it is exit from the foramen of stylomastoid and passing anteriorly to supply the muscles in charge of the facial expression[4, 5, 6].

The tumors that arise from salivary glands may be derived from salivary epithelium (parenchymal) or the supportive stroma (mesenchymal). Among benign tumors, *adenoma pleomorphic type (mixed tumor)* is the most popular. *Monomorphic adenoma*, *oncocytoma*, and *papillary cystadenoma lymphomatosum (Warthin tumor)* are also relatively common [7].

Of parotid neoplasms, 80% are benign, 90% occurring in the superficial or lateral lobe and gland's tail and the remainder in the deep part, with only a few in the accessory lobe [(8)]. The most popular type of salivary gland tumours, which appear in the parotid, is usually as painless and slow growing enlargement [9].

Parotid tumors may be nodular or diffuse. Diffuse tumors are always malignant, while the nodular ones are usually benign [10].

The significant feature of pleomorphic adenomas from the view of surgery is the existence of the "pseudocapsule" that characterized by the development of the tumor again. Recurrent of the tumor which originate from the nest of the tumor cells that are left

behind after inaccurate surgical technique. For many years superficial lobectomy is the standard surgical technique that preserve facial nerve in patient with tumor in the superficial lobe (major type). Same outcome of minimal surgical technique that characterized by lowest morbidity was became popular for most of surgeon. Recently, the "extracapsular dissection" is sufficient modification instead of entire removing of superficial parotid.. For a benign tumor, elimination of peripheral margin from normal salivary gland along with tumor mass is preferable to a complete superficial parotidectomy to reduce the morbidity by avoiding the relevant complications as facial palsy, because of intimate contact of the facial nerve with the tumor, without oncological compromise. [11, 12]

The aim of this study is to show the clinical benefits of extracapsular dissection over superficial parotidectomy in the treatment of benign parotid tumors.

Funding

Our paper never get any type of financial support from any agency in the commercial, public, or profit establishment.

MATERIAL AND METHOD

This research was approved by the institutional Ethics Committee.

This study consisted of 20 patients aged 30-60 years old. These patients were affected by benign parotid tumors; 17 (85%) of them were pleomorphic adenomas, 2 (10%) of them were monomorphic adenomas, and one case(5%) was Warthin's tumor. 10 patients (7 pleomorphic adenomas, 2 monomorphic adenomas, and one case Warthin's tumour) were treated by superficial parotidectomy while the remaining 10 patients were treated by extracapsular dissection. The latter 10 patients were all affected by pleomorphic adenomas.

After the attendance of the patients to the maxillofacial department and before examining them, a thorough history has been taken with focusing on the signs and symptoms and their character and duration. Extraoral examination followed by intraoral inspection with palpation and special care for the pharyngeal space to exclude deep lobes involvement [13].

Assessment of the function of the facial nerve was done because facial nerve paralysis is strongly suggestive of a malignant tumor namely adenoid cystic carcinoma. Ultrasonographic examinations were the imaging techniques of first choice for all the patients followed by CT and/MRI scans [14]. Fine needle aspiration cytology was also used [15]. The general anesthetic was given and the patients were positioned on the operating table with a slight head-up tilt to reduce venous bleeding [16].

The head was turned away from the surgeon. Hair from the temporal area was clipped or shaved to allow for the possible temporal extension of the incision [17]. In superficial parotidectomy the cervicomastoidfacial (modified Blair incision) is used for its excellent or premium access for parotid surgery, only it drop out obvious neck scar, whereas in extracapsular dissection a limited preauricular or retromandibular incision is used which was enough to excise the tumor with less conspicuous resultant scar.

In superficial parotidectomy a flap is made on the parotid gland surface to help expose all the gland and tumor to be removed then superficial lobe was dissected free of the facial nerve. The main trunk of the facial nerve should be carefully identified along with its two main branches; the cervicofacial nerve and the temporofacial branch, that is why facial nerve injury is usually occurred in this surgical technique. Removing the mass of tumor without capsule damaging by carful dissection about (3 to 4 mm) peripherally to the capsule of the tumor, in centripetal fashion **(Fig. 1)**.

Figure 1. Extracapsular dissection of the tumor

Dissection shall including limited layer until fascia of parotid along with areolar connective tissue that surround the mass. Keeping the facial nerve under a minimal risk, *which is one of the aims of extracapsular dissection technique*, is as a result of avoiding identification of it's trunk.

Some of the normal margin of salivary gland substance that surround the tumor mass will form the components of the excisional specimen. This modality of surgery can be also called partial superficial parotidectomy.

In the superficial parotidectomy more major blood vessels are encountered during operation e.g. external carotid artery and retromandibular vein which must be clipped, divided and ligated in contrast to the extracapsular dissection where these structures are avoided, retracted or not encountered at all. So that in superficial parotidectomy less blood loss occurred and hence blood transfusion is seldom needed. In superficial parotidectomy vacuum drains are used at the end of the operation and before wound closure due to the creation of dead space to prevent hematoma collection, infection, and wound breakdown while in extracapsular dissection no considerable dead space will be created and the defect size is small therefore no need for vacuum drains and only a pressure bandage for 2 days will be satisfactory.

The superficial parotidectomy procedures are performed in two to five hours depending on the experience and skill of the surgeon in comparison to approximately one hour in extracapsular dissections.

RESULTS

All the 20 patients who were treated by both modalities showed no recurrence. The dramatic difference between the superficial parotidectomy and the extracapsular dissection was in the post-operative complications. The occurrence of complications following local extracapsular dissection was relatively low, and of variable severity.

Facial palsy

It was observed that many tumors were in contact with one or more branches of the facial nerve. The relationship varied. Sometimes the contact was limited and tangential; more often it was intimate, and on occasion the tumor had grown around a branch of the facial nerve.

The incidence of facial paralysis in the patients who were treated by extracapsular dissection was small and transient and noticed in 1 patient only (10%) and 1 branch only (buccal branch) was affected reversibly (neuropraxia) while in the other patients the facial nerve was intact and functioning well postoperatively **(Fig. 2,3),** whereas the incidence of a permanent facial paralysis has been greater with superficial parotidectomy involving VII nerve dissection and noticed in 6 patients with variable degree of injury according to the number of the branches that were affected (60%) **(Fig. 4)**.

Figure 2. 1 week post-operatively

Figure 3. Facial nerve is functioning

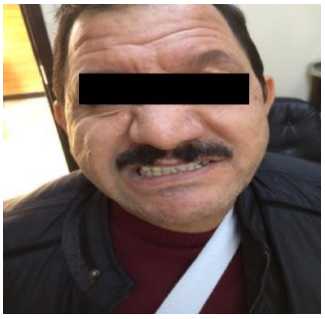

Figure 4. Partial facial nerve paralysis in a superficial parotidectomy case

Frey's syndrome

Following extracapsular dissection technique the occurrence of gustatory sweating syndrome was only 20% (2 patients) in contrast to 50% (5 patients) following nerve dissection in superficial parotidectomy.

Sensory loss

Initially after operation (in both techniques) there was an extensive but transient loss of feeling over the parotid area and ear. During recovery of sensation, there was a phase of hyperesthesia (in approximately 2% of both modalities) before sensation returned to normal, although some patients continued to complain of hyperesthesia in extreme temperature.

There is greater risk when branches of the auriculotemporal nerve have been sacrificed during operation of persistent hyperesthesia or anesthesia of the lobe of the ear. Permanent sensory loss in this series occurred in approximately 6% of both cases irrespective of the operative technique.

Wound infections

Slight difference was found between the 2 methods being (10%) in extracapsular dissection and (20%) in parotidectomy series and occurred mainly in the retroauricular part of the flap which is usually susceptible to necrosis.

Hematoma and seroma

No hematoma or seroma were developed after extracapsular dissection. While in superficial parotidectomy it has developed in 2 patients (20%) despite careful hemostasis and a pressure dressing. One of them was due to elevated blood pressure in already an uncontrolled hypertensive individual.

Salivary fistulae

These were not found in the extracapsular dissection cases, while in formal parotidectomy they occurred in 10% (1) of patients.

Cosmetic defect

All the parotidectomies (100%) resulted in a significant cosmetic defect with hollowing of the facial contour behind the mandible while in extracapsular dissection no such esthetic violation resulted.

DISCUSSION

The high incidence of both permanent and temporary nerve injury in the miscellaneous operative group reflects the more complicated procedures undertaken [(1)].

The sensitivity of the facial nerve to mobilization and manipulation seems extremely variable from one individual to another [3]. Complete and permanent facial paralysis which is usually associated with parotidectomy is a more serious problem than partial and temporary facial paralysis that is associated with extracapsular dissection [2].

The Frey's syndrome is variable in terms of onset after surgery, and consists of a faint marked vasomotor reaction and blushing of the skin in the parotid region which, if marked may be accompanied by a burning sensation. Sweating may occur in response to food, notably hard food with a sharp flavor. For these patients, both medical (as Botulinum toxin injections) and surgical treatment (tympanic neurectomy) are available, but the results are unpredictable [18].

In general, complications following extracapsular dissection are relatively minor, and occurred infrequently [19].

CONCLUSION

The localized approach of extracapsular dissection is not recommended for an inexperienced surgeon in training because meticulous dissection required around the tumor without rupturing its capsule to avoid seeding the tumor cells in the operative field and causing recurrence [20]. Our advice is that, the extracapsular dissection as an alternative to superficial parotidectomy provided that the capsule of the tumor is kept intact with preservation of the facial nerve integrity.

DECLARATION

Conflict of Interest: "The authors have no conflicts of interest to declare."

Funding: "This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors."

Ethical approval: This study was conducted according to the committee of medical ethics in Iraqi Ministry of Health

REFERENCES

1. Joseph G. McCarthy, *Plastic surgery: tumors of the head and neck and skin*, Vol 5, W.B. Saunders, 1990.
2. S.M. Balaji, *Textbook of oral and maxillofacial surgery*, ed 2, Elsevier, 2013.
3. John C. Watkinson, Mark N. Gaze, Janet A. Wilson, *Stell and Maran's head and neck surgery*, ed 4, Butterworth-Heinemann, 2000.
4. Shahrokh C. Bagheri, R. Bryan Bell, Husain Ali Khan, *Current therapy in oral and maxillofacial surgery*, Elsevier, 2012.
5. James R. Hupp, Edward Ellis, Myron R. Tucker, *Contemporary oral and maxillofacial surgery*, ed 5,Mosby, 2008
6. Gustav O. Kruger, *Textbook of oral and maxillofacial surgery*, ed 6, Mosby, 1984
7. J.Philip Saap, Lewis R. Eversole, George P. Wysocki: *Contemporary oral and maxillofacial pathology*, Mosby, 1997.
8. John E deBurgh Norman, Mark McGurk: *Color atlas and text of the salivary glands diseases, disorders and surgeries*, Mosby-Wolfe, 1995.
9. John D. Langdon, Mohan F. Patel: *Operative maxillofacial surgery*, Chapman and Hall, 1998.
10. T.J. Bayley, S.J. Leinster, *Systemic disease for dental students*, Wright. PSG, 1984.
11. Michael Miloro, *Peterson's principles of oral and maxillofacial surgery*, Vol 1,ed 2,BC Decker Inc, 2004.
12. Peter Ward Booth, Stephen A, Schendel, Jarg-Erich Hausamen, *Maxillofacial surgery*,ed 2,vol 1,Churchil Livingstone,2007.
13. Heeneman H, Maran AGD: Parapharyngeal space tumours, *Clin Otolaryngol* 4:57-69, 1997.
14. Hanna DC, Gainsford JC: Salivary gland tumours. In Gainsford JC, editor: *Symposium on cancer of the head and neck*, St Louis, 1969, Mosby.
15. Zurrida S, Alasio L, Tradati N et al: Fine-needle aspiration of parotid masses, *Cancer* 72:2306-2311, 1993.
16. Hobsley, M. (1983) *A Colour Atlas of Parotidectomy*, Wolfe, London.
17. Rankow, R.M. and Polayes, I.M. (1976) *Diseases of the salivary Glands*, W.B. Saunders Company, Philadelphia.
18. Kevin M. Motz, MD and Young J. Kim, MD, *Auriculotemporal Syndrome (Frey Syndrome)*, *Otolaryngol Clin North Am*, 49(2): 501-509, 2017.
19. Gleave EN, Whittaker JS and Nicholson A (1979) Salivary tumors-experienced over thirty years. *Clin Otolaryngol* 4:247-257
20. Seifert G, Miehlke A, Haubrich J, and chilla R (1986) *Diseases of the Salivary Glands:Pathology, Diagnosis,Treatment, Facial Nerve Surgery* (trans. Stell PM). P.310. Thieme,Stuttgart