Which Surgical Method is Superior for the Treatment of Parotid Tumor? Is it Classical? Is it New?

Vahit Mutlu, Zulkuf Kaya

ABSTRACT

Objective: We aimed to compare the incidence of parotid tumors seen in our region in the last ten years with the literature values and to compare the recently proposed new parotidectomy methods with classical parotidectomy methods which we applied for ten years.

Materials and Methods: 37 females and 36 males total 73 patients who made parotidectomy between 2008 and 2018 were included in the study. The patients age, sex, histopathological diagnosis, surgical methods applied to malignant or benign tumors and side of the disease were recorded. Histopathological results and the results of surgical methods applied were compared with literature.

Results: The mean age of the 73 patients underwent parotidectomy was 54±34. Of the cases, 57 (78%) cases were benign and 16 (22%) were malignant. Histopathologically benign masses were found 3.5 time more common than malignant masses. The sides of diseases were observed at the near rates (right, left; 52%, 48%, respectively). The most often detected benign neoplasm was pleomorphic adenoma with 42 (74%) cases. The most often detected malignant neoplasm was mucoepidermoid carcinoma with 6 (43%) cases. As surgical method, superficial parotidectomy was applied to 64 (88%) patients, total parotidectomy to 9 (12%) patients and the neck dissection to 7 (10%) patients.

Conclusion: We recommend that to be applied the superficial parotidectomy as the smallest procedure to be performed in the surgery of parotid tumors and to be avoided from partial superficial parotidectomies. In short, we advocate to classical methods for the parotid tumor surgery.

Keywords: Benign, malign, mass, parotid, surgery methods

Introduction

Different parotid gland diseases, such as inflammation, sialolithiasis, and benign or malignant neoplasms are seen clinically. An accurate diagnosis and the subsequent management are crucial [1]. Parotid neoplasms account for 75% of all salivary gland tumors, and 20%-25% of these are malignant [2, 3]. The parotid neoplasms are usually seen as a subauricular mass [1]. There is no correlation between the size and nature (benign or malignant) of the parotid tumor [4].

Fine-needle aspiration cytology is applied for diagnosing parotid masses in several clinics. However, low level of tumor seeding is a risk associated with this application [5]. Nevertheless, none of methods, such as ultrasonography, fine needle aspiration cytology, magnetic resonance imaging, and computerized tomography, provide precise information about the histopathologic diagnosis of a parotid mass [4]. In most clinical applications, once the parotid masses are resected, the final histopathological diagnosis is obtained [4].

Superficial parotidectomy is the most applied surgical procedure in the parotid tumors. Benign and early stage malignant neoplasms localized in the superficial lobe of the parotid gland are managed with superficial parotidectomy [6]. However, new surgical procedures, such as extracapsular dissection, partial superficial parotidectomy, and enucleation, have also been proposed for the treatment of parotid tumors in the last two decades [7]. There is no consensus in literature regarding the most superior surgical method in terms of recurrence and residual in the postoperative period.

In the present study, we aimed to compare the incidence of parotid neoplasms seen in our region in the last 10 years with literature data and to compare the recently proposed parotidectomy

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methods with the classical parotidectomy methods, which were applied for 10 years.

Materials and Methods

Data were obtained from 73 consecutive patients who underwent parotidectomy due to benign and malignant tumors between January 2008 and May 2018, at the Clinic of Otorhinolaryngology of Ataturk University, School of Medicine Hospital.

Patient characteristics, including habits, such as alcohol and smoking consumption; family history; and clinical symptoms of the parotid neoplasm, were recorded. The method of operation was decided after the radiological images and fine needle aspiration biopsy results were evaluated. Additionally, patients' age, sex, histopathological diagnosis, surgical methods applied to tumors, side of diseases, complication rates, and treatment success were recorded. Our results were evaluated based on literature and compared with the new surgical methods recently reported.

All operations were conducted under general anesthesia. A standard parotidectomy incision was made on all patients, and a cervical incision was performed on patients requiring neck dissection. Superficial or total parotidectomy with/without the neck dissection, which is regarded as the classical surgical method, was applied. We identified the facial nerve body during operation and carefully dissected the superficial lobe of the parotid gland with neoplasm along the course of the facial nerve branches, routinely. If an enlarged cervical lymphadenopathy was preoperatively detected through physical examinations or computerized tomography, neck dissection was added to the operation of malignant tumors.

The ethics committee approved the study, which was conducted adhering to the principles of the Declaration of Helsinki.

Results

The available medical records of 73 patients were reviewed; 37 female patients and 36 male patients were included. The mean age of the all patients who underwent parotidectomy was 54±34 years.

The applied surgical methods are shown in Table 1.

Table 1. Applied surgical methods

Surgical Method	Number of Patients	%
Superficial Parotidectomy	64	88
Total Parotidectomy	9	12
Plus Neck Dissection	7	10

Superficial parotidectomy was applied to 64 (88%) patients. Total parotidectomy was administered to 9 (12%) patients, and neck dissection was performed on 7 (10%) patients. We applied the same surgical methods and approach for treating parotid tumors for 10 years.

According to the histopathological examination, 57 (78%) cases were found benign and 16 (22%) malignant. Histopathologically, benign masses were found to be 3.5 times more common than malignant masses.

The parotid masses were seen almost equally on both sides (right: 52% and left: 48%). Benign tumors constituted 76% of the right-side masses, whereas malignant tumors constituted 24%. Similarly, benign tumors constituted 80% of the left-side masses, whereas malignant tumors constituted 20%.

All histopathological results are shown in Table 2.

The most often detected benign neoplasm was pleomorphic adenoma with 42 (74%) cases, and the most often found malignant neoplasm was mucoepidermoid carcinoma with 7 (43%) cases. The second most commonly seen benign parotid neoplasm was warthin tumor with 11 (19%) cases. The second most commonly seen malignant parotid neoplasm was acinic cell carcinoma with 3 (18%) cases. There were no differences according to years in the histopathological diagnoses over 10 years.

Postoperative surgical complications were not seen in any of the patients. Only temporary facial paresis occurred in the two patients. The facial nerve functions were completely restored after steroid therapy.

Discussion

The histopathological diagnoses were comparable with the existing data for parotid tumor surgery performed in our region for 10 years. While pleomorphic adenoma was the most commonly seen benign neoplasm, mucoepidermoid carcinoma was the most commonly seen malignant neoplasm. In addition, we determined that the superficial parotidectomy performed in parotid superficial lobe neoplasms is superior to the new surgical methods in terms of postoperative relapse and residue.

Salivary gland neoplasms constitute 5% of all head and neck neoplasms, and parotid gland neoplasms constitute 75% of the salivary gland neoplasms [2].

The incidence of salivary gland neoplasms increases in the sixth and seventh decade of life. However, the average age was found 48.4 years in another study [8]. While Tas et al. [9] found an average age of 52.7 years and Al Salamah et al. [10] showed an average age of 51.6 years, Inci et al found an average age of 44 years [11]. In our study, the average age of the parotid gland tumors was 49.41 years (20-88). Our result was consistent with that of literature.

The most commonly reported benign parotid neoplasm was pleomorphic adenoma [1, 9]. In literature, pleomorphic adenoma has been reported for 51%-85% of benign parotid tumor cases [8, 9, 11]. In our study, pleomorphic adenoma was the most frequent benign parotid neoplasm, and it accounted for 73% of all benign parotid gland masses. This result was consistent with literature. Pleomorphic adenoma may have small extensions into the surrounding normal parotid tissue. If this tumor cannot be completely removed, the recurrence rate would be high.

Table 2. Histopathological results of parotidectomies

Histopathological Result		Number of Patients	%
Benign	Pleomorphic adenoma	42	57.6
	Warthin tumor	11	15
	Sialoadenitis	3	4
	Sialolipoma	1	1.4
Total		57	78
Malignant	Mucoepidermoid carcinoma	7	9.6
	Acinic cell carcinoma	3	4
	Adenocarcinoma	2	2.8
	Squamous cell carcinoma	2	2.8
	Nonhodgkin carcinoma	2	2.8
Total		16	22
Total		73	100

The tumor mass may occur again from these small extensions postoperatively [1]. In our clinic, the recurrence of pleomorphic adenoma was not observed during follow-ups.

The malignancy rate of parotid gland was reported as 20%-25% in literature [3]. In our study, we found the rate of malignant disease of parotid gland as 22%. Mucoepidermoid carcinoma has been reported as the most often malignant parotid neoplasm [12]. We also found same result in our study, and it accounted for 43% of malignant parotid masses. Mucoepidermoid carcinoma may be high and low grade. The prognosis of high-grade mucoepidermoid carcinoma is worse. The incidence of mucoepidermoid carcinoma has been reported to be 3%-18% [8, 9], which was found to be 9.6% in our study.

The second most frequently seen malignant neoplasm in our study was acinic cell carcinoma, and it accounted for 18% of malignant parotid masses. Acinic cell carcinoma is a low-grade malignancy, and it is seen most often in the parotid gland (80%) [13]. Acinic cell carcinoma is the third most commonly seen malignancy of the salivary gland [14]. However, this tumor was the second most common malignant neoplasm in our study. Acinic cell carcinoma is responsible for 12%-17% of major salivary gland malignant neoplasms and 3.4% of all salivary gland tumors [13]. In our study, we found that it is responsible for 18% of parotid malignant neoplasms and 4% of all parotid masses. These results were comparable with literature.

While superficial parotidectomy and total parotidectomy procedures were performed for parotid tumor before 2000, new surgical procedures, such as extracapsular dissection, partial superficial parotidectomy, and enucleation, have been proposed in the last two decades [7]. Many studies have compared surgical techniques for the removal of parotid gland tumors, particularly pleomorphic adenoma [15]. Superficial parotidectomy is the highly applied surgical procedure [6]; however, partial parotidectomy, which means resection of the neoplasm mass together with 1-2 cm of the surrounding normal parotid gland tissue, has been recently advocated for the treatment of the pleomorphic adenoma [16, 17]. The published reports have emphasized that partial superficial parotidectomy provides more cosmetic and functional outcomes [18]. However, the recurrence rate after partial parotidectomy for pleomorphic adenoma was reported to be 1%-9% [7]. In another study, it was reported that is high recurrence rates (4%-40%) related with partial parotidectomies applied such as tumor enucleation and conservative parotidectomy [19]. In a study with 98 patients who underwent extracapsular dissection for pleomorphic adenoma in 2004, local recurrence was reported in eight patients, and seven patients underwent capsule rupture during surgery [20]. In another study, it was also reported that the recurrence rate of patients treated through intracapsular enucleation was 45% [17]. It has been expressed that the surgical methods, such as extracapsular dissection, partial superficial parotidectomy, or enucleation, cause inadequate excision due to pseudopodia or satellite nodule, leading to recurrence [21]. Additionally, in a study conducted in 2004, it has been advocated that superficial parotidectomy should be used for large parotid tumors [20]. In our clinic, superficial parotidectomy was applied to all patients with superficial parotid tumors, and no recurrence was observed during follow-ups.

While superficial parotidectomy is sufficient for low-grade carcinoma, total parotidectomy and postoperative radiotherapy may be needed for high-grade carcinoma [7]. In our clinic, superficial or total parotidectomy operations were applied for the patients with malignant parotid gland disease. Neck dissection is a controversial subject in parotid malignant tumors. In the presence of a clinically palpable lymph node, there is a consensus on the application of elective neck dissection with a primary parotid surgery [22]. We also performed neck dissection if an enlarged cervical lymph node was found preoperatively through physical examination or computerized tomography. In contrast, some authors support elective neck dissection depending on the tumor histology, size, and grade [23, 24]. No recurrence of malignant parotid disease was found postoperatively in our patients.

The complications of parotid surgery are facial nerve damaging, bleeding, hematoma, seroma, sialocele, flap necrosis, saliva fistula, infection, and Frey syndrome [25]. While the most commonly seen postoperative complication is temporary facial palsy (20%), the second common complication is permanent facial palsy (2.5%) [1]. In our patient group, only postoperative temporary facial paresis was observed in two (2.7%) patients. The facial nerve functions were completely restored after steroid therapy.

The limitations of our study are low sample size, and there is not of different operation groups which we may will do statistical analysis. Other institutes in our region applying similar surgical techniques for treating parotid tumors may further contribute to the data pool of the current study.

In conclusion, the type and incidence of parotid tumors seen in our region for 10 years were consistent with literature. According to our clinical data, we believe that the shortest procedure to be performed in the surgery of parotid tumors should be superficial parotidectomy, and partial superficial parotidectomy should be avoided owing to the risk of recurrence and residual tissue. Additionally, total parotidectomy should be the preferred treatment option in benign tumors that hold the deep lobe and high-grade malignant parotid tumors. In short, we advocate the classical methods for the surgical treatment of parotid tumors.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Atatürk University School of Medicine.

Informed Consent: Written informed consent was received from all patients who participated in this study.

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