Research Article

Parotid Neoplasm, A Retrospective Study and an Updated Review in National Cancer Institute

Abu Bakr M. Mohie El Deen, Amr A. Abdel-Kader, Alaa M. Hassan and Bassem M. Saber Ismail
Department of General Surgery, El-Minia Faculty of Medicine

Abstract
Introduction: Tumors of the salivary glands are relatively rare, comprising slightly less than 3 per cent of all head and neck neoplasms. Parotid tumors are the most common salivary glands tumours. Their relative infrequency and tendency to histological variability continue to contribute to a grave lack of hard data on which to pursue an 'evidence-based approach' to the subject. **Aim of the Work:** This study aims to appraise the literature and write an updated review about parotid neoplasms and the new concepts of relation and comparison between preoperative diagnosis by different investigational methods and postoperative pathological analysis and also approaches in their surgical management. **Patients and Methods:** Patients enrolled in this study were scheduled for parotidectomy. The number of patients included in this study were forty-six patients. The study is a retrospective study of the patients presenting to National Cancer Institute (NCI) in 2019 with parotid tumors. **Results:** This study was performed in National Cancer Institute (NCI) between January 2019 and December 2019. Forty-six patients with Parotid neoplasm who underwent parotidectomy were included in this study. **Conclusion:** The epidemiology, diagnosis and management of parotid tumors has changed in the past two- or three-decades giving rise to new risk factors, pre-operative diagnostic techniques and novel approaches to surgery with new surgical procedures. The better understanding to the pathological behavior and the introduction of new advances in radiotherapy led to better control of locoregional malignant parotid tumors. New approaches to surgery and better cosmetic results made parotid surgery a less complicating one where patients with an early disease can have a curative surgery with almost no apparent scar or disfigurement.
Key words: Retrospective Study, Updated Review, Parotid Neoplasms, NCI- Cairo University.

Introduction
Tumors of salivary glands are rare constituting less than one percent of all tumors and 3% to 10% of the neoplasms of head and neck region[(1)]. Parotid tumors affect 1 in 100,000 people, representing 2-3% of tumors of the head and neck and 80% of salivary gland tumors[(2)].

Approximately 80% of the minor salivary gland tumors are benign, with pleomorphic adenoma being the most common followed by Warthin's tumor[(3)]. Although most these tumors are malignant, three-fourths of parotid tumors are benign[(1)] The most common malignant types of the parotid gland tumor are mucoepidermoid carcinoma (30%), adenoid cystic carcinoma, and malignant mixed tumors.[(4)]

Facial nerve paresis or paralysis is an ominous sign that a parotid mass is most likely malignant and has invaded the facial nerve. However, this is not always happened as there have been case reports indicating that some benign parotid gland tumors can invade the stylomastoid foramen, and through compression, can cause paresis or paralysis.[(5)]

In this theory, adenomatoid tumors, including oncocytic tumors, and pleomorphic adenoma are derived from the reserve cell of the intercalated duct, whereas epidermoid tumors, such as squamous cell and mucoepidermoid carcinomas, are derived from the reserve cells of the excretory duct.[(1,2)] Some reports provide molecular evidence to support the reserve cell theory of salivary gland tumorigenesis.[(3)]

Aim of Work

This study aims to appraise the literature and write an updated review about parotid neoplasms and the new concepts of relation and comparison between preoperative diagnosis by different investigational methods and postoperative pathological analysis and also approaches in their surgical management.

A Retrospective study of the patients presenting to National Cancer Institute (NCI) in 2019 with parotid tumors to review the biological and surgical aspect of the disease.

It was an attempt to find if the relation between preoperative diagnosis and postoperative pathological diagnosis of specimens considerable and also the best management for such cases.

Material and Methods

A retrospective case series study of parotid neoplasm patients will include all the patients who presented to National Cancer Institute (NCI) in the last year (2019) and underwent parotidectomy as a definite treatment.

This study will exclude patients unfit for surgery, refusing the operation, with recurrent or metastatic lesions, with other associated tumors and post-chemotherapy or radiotherapy.

Data will be retrieved from the pathology and statistics departments as well as the inpatient files for new cases.

Statistical analysis of the biological and clinical data will be performed when relevant.

Inclusion criteria:

This study will include patients both genders with Parotid gland Neoplasms needing parotidectomy as definitive treatment.

Exclusion criteria:

This study will exclude patients:

1. Unfit for Surgery.
2. Refusing the operation
3. With metastatic lesions
4. With other associated tumors.
5. Post-chemotherapy.

This study was performed in National Cancer Institute (NCI) between January 2019 and December 2019. Forty-six patients with Parotid neoplasm who underwent parotidectomy were included in this study. The patients were taken from National Cancer Institute (NCI) from the Head and Neck unit. The operation was performed in Surgery Department in National Cancer Institute (NCI).

SPSS was utilized for statistical analysis. Quantitative data are presented as mean ± SD. The chi-square test was used for comparison of qualitative data, and partition of chi-square was used for pairwise comparisons. The ANOVA test was used for analysis of quantitative data among the cases. For finding if there is a relation between preoperative diagnosis and postoperative pathological diagnosis of specimens, repeated measures ANOVA test was used. P <0.05 was considered statistically significant.

In our study, of the 46 patients who sought medical advice in NCI, all cases had some sort of an imaging modality. 80.4% of patients had a CT done for them, 10.9% had only done a U/S for them, and 8.7 % had an MRI done for them.

Suspicious nodes were found in 15.2% of the cases for all imaging modalities used, of whom 85.7% proved to be malignant and 14.3% proved to be benign (P value< 0.001).

51.3% of the pathologically verified tumors (39) were found benign by radiology and 48.7% were found malignant. The detected level by different imaging modalities showed that 71.7% of the pathologically proven cases were superficial, 17.4% deep, and 10.9%of the cases were inconclusive to the radiologist regarding the level, those were mostly ultrasound results.

Relating the above-mentioned data to the pathological behavior of the cases yielded the fact that 67.7% of the truly benign cases were radiologically benign (32.3% of cases were mistaken diagnosed radiologically as not a benign nature), and that 47.4% of the radiologically malignant were truly malignant cases (52.6% of cases were mistaken diagnosed radiologically as malignant).

Results

Table 1: Radiological nature versus pathological behavior for patients presenting to

NCI with parotid tumors

	Benign N=31 (%)	**Malignant N=15 (%)**	
Benign N=20	20 (67.7)	0 (0)	0.005
Malignant N=19	10 (52.6)	9 (47.4)	
Suspicious Nodes N=7	1 (14.3)	6 (85.7)	

In the current study, there was post-operative complications in the form of 15 cases out of 46 had some sort of facial palsy with only less than half of this number with permanent changes (neurotemesis), two cases showed metastasis, two showed post-operative wound infection, sloughing occurred in one case and also Frey's syndrome was reported in just one case.

Table 2: Data regarding post-operative complications for patients presenting to NCI with parotid tumors

Parameter	Frequency	%
Post-operative complication		
Fascial palsy	15/46	32.6
Metastasis	2	4.4
Wound infection	2	4.4
Wound sloughing	1	2.2
Frey's syndrome	1	2.2
Degree of palsy		
Neuropraxia	8	17.4
Axontemesis	1	2.2
Neurotemesis	6	13.1

Discussion

This study is mainly considered with studying the different criteria in parotid neoplasms in the patients presenting to NCI – Egypt who underwent parotidectomy as a definitive treatment and comparing them to the findings abroad in a trial to know the points of variation and the reasons for that difference hoping to present a better management for patients with parotid tumors.

It has been previously stated that malignant lesions cannot be differentiated from benign lesions based on the CT density, CT enhancement, MRI signal, or post gadolinium MRI enhancement. However, infiltration of the soft tissues, masseter muscle, or parapharyngeal space or tumor extension along the course of the parapharyngeal or facial nerves (frequently with adenoid cystic carcinoma) suggests malignancy[6] Ultrasound is the ideal initial investigation for evaluating masses and lesions in the superficial lobe of parotid, particularly as it is readily combined with FNAC[7], so questioning the value of radiological assessment in preoperative primary parotid lesions is meaningless.

In our study, the preoperative radiological assessment showed strong evidence of significance in detection of malignant cases and suspicious neck nodes preoperatively, supporting the global results stated above. Most radiological preoperative assessment was done using CT scan, for which the best statistical results were obtained (P value of 0.005).

Regarding post-operative complications, the facial nerve is more susceptible for injury in more extensive procedures, this is evidenced by have more facial injuries in non-superficial parotidectomies, this can be due to more:

• Facial nerve traction
• Facial nerve skeletonization
• Longer operative time exposing the nerve for desiccation
• The cause for which total parotidectomy was done, being a malignant tumor means a possibility for intentional or accidental facial injury.

The only case with reported Frey's syndrome was recorded in subjective basis with no objective tools used for assessment, assessment with special tests (Minor's test) significantly increases the incidence that may not be clinically perceived by the patient or the physician in the follow up clinic.

Wound infection and sloughing were recorded in a total of three cases, it was interesting to find that none of them had a Blair incision and that neck dissection and reconstruction were done in all three cases, thus strongly relating bigger incisions to a higher incidence of wound infection.

Conclusion

The epidemiology, diagnosis and management of parotid tumors has changed in the past two- or three-decades giving rise to new risk factors, pre-operative diagnostic techniques and novel approaches to surgery with new surgical procedures.

The better understanding to the pathological behavior and the introduction of new advances in radiotherapy led to better control of locoregional malignant parotid tumors.

The introduction of high technology in imaging together with the use of ultrasound guided FNAC made it possible to plan the subsequent management precisely and weigh every possible complication during surgery and radiotherapy.

New approaches to surgery and better cosmetic results made parotid surgery a less complicating one where patients with an early disease can have a curative surgery with almost no apparent scar or disfigurement.

New concepts for assessing patient satisfaction and new tests for detection of hidden complications further contributed in better outcome of parotid surgeries

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