Original Article

Surgical Dissection of the Facial nerve in Parotidectomy: Our Personal Experience

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Abstract

Introduction:
Salivary gland tumors are relatively rare and constitute 3-4% of all head and neck neoplasms. The majority (70%) of salivary gland tumors arise in the parotid gland. Recommended treatment for a parotid mass is surgical excision with a surrounding cuff of normal tissue to prevent recurrence.

Materials and Methods:
This is a retrospective study of 300 patients who were operated by a single surgeon for parotidectomy over a 20-year period in Ghaem Hospital, Mashhad, Iran. The patients' age, sex, operation findings, pathology report and type of surgery (parotidectomy or mastoidectomy) were analyzed.

Results:
In 25 cases we had to find the nerve in a retrograde fashion by finding the distal branches and dissecting backwards to reach the mass, whereas in 275 patients the trunk of the facial nerve was approached in a conventional antegrade fashion. Twelve cases needed some sort of repair on the nerve due to a trauma in the surgical field, either grafting or anastomosis was done. Interestingly mastoidectomy was required in 5 of our cases. The aim of these mastoidectomies was to eradicate the malignancy in cases where a perineural invasion was present. It also gave us a chance to find a normal proximal nerve ending in order to perform a safe nerve reconstruction (grafting or anastomosis).

Conclusion:
Mastoidectomy and facial nerve anastomosis may be required in parotid surgery.

Keywords:
Dissectio, Facial nerve, Parotidectom

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Introduction

Parotid surgery has always been engaged with facial nerve dissection, trauma and reconstruction. Around 5-7% of the parotid masses are malignant and some of them have the possibility of perineural invasion. Most of parotid tumurs have an insidious and gradual growth. Even in cases with the most common type of benign parotid tumors - pleomorphic adenoma- a safe margin prevents the high recurrence rate which is usually faced in this benign situation. To find the facial nerve in parotid surgery we have used the anatomical landmarks and in the case of any difficulty electrical intraoperative stimulation and monitoring the nerve function had to be used. There are cases in which such facilities are not advanced enough to find the main nerve trunk, therefore a change in the method towards finding peripheral branches and exploring the nerve backward to the mass has to be established. This technique and approach will bring about the condition to perform a satisfying oncologic surgery and a surgical field for preservation and/or repair of a traumatized facial nerve. In the cases of suspicious perineural invasion, the nerve has to be traced into the mastoid area in order to eradicate the malignant progression and find an intact proximal end for reconstruction and anastomosis.

Materials and Methods

This is a retrospective study of 300 patients who had undergone parotidectomy by a single surgeon over a 20-year period in Ghaem Hospital, Mashhad, Iran. Age, sex, operation findings, pathology report, type of surgery (parotidectomy or mastoidectomy) and method of facial nerve trunk finding (retrograde or antegrade) were analyzed for all patients as well as type of the parotid mass, being either benign or malignant.

Results

The male to female ratio was almost 1 (149 males and 151 females); 45 (15%) patients had a malignant tumor. In 275 patients the main facial nerve trunk was found in a conventional antegrade fashion and in 25 patients in a retrograde manner. No significant difference was observed in the incidence of postoperative complications between the two groups. In 5 cases a mastoidectomy had to be done in order to decompress the nerve and resect the affected nerve as far proximal as it was involved for the sake of achieving a safe margin oncologic surgery.

Discussion

Parotid malignancies are not common consisting 3-4% of all head and neck malignancies (1). But two main conceptions have to be kept in mind for those who are involved in the surgery of the parotid gland. First of all the best outcome is in the hands of the first surgeon. He or she has to be quite aware of the possibility of perineural invasion which has a serious impact on the type of surgery. If the first surgery brings about a clean margin especially on the side of nerve involvement, then one can expect a better survival rate and a better chance for facial nerve repair. Having the above essential concepts in mind, we operated 300 cases of parotid masses in the last two decades (2,3).

The male to female ratio was almost 1(149 males and 151 females); 45 (15%) patients had a malignant tumor. We reviewed our attempts in finding, preservation and repair of the facial nerves with especial attention to the cases where the nerve involvement led us to approach an intact normal proximal nerve ending. The idea was to complete the elimination of the malignant progression and prepare the surgical field for a successful nerve graft for rehabilitation of the disturbing facial appearance.

In 275 patients the main facial nerve trunk was found in a conventional antegrade fashion and in 25 patients in a retrograde manner. No significant difference was observed in the incidence of postoperative complications between the two groups (4).

In 5 cases a mastoidectomy had to be done in order to decompress the nerve and resect the affected nerve as far proximal as it

was involved for the sake of a perfect oncologic surgery. It also gave us the chance for nerve grafting (5-7).

Complementary mastoidectomy along with parotidectomy has been reported in medical literature (6).

Not every mastoidectomy is performed due to perineural involvement, although it has been the main cause.

This is because perineural involvement is a big fear for the surgeon not to have a complete surgical treatment for cases of adenoid cystic and squamous cell carcinomas which their pathologic processes have higher incidences for perineural invasions. In two of our cases complementary mastoidectomy was performed in order to get to a proximal end which could lead to a satisfactory nerve grafting. In 1975 a study reported mastoidectomy having been performed on two unusual cysts in the parotid gland:

A cholesteatoma arising from the ipsilateral mastoid twenty years after a successful radical mastoidectomy, and a deeply located cyst of a probably congenital origin (8).

Conclusion

A retrospective study of the 300 cases of parotidectomies gave us a chance to look at the significance of the facial nerve in parotid surgeries. The points of great significance are as follows:

- Be prepared for performing extra work to eradicate the malignant disease.
- This may necessitate a mastoidectomy and facial nerve decompression, frozen section to reach a normal and intact proximal nerve ending.
- A rich medical and surgical background for understanding the behavior of some pathologies which may behave differently.
- The equipment which facilitate facial nerve finding are necessary instruments which add to the surgeon's knowledge of anatomical landmarks whenever the case necessitates a different exploration and for preservation or repair of the facial nerve.

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