

A study of complications of superficial parotidectomy

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Abstract:

The commonest tumor of the parotid gland is pleomorphic adenoma and it arises mostly from the superficial lobe of the gland. The condition is best managed by superficial parotidectomy. If the operation is not performed properly, it can result in some specific complications with long term anatomical and physiological effects. This is due to the unique surgical anatomy of the gland. Most importantly, the surgeon must be well acquainted with the course of the facial nerve which traverses through the gland as its injury can lead to an unacceptable cosmetic result. Secondly, even though the tumor is benign, due importance should be given to removal of the tumor with a wide margin in order to reduce the chance of local recurrence compared to simple enucleation. Other complications typical to parotid surgery include Frey's syndrome, parotid fistula, trismus, loss of sensation over the skin of the lower part of the pinna and adjoining preauricular area etc. The present study has been performed over a 4 year period in which 37 cases have been operated with the aim to study the complications of surgery in the immediate post operative period and also on long term follow-up. Cases were selected from patients attending the OPD and diagnosis was confirmed pre-operatively by USG, CT scan and FNAC. After routine work-up, patients were operated by a standard procedure and the surgical specimen was sent for histo-pathological examination in every case. The results have been analyzed in detail and also compared with the available literature.

Key Words: Pleomorphic adenoma, Superficial parotidectomy, Facial nerve palsy, Frey's syndrome, Parotid fistula

Introduction:

Superficial parotidectomy is routinely being performed by ENT surgeons, general surgeons and maxillofacial surgeons as it falls within the domain of all the three

specialties. It is primarily indicated for the management of pleomorphic adenomas arising from the superficial lobe of the parotid gland. This operation is associated with some typical complications owing to the unique surgical anatomy of the gland. Most important is the close relation of the facial nerve to the gland as it traverses through the latter while dividing into various

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branches. This results in division of the parotid into a large superficial lobe and a smaller deep part¹. The primary duty of the surgeon is to identify and preserve the facial nerve trunk and its branches in order to prevent post-operative facial palsy. Another major point that must be noted in relation to this operation is that even though the tumor is benign, it must be excised with a wide margin of healthy parotid tissue to reduce the risk of local recurrence compared to simple enucleation. Other complications that can be encountered after this operation include trismus, Frey's syndrome, parotid fistula and anesthesia over the lower half of the pinna and adjoining area of the face. The present study was conducted to identify the complications of superficial parotidectomy for pleomorphic adenomas in the immediate post-operative period and to note the recurrence of tumor on long term follow-up.

Materials and methods:

In the present study, a total of 37 cases of pleomorphic adenoma arising from the superficial lobe of the parotids were diagnosed and operated by superficial parotidectomy over a 4 year period (July 2007 to June 2011) and the complications were monitored through long-term follow-up. Necessary consent from the hospital authorities was taken prior to the study.

Only cases with pleomorphic adenomas arising from the superficial lobe of the parotid gland were enrolled for the study and a total of 41 cases were identified. Patients were all chosen from the out-patient department on the basis of clinical presentation of swelling over the parotid region. The location of the tumor and diagnosis was confirmed in every case by advising ultrasound of the parotid region and/or CT scan along with Fine Needle Aspiration Cytology (FNAC) from the swelling. It is pertinent to mention here that FNAC is a safe alternative compared to open biopsy of major salivary glands for an exact pre-operative diagnosis and evidence suggests that if the needle used for the procedure does not exceed 18G, there is minimal risk of seeding viable tumor cells during the procedure².

After diagnosis, the patients were counseled in detail regarding the need for surgery and the possible post-operative complications. 4 patients declined surgery and therefore 37 cases were prepared for operation after taking necessary surgical consent. After completing routine investigations they were prepared for operation under general anesthesia after pre-anesthetic check-up. Of the 37 cases, 23 were male and 14 were

female patients with the age of patients ranging between 22 to 53 years.

A standard operative protocol³ was followed in all cases and all specimens were sent for histo-pathological examination to the department of pathology for final confirmation of the diagnosis. Intravenous antibiotics and pain killers were prescribed in all cases in post-operative period as per standard protocol. Some patients developed a variable degree of facial palsy in the immediate post-operative period. We have prescribed a 14 day course of oral steroids (starting with a dose of 1 mg/kg body weight and then tapered off) to these all these patients to aid the process of recovery of facial nerve function unless otherwise contra-indicated (three patients were diabetic & one had severe hypertension and hence not given steroids). The drain was removed on the 2nd or 3rd post-operative day depending on the amount of collection and patients were subsequently discharged. They were asked to come back on the 5th or 6th post-operative day for stitch removal and weekly thereafter for up to 6 weeks. After that they were asked to come for review at monthly intervals. On each visit, the specific complications and their severity were noted in a progress sheet.

Results:

The common complications of superficial parotidectomy are well documented in the literature and include facial nerve injury, development of Frey's syndrome, development of parotid fistula, trismus, anesthesia of the skin over the lower part of the pinna and adjoining cheek and tumor recurrence. The complications that were encountered are enumerated accordingly.

Impairment of facial nerve function – A total of 14 patients (37.8%) had variable degree of facial nerve weakness in the immediate post-operative period. 11 cases out of the 14 (i.e. 78.6%) were however transient in nature and showed full recovery within a maximum period of 6 weeks. Out of the 3 cases with permanent facial nerve involvement, 2 patients (out of the total of 37 cases i.e. 5.4%) had partial weakness due to injury to the marginal mandibular branch of the facial nerve and 1 patient (2.7%) had complete facial nerve palsy due to transection of the nerve.

Frey's Syndrome – It developed in 22 cases (59.4%) between 4 – 10 weeks after surgery. 18 out of the 22 (i.e. 81.8%) showed spontaneous improvement over 4 - 6 months with no residual complaints. 4 patients (i.e. 18.2% of those with Frey's syndrome) continue to have the problem but of much

lesser proportions than in the immediate post-operative period.

Development of parotid fistula – 6 cases (16.2%) developed features of parotid fistula but among them 5 cases (i.e. 83.3% of those involved) recovered completely with parenteral feeding & pressure dressing within 3 to 4 weeks. Only 1 patient out of 37 cases (2.7%) continued to have the problem up to 1 year after surgery but was subsequently lost to follow up.

Trimus– Again an insignificant but inevitable complication, it was seen in most cases in the immediate post-operative period but improved over 2 weeks.

Anesthesia involving the lower half of the pinna and pre-auricular skin – It is an inevitable sequelae of this operation because of division of the greater auricular nerve. All cases were involved in variable degree but the area of numbness diminished gradually over a period of 6 months with no major complaint in any case.

Tumor recurrence – Of the 37 cases, 6 have been lost to follow up but the remaining 31 patients have not shown any sign of tumor recurrence up to a minimum of 6 months and a maximum of slightly over 4 years of follow-up.

Discussion:

The results are discussed separately in detail below with special reference to available literature on the basis of individual complications -

Impairment of facial nerve function – It is the most dreaded complication of this operation and may occur due to accidental injury to one or more of the major branches or the main trunk of the facial nerve. Clinically it is manifested as variable weakness of one side of the face with the asymmetry of the angle of the lip, inability to close the eye, inability to wrinkle the forehead etc. depending on the involvement of specific branch of the nerve. More commonly, even though the branches of the nerve remain intact, the nerve function may not be proper in the immediate post-operative period due to the effect of manipulation during surgery. This leads to a weakness of one half of the face which may last a few weeks to months with full recovery eventually.

As indicated above, a total of 14 out of 37 cases (37.8%) had variable degree of temporary or permanent facial palsy. Out of these, 11 cases (29.7%) developed transient facial nerve weakness and all of them had full recovery of nerve function within 6 weeks of surgery. A recently published case

series of 156 patients who underwent partial superficial parotidectomy for pleomorphic adenomas however puts the figure at only 15% with no case of permanent weakness⁴. There were 3 cases out of 37 (8.1%) with permanent facial nerve palsy in our study of which 2 (5.4%) had permanent partial nerve weakness due to injury to the marginal mandibular branch of the facial nerve. Incidentally, this division of the nerve is most vulnerable for inadvertent injury during parotid surgery⁵. As already mentioned, 1 patient (2.7%) had complete facial nerve palsy due to accidental transection of the nerve.

In this context, it is pertinent to mention that the situation is entirely different when parotid surgery is being done for recurrent pleomorphic adenoma. In such a situation the surgeon may have to risk sacrificing one or more branches of the facial nerve purposefully for complete tumor removal (due to the locally infiltrative character of the tumor and also due to fibrous adhesions from previous surgery).⁶

In order to minimize the risk of facial nerve injury, some advanced centers routinely use facial nerve monitors during surgery⁷. It is not available in our setup, but we feel that if basic anatomical landmarks are sought and dissection carried out under direct vision,

the results are quite acceptable. A large case series of 63 patients with benign tumors arising from the superficial lobe of the parotid also concludes that lack of facial nerve monitoring should not be considered as a contraindication of surgery⁸.

Frey's Syndrome – This condition is characterized by sweating in front of the ears whenever the patient takes a meal. It is postulated that the condition occurs due to the re-growth of the secreto-motor parasympathetic fibers of the auriculotemporal nerve (which supplies the parotid gland) into the distal cut ends of the sympathetic fibers that supply the sweat glands & blood vessels of the skin. This complication may develop in up to 50% cases following superficial parotidectomy according to Stell & Maran⁷. The result of 22 cases (59.4%) developing it is in our study is quite close to their observation. However, the recently published large series of Papadogeorgakis cited above reported its incidence as low as 4% only⁴.

Development of parotid fistula – A troublesome complication of parotid surgery, it is inevitable in some cases. In the present study, 6 cases (16.2%) initially developed signs & symptoms of parotid fistula but 5 cases (i.e. 83.3% of those involved) completely recovered with

treatment while 1 patient out of 37 cases (2.7%) continued to have the problem up to 1 year after surgery (when he was lost to follow up). These findings are in line with those of other reported case series.

Trismus– Again an insignificant but inevitable complication that improves over 2 weeks in most cases was also encountered in almost all cases.

Anesthesia involving the lower half of the pinna and pre-auricular skin – As already mentioned, it is inevitable after this operation because of division of the greater auricular nerve. It is a minor complaint and all it needs is reassurance to the patient that it will improve over 6 months.

Tumor recurrence – In this context it must be noted that the tumor capsule of a pleomorphic adenoma is frequently incomplete with tumor tissue projecting through the dehiscence⁹. Hence the tumor must be removed with a margin of normal parotid tissue around it to bring down the chance of recurrence to less than 5% compared to simple enucleation which has been abandoned due to a high long term failure rate of up to 40%. In the present series, no recurrence has been noted up to a

minimum of 6 months and a maximum of slightly over 4 years of follow-up in 31 cases while 6 cases have been lost to follow up. But considering the fact that this is a very slow growing tumor, we can only be more definitive about the success after further follow-up in the coming years.

Conclusion:

The branch of Otorhinolaryngology has made large strides in the past few decades and breached new frontiers. We are now routinely doing surgeries that were considered to be in the exclusive domain of general surgeons & maxillofacial surgeons. Parotid surgery is one such example. A thorough knowledge of the surgical anatomy of the gland is a must for good results especially due to its close relationship to the facial nerve. The present study shows encouraging results with acceptable complications rates. Some of the complications like facial nerve injury and tumor recurrence can be minimized by careful dissection while others like Frey's syndrome, trismus, parotid fistula etc are sometimes unavoidable but self limiting and easily manageable with minimal long term effects.

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