STERNOCLEIDOMASTOID (SCM) MUSCLE FLAP AFTER PAROTIDECTOMY

Ramraj R¹, Vishnu M. L²

¹Senior Consultant Surgeon, Department of General Surgery, SUT Hospital, Pattom, Thiruvananthapuram.
²Assistant in the Department, SUT Hospital, Pattom, Thiruvananthapuram.

ABSTRACT

BACKGROUND
Parotidectomy is a routinely undertaken procedure by general surgeons and ENT surgeons; however, the risk of facial nerve injury and further deformity is a scar of the patient and nightmare of the operating surgeon, thus obtaining consent for the surgery is a difficult task of the surgeon. Most patients are happy after surgery; however, a depressed facial contour is a point of significant dissatisfaction for the patient. Another point of concern after superficial or total parotidectomy is Frey syndrome, which is seen in almost 80%, but becomes noticed or symptomatic only in about 10% - 12%. Many a number of attempts have been made with fascia lata, dermal fat, platysma, temporalis fascia, sternocleidomastoid muscle and submuscular aponeurotic sheath of the face to overcome these disabling issues. The sternocleidomastoid muscle flap with its superiorly based perforation from occipital artery and superior thyroid artery is an effective tool in preventing Frey syndrome and avoiding a pitted deformity in the periauricular region, thus achieving facial symmetry. The advantage of this muscle over the other alternatives described is that it has lower chance of necrosis and it provides cover over a larger area and its design is easier.

The objective of the study was to assess the cosmetic and functional outcome of primary sternocleidomastoid muscle flap undertaken on post parotidectomy patients with reference to the cosmetic outcome, occurrence of Frey syndrome and sensation to the ear lobe.

MATERIALS AND METHODS
This descriptive study was undertaken on 22 patients, among whom 14 underwent superficial parotidectomy and 8 total conservative parotidectomy.

RESULTS
Among the 22 patients who underwent the procedure after parotidectomy, 4 were males and 18 were females. There were 14 superficial parotidectomy and 8 total conservative parotidectomy. The histopathology report was malignancy in 6 patients, pleomorphic adenoma in 14 patients and Warthin’s tumour in 2. Satisfactory cosmetic outcome was possible in 21 patients. One patient had marginal necrosis of the flap and a pitted scar (post radiation patient) requiring PMMC (pectoralis major myocutaneous flap) cover. Frey syndrome occurred in one patient in spite of the flap. Ear lobe sensation was preserved in 20/22 patients.

CONCLUSION
Partial thickness superiorly based on sternocleidomastoid flap provides exemplary cosmetic outcome following either superficial or total conservative parotidectomy and it significantly lowers the incidence of Frey syndrome.

KEYWORDS
Sternocleidomastoid Muscle Flap, Parotidectomy, Frey Syndrome.


BACKGROUND
Parotidectomy either superficial or total conservative is the most effective treatment for benign and malignant neoplasms of the parotid gland. Most patients and some surgeons are averse to this concept of treatment for fear of the complications following parotidectomy ranging from apraxia to the facial nerve, partial or total paralysis of the facial nerve, loss of sensation to the ear lobe, pitted pre-auricular deformity, Frey syndrome and many others. Among these complications, the most important concern of the surgeon will be to prevent facial nerve injury, Frey syndrome and preservation of sensation to the ear lobe. A thorough knowledge of the neurovascular plane in parotid and its surrounding, an unhurried meticulous patient, bloodless dissection by the surgeon are the prerequisites for a favourable outcome.

A critical assessment of efficacy of sternocleidomastoid muscle flap which forms an effective tool in avoiding the major unfavourable outcome of surgery is undertaken in this descriptive study carried out on 22 patients.

Sternocleidomastoid muscle is rich in its vascularity from occipital artery from its upper third, superior thyroid artery in its mid portion and transverse cervical artery inferiorly. This muscle is therefore a commonly chosen one for orofacial reconstruction. Superiorly based partial split flap is used in post parotidectomy defect reconstruction. The most important structure to be attended during the dissection of the flap is the accessory nerve which passes through it. The SCM flap has an advantage over the other flaps as it fits into the defect perfectly, can be harvested without any deficits, has relatively no risk of skin necrosis.

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Corresponding Author:
Dr. Ramraj R,
Senior Consultant Surgeon,
SUT Hospital, Pattom,
Thiruvananthapuram.
E-mail: ramrajr69@gmail.com
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and it provides a larger area under its cover,7 thus significantly decreasing the incidence of Frey syndrome.

MATERIALS AND METHODS
This descriptive study was conducted in 22 patients admitted in the Department of General Surgery for parotidectomy from April 2014 to October 2017. All surgeries were individually performed by a single surgeon (myself). A uniform technique of parotidectomy was performed.

All patients admitted for parotidectomy went through a proper evaluation of history and physical examination which were recorded. All patients underwent routine blood examination consisting of haemoglobin estimation, total count, differential leucocytes count, ESR, blood sugar, blood urea, serum creatinine, serum sodium and serum potassium. X-ray chest and ECG (all leads) were included in the list of investigations. Imageology namely ultrasonography, CT scan or MRI was considered depending on the type of case to identify the preoperative anatomy and to plan surgery.

Operative Technique
Surgery was undertaken under general anaesthesia. Patient lying in the supine position with head tilted to the opposite side and a sandbag beneath the shoulder for adequate neck extension. The skin incision8 started from the level of the zygomatic bone in its preauricular limb curving down to go behind the ear lobule and then curving down over the sternocleidomastoid muscle to reach the upper crease of neck.8

Superficial or total conservative parotidectomy was performed depending on the placement of the lesion and the anticipated pathology in the conventional way. The trunk of facial nerve was identified first followed by identification and securing of its division, all branches and its intercommunicating rami.9 Other important structures in the fasciovenous plane namely retromandibular vein and terminal branches of external carotid artery were identified and secured. The use of haemostatic cautery was kept minimum and ligatures were used when required utilising 4-0 polyglactin. A superiorly based partial thickness SCM flap was harvested, carefully preserving vascularity received from occipital artery and the same was rotated anteriorly to cover the defect over the facial nerve and its branches, retromandibular vein, the branches of the external carotid artery and masseter muscle.

The flap was sutured to remnant parotid fascia and masseteric fascia avoiding a direct or indirect hitch or compression on the branches of the facial nerve. Specific care was executed during the dissection to avoid injury to the spinal accessory nerve, which pass through the SCM.10 After thorough haemostasis, a number 12 suction drain was placed, and the wound was sutured using 2-0 polyglactin for the subcutaneous tissue and monofilament 4-0 poliglecaprone subcuticular sutures for skin. Suction was removed on Day 1 or Day 2 depending upon individual cases. Patient was discharged on Day 3 to Day 4.
Another example of satisfactory outcome at 3 months using SGM flap.

**Ethics**
Evaluation and surgical procedure undertaken on all patients were in accordance with the ethical standards. Consent from the ethical and scientific committee of the hospital was sought prior to the commencement of the study.

**Statistics**

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<td>Gender</td>
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<td>Male</td>
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<td>Female</td>
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*Table 1. Patient Profile*

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<th>Type of Surgery</th>
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<td>Superficial parotidectomy</td>
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<td>63.63%</td>
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<td>Total conservative parotidectomy</td>
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<td>36.36%</td>
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*Table 2. Surgery Types*

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<td>Pleomorphic adenoma</td>
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<tr>
<td>Warthin’s tumour</td>
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<td>09.09%</td>
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<tr>
<td>Malignancy</td>
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<tr>
<td>Total</td>
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*Table 3. Histopathology*
In our series, a superiorly placed SCM flap was used. Careful placement of sutures attaching the flap to the remnant parotid fascia was the most important step. In malignant tumours of the parotid in our series, the SCM flap was used only with a caution that a tumour recurrence would be hidden. The same was explained to the patient and relatives when total conservative parotidectomy was considered for suspected malignant lesion of parotid. The Frey syndrome that was noticed in one patient improved with time and patient is tolerating the same. The cosmetic results in our study were exemplary and the score given by the patient was of degree one and a blinded second person made a score of zero and one.

CONCLUSION

The superiorly based SCM flap offers cosmetic and functional benefit in avoiding an ugly scar and it significantly lowers the occurrence of Frey syndrome. There is no significant hazard to the patient’s wellbeing when this procedure was undertaken. There is no reported damage to the spinal accessory nerve when the procedure was undertaken with the desired level of expertise.

REFERENCES


