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Case Report

Tensor fascia lata interposition for treatment of Frey's syndrome: a forgotten surgical technique?

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ABSTRACT

Frey's syndrome which manifests clinically as unilateral facial sweating and flushing on salivary stimulation and mastication, is postulated to result from aberrant regeneration of sectioned autonomic nerve fibers. Many surgical and non-surgical treatment modalities have been described with varying degrees of success to relive the symptoms. In this case report, we describe the surgical technique of tensor fascia lata interposition as a simple and reliable treatment option for Frey's syndrome.

Keywords: Frey's syndrome, Tensor fascia lata, Gustatory sweating

INTRODUCTION

Frey's syndrome, also known as gustatory sweating, commonly occurs following parotidectomy. However, it can also occur after other forms of injury to the preauricular region, such as condylar fractures, blunt trauma or even after incision and drainage of parotid abscesses. The symptoms may develop several weeks to several years after the initial insult.[1,2] The syndrome bears the name of Dr. Lucie Frey, a neurologist at University of Warsaw, who described this phenomenon in a patient with gunshot wound to the parotid region.[3] Early references, however, have been traced back to Duphenix in 1757, Dupuya in 1816, and Baillarger in 1853 who had described gustatory sweating over the cheek area in patients with previous parotid infections and incisions for drainage.[4]

Many treatment modalities have been described with varying degrees of success to relive the symptoms. The most widely used non-surgical technique at the present time is a local injection botulinum toxin. Besides being temporary, its use is not without side effects. Most of the surgical techniques employ implantation of a "tissue barrier" between skin and parotidectomy bed, including sternocleidomastoid muscle flap, temporoparietal fascia rotational flap, superficial muscular aponeurotic system, dermis fat graft, synthetic biomaterials such as expanded polytef.

We describe the use of tensor fascia lata as an interposition tissue for the treatment of Frey's syndrome. Through this report, we intend to revive this "forgotten" surgical technique as a simple, effective, permanent and reliable alternative to other treatment modalities.

CASE REPORT

A 60 year old man underwent total parotidectomy for a parotid neoplasm. Histopathology was suggestive of a low-grade acinic cell carcinoma. Two years later, he presented to the outpatient department with complaints of severe gustatory sweating on the skin overlying the operated area.

Starch iodine test showed blue-black discoloration on the skin overlying the area of left parotidectomy, thus, establishing the diagnosis of Frey's syndrome (Figure 1.

A-C). However, on examination, we also noted small nodular swellings, four in number, over the scar of previous surgery. Keeping the suspicion of recurrence in mind, FNA cytology from the swellings was done. It was reported as recurrence of acinic cell carcinoma. MRI was done to assess the internal extent of recurrence. The patient underwent revision parotidectomy including wide excision of the skin recurrence.

Figure 1(A): Preoperative starch iodine test. Application of betadine solution to the affected area.

Figure 1(B): Application of starch powder to the dried painted area.

At the same time, to treat his symptoms of gustatory sweating, tensor fascia lata was interposed between skin flap and parotidectomy bed.

Figure 1(C): Triggering of gustatory response on chewing leads to blue-black discoloration.

Figure 2: Skin flap raised off the parotidectomy bed.

Surgical technique of fascia lata interposition

The area affected by gustatory sweating is clearly demarcated by starch iodine test. With the boundaries of the affected skin marked, skin flap is raised off the parotidectomy bed (Figure 2). Fascia lata is then harvested from the lateral aspect of thigh and care is taken to prevent perforating the flap. The fascia is then fashioned to the appropriate shape and size (slightly larger than the affected area) and placed under the affected skin flap. It is then sutured to the subcutaneous tissue to prevent its sliding under the flap (Figure 3 and 4). The skin flap is reposited and incision closed.

Post-operatively, he was completely relieved of the distressing symptoms. Starch iodine test revealed only a

small area of discoloration above the level of root of helix which was asymptomatic otherwise (Figure 5).

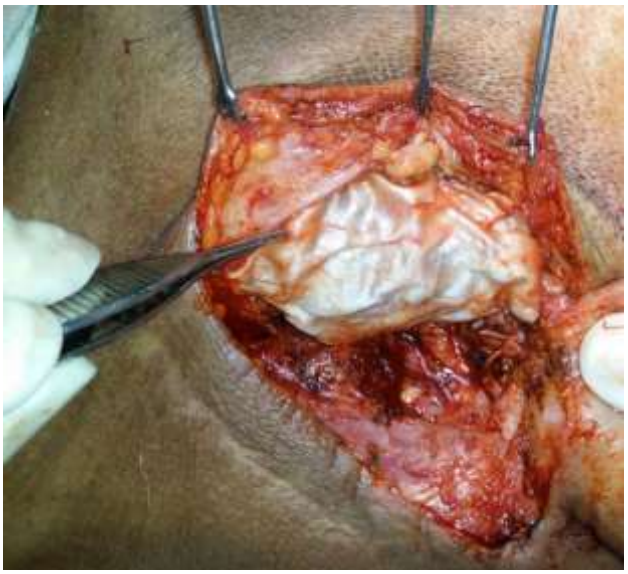

Figure 3: Fascia lata being fashioned to the size and shape of affected area.

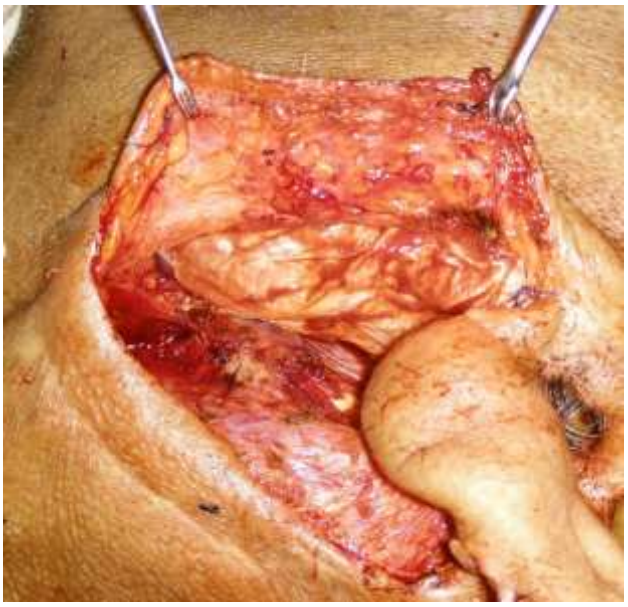

Figure 4: Fascia lata secured by suturing to the subcutaneous tissue.

DISCUSSION

Salivary gland tumors are relatively rare and constitute 3-4% of all head and neck neoplasms. Approximately 70-90% of salivary tumors are located in the parotid gland. The vast majority of these, approximately 85%, are benign.[5-7] Surgical treatment of parotid tumors involves parotidectomy, the extent of which can be partial superficial, superficial, or total. Frey's syndrome is among one of the more common complications of parotidectomy. Also known as gustatory sweating or auriculotemporal syndrome, it presents clinically as facial sweating and flushing on salivary stimulation and mastication.

Figure 5: Post-operative starch iodine test showing a very small area of residual discoloration.

It is reported that around 10% of patients undergoing parotidectomy will complain of gustatory sweating, however, on questioning, 30-40% will reply that they experience it, while it can be demonstrated objectively by starch-iodine test in 95% of patients.[8]

The pathophysiology of this syndrome was described by Andre Thomas[9] in 1927 and later by Ford and Woodhall[10] in 1938. They postulated that Frey's syndrome is caused by aberrant regeneration of sectioned postganglionic parasympathetic fibers that are severed during parotidectomy. These cholinergic fibers reach the distal end of the sympathetic fibers innervating the sweat gland and subcutaneous vessels. Because postganglionic parasympathetic nerve fibers and sympathetic nerve fibers share the same mediator, acetylcholine, once the aberrant regeneration takes place, the skin flushes and sweats during eating.

First proposed by Drobik and Laskaw in 1995, botulinum toxin has come up as one of the most widely used treatment options for these patients.[11] Its limitations, however, are the need for repeated administration, high cost and side effects. It may diffuse into the facial muscle motor end plate resulting in temporary weakening of the facial muscles, drooping of the eyelids and facial paresis. Localized, short-term reactions at the injection sites, including pain, edema, erythema, ecchymosis and hyperesthesia, as well as allergy reactions have also been reported.[12,13]

The pathology of this syndrome dictates that in established cases of Frey's syndrome, raising the skin flap from the parotid bed would "break" these aberrant

nerve fibers. It, then, follows from the pathophysiology that interposition of a tissue between skin and the parotid bed in the form of a "barrier" would not allow this aberrant regeneration to happen again. This has been the basis of most of the surgical treatments that have been employed for this syndrome in the recent times. What differs among these treatments, however, is the choice of interposition tissue.

Sessions et al, as far back as 1975, had described the use of tensor fascia lata graft in treatment of Frey's syndrome.[14] He used this technique in four patients whose symptoms had returned several months after tympanic neurectomy. Two were symptom-free several months later when they were lost to follow-up, while long term follow-up was available for other two. They remained symptom free for 2.5 and 5.5 years respectively and even had negative starch-iodine tests. Subsequently, Wallis et al in 1978 used fascia lata in two patients with similar results.[15]

We could not find any more references to the use of fascia lata in the literature after 1978. This is surprising since fascia lata seems to be the ideal material to use for interposition. It is a thick and sturdy fascial layer which provides for a sufficient barrier to the regrowth of aberrant parasympathetic fibers.[14] Besides being easy to harvest, it is available in abundance and thus, can be used to cover a larger area. The effect seems to be permanent. Being an autogenous material, it eliminates the risk of reactions or rejections and thus, can be considered safe. Additionally, harvesting it is not associated with any donor site morbidity.

A few things should be kept in mind, though. The fascia should be harvested from the lateral-most aspect of thigh, for it is here that the fascial layer is thickest.[14] It should be sutured securely to the subcutaneous tissue and/or the parotidectomy bed to prevent its sliding under the skin flap. It is important to avoid perforating the graft so as not to inadvertently allow the penetration of nerve fibers.[14] Thus, it must be a continuous piece of fascia covering an area slightly larger than the corresponding area of involved skin.

Torretta et al first described the use of fat injections in four patients of post-parotidectomy Frey's syndrome.[16] They reported a clinical and subjective improvement and concluded that while fat injections can be an effective remedy, multiple procedures may be needed to achieve a definitive result. Rubinstein first described the successful use of temporo-parietal fascial flap in the treatment of an established case of Frey's syndrome.[17] There is, however, a risk to frontal branch of facial nerve with this technique because the nerve travels within the plane adjacent to the temporoparietal fascia flap. With the sternocleidomastoid rotation flap, there remains the risk of injury to accessory nerve. Moreover, the bulky flap may mask any future recurrences in the parotid bed. The disadvantages of techniques involving the SMAS flap are that the facelift incision does not allow access to upper cervical lymph nodes should a neck dissection be necessary, and large tumors may be too close to the SMAS layer to allow it to be raised off the parotid gland intact without leading to an increased risk of recurrence.[18]

Tensor fascia lata interposition does not pose any risk of these above mentioned complications. It can thus be considered as a safe and reliable alternative to other treatment modalities.

CONCLUSION

Tensor fascia lata interposition is a simple, safe, effective, reliable and permanent surgical technique for the treatment of Frey's syndrome. We recommend it as the ideal treatment option for this distressing complication of parotid surgery.

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