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(CASE REPORT)

Role of Temporal Fascia Grafting in Temporomandibular Joint Coverage after Oncologic Resection: A Case Report

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Abstract

Tumor resections of the temporomandibular region frequently result in exposure of the temporomandibular joint (TMJ), requiring immediate reconstructive management and representing a major reconstructive challenge. Temporal fascia grafting, due to its thinness, strength, and reliable vascularization, constitutes an ideal autologous option for TMJ coverage. It provides both mechanical and biological protection, limits postoperative adhesions, and preserves joint mobility. This article aims to evaluate the role of temporal fascia grafting in the reconstructive management of post-tumoral TMJ exposure, through an anatomical, technical, and clinical review.

Keywords: Temporal Fascia; Temporomandibular Joint; Tumor Excision; Reconstruction; Plastic Surgery

1. Introduction

Excision of tumors involving the temporoparotid, jugal, or auricular regions frequently results in exposure of the deep structures of the temporal fossa, particularly the temporomandibular joint (TMJ). This exposure is associated with major functional, infectious, and aesthetic complications, including:

- Postoperative fibrotic scarring,
- Joint ankylosis,
- Deep infections,
- And aesthetic deformity of the temporal region.

Immediate reconstruction is a crucial step in the surgical management of post-tumoral defects. The chosen tissue should be thin, flexible, well-vascularized, and able to protect the bony and articular structures without compromising mandibular mobility. The temporal fascia, a delicate fibrous layer covering the temporal muscle, meets these requirements perfectly. Its anatomical proximity, favorable morphology, and reliable vascularization make it an ideal option for reconstructing defects of the temporomandibular joint (TMJ). [1].

2. Observation

The patient is a 54-year-old male with a history of nodular basal cell carcinoma of the frontal region, treated one year ago by complete excision with clear margins, followed by reconstruction using a scalp flap.

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The patient presented with an ulcerative-proliferative lesion of the right pretragal region, evolving over approximately 12 months. Clinical examination revealed a 3.2 cm indurated tumor, adherent to the deep structures, with loss of the normal tissue plane and reduced skin mobility (figure 1).

The lesion progressed slowly and progressively, initially painless, but causing discomfort during mastication. The lymph node areas were free. Biopsy confirmed a nodular basal cell carcinoma. MRI revealed suspected deep extension involving the temporal muscle, masseter, and superficial parotid region.

Figure 1 Ulcerative-proliferative tumor of the right pretragal region

A wide surgical excision was performed under general anesthesia with 10 mm safety margins. During the procedure, the capsule of the temporomandibular joint (TMJ) was exposed, without articular breach. (Figure 2).

A temporal fascia graft was performed immediately to cover the exposed joint. (Figure 3).

Figure 2 During the excision, the temporomandibular joint (TMJ) was exposed

Figure 3 The fascia graft was placed

Fatty dressing with Bourdonnet was applied to promote tissue budding. After a period of twenty days, and with a well-vascularized graft bed, a thin skin graft was performed secondarily, allowing complete engraftment and satisfactory healing of the surgical site.

The postoperative course was uneventful, with no signs of infection or joint inflammation. At the 6-month follow-up, the graft had integrated perfectly, healing was satisfactory, and mandibular mobility was preserved.

Figure 4 1 week post-surgery

Figure 5 Total skin graft 20 days after excision

Figure 6 One month after a full-thickness skin graft

3. The surgical technique

3.1. Surgical preparation

- The patient is placed in the supine position with their head turned to the opposite side.
- The incision is made along a retrocapillary or temporal line, preserving aesthetics and concealing the scar.

3.2. Temporal fascia removal

- Two techniques are possible: free graft or pedicle flap.
- The fascia is taken directly from the temporal muscle, hydrated, and applied to the exposed TMJ.

3.3. Placement of the graft

- The fascia is attached to the muscular or periosteal edges using absorbable sutures, perfectly covering the joint area.
- In cases of associated skin loss, it is covered with a thin skin graft.

3.4. Closure and postoperative procedures

- The donor site was closed in layers, with application of a compressive dressing. Mandibular mobilization was initiated early (postoperative days 3–5) to prevent adhesions.

4. Results

- The clinical results observed show:
- Rapid and complete healing,
- preserved mandibular mobility,
- Prevention of joint adhesions,
- And low morbidity at the donor site.
- The aesthetic appearance is satisfactory, with the temporal scar remaining discreet and without marked indentation.

5. Discussion

The pretragal region is an anatomically complex area where safety margins can be difficult to achieve without compromising deep structures such as the TMJ. Joint exposure after tumor excision requires rapid coverage to avoid the risk of septic arthritis, capsular necrosis, or fistulization. [2].

The temporal fascia is a thin tissue, well supplied with blood by the superficial temporal artery, which promotes its survival in free grafts or pedicle flaps. [3].

This dense, thin, well-vascularized connective tissue is easily accessible in the same surgical field, reducing operating times and complications associated with a second harvest site [4]. Also, its extreme flexibility and good integration make it a great choice for covering mobile or joint structures.

It has provided stable and long-lasting coverage of the TMJ, preventing functional and aesthetic complications.

Alternatives such as local or free flaps (temporal muscle flap, sternocleidomastoid flap, or microsurgery) may be considered, but they often involve higher morbidity, longer operating times, and a need for specific surgical expertise [5].

6. Comparison with other techniques

6.1. Temporal muscle flap

The temporal muscle flap is a classic and well-known technique in facial reconstruction. It is pedicled, robust, and well vascularized. It provides good coverage, particularly in cases of more significant tissue loss or in the presence of a deep cavity.

However, this technique has several disadvantages:

- Functional morbidity (chewing difficulties, facial asymmetry)
- Excessive flap thickness for an area as thin as the pretragal region
- Secondary muscle atrophy in the months following the procedure [6].

In comparison, the temporal fascia is much thinner, better suited to superficial reconstructions, with much lower morbidity and no functional impact on mandibular movement.

Table 1 Different advantages of temporal fascia grafting

The criterion	Advantages of temporal fascia
Thickness	Very thin, ideal for covering the TMJ without hindering mobility
Flexibility and elasticity	Follows complex anatomical contours
Mechanical resistance	Provides effective protection for bone and deep tissue
Vascularization	Rich, allowing good tissue integration
Proximity to the receiving site	Reduces operating time and morbidity
Aesthetic appearance	Discreet scar, minimal temporal deformation

6.2. Sterno-cleido-mastoid (SCM) flap

The SCM flap is also a reliable regional option for covering tissue loss in the parotid-pretragal region. It provides good volume and protective muscle coverage.

However:

- It often requires more extensive cervical dissection, with an increased risk of nerve damage (spinal nerve).
- It can cause functional limitation of the cervical spine and asymmetry of the neck.

- Its mobility is less than that of the temporal fascia, especially in cases of superior rotation toward the pretragal area. [7].

The temporal fascia, on the other hand, can be transposed directly to the affected area, offering great flexibility of movement and better adaptation to the local topography.

6.3. Regional cervicofacial or fasciocutaneous flaps

Cervicofacial flaps can be used for local reconstruction with good skin coloration. They are useful for extensive skin reconstruction, but are less suitable when it comes to specifically covering a joint, especially if it is partially exposed without significant tissue loss.

They do not provide the fineness, flexibility, or mechanical protection offered by connective tissue such as the temporal fascia.

6.4. Free microsurgical flaps (ALT, radial, scapular)

Free flaps are indicated in major reconstructions following extensive cancer resection, particularly when the loss of tissue affects several anatomical layers: skin, muscle, bone. They enable reconstruction in a single stage by providing well-vascularized tissue from a distant site.

However, they are:

- More technically complex,
- require a longer operating time,
- carry a risk of pedicle thrombosis,
- And require microsurgical resources that are not always available in all centers. [4].

In our case, exposure of the TMJ was limited, with no significant loss of volume, which did not warrant extensive reconstruction. The temporal fascia therefore offered a solution that was simple, quick, and suited to the anatomical situation.

6.5. Biological and aesthetic integration

In addition to technical considerations, the aesthetic result is a determining factor. The temporal fascia is thin and flexible, making it

Well suited for secondary coverage with a thin skin graft, with good aesthetic results in an exposed area of the face.

Its indirect vascularization by the recipient bed is generally sufficient, especially if the graft is applied to a well-irrigated structure (joint capsule, masseter muscle, etc.) and if there are no local ischemic risk factors (radiotherapy, smoking, diabetes).

6.6. Conclusions of the discussion

In summary, temporal fascia grafting offers ideal coverage in cases of moderate TMJ exposure, particularly in the context of head and neck cancer surgery:

- It combines technical simplicity, functional effectiveness, and excellent aesthetic results.
- It provides anatomically conforming coverage with low morbidity.

Compared to other techniques, it is less invasive, less morbid, and more suitable for small to medium-sized tissue loss located in the pretragal region.

Table 2 Comparison of temporal fascia grafting with other methods

Method	Advantages	Disadvantages
Skin-fat grafting	Easy to extract	To thick, risk of retraction
Temporal muscle flap	Large cover	Loss of temporal relief, alteration of masticatory function
Free microsurgical flap (radial, scapular, etc.)	High flexibility, extensive reconstruction	Requires microsurgery, long operating time
Temporal fascia	Thin, flexible, vascularized, easy to sculpt	Limited surface area (small and medium defects)

Abbreviation

TMJ: temporomandibular joint

7. Conclusion and prospects

The temporal fascia is a valuable autologous resource for reconstructing TMJ exposure after tumor resection.

Its thinness, strength, and vascularization make it an ideal covering tissue.

The future lies in:

- Better preoperative vascular planning (angio-MRI, 3D scanning),
- Combination with other local flaps,
- And clinical validation of its long-term effectiveness on joint mobility and fibrosis prevention.

Ultimately, temporal fascia embodies the modern reconstructive philosophy: “restore with similar tissues, in a simple, effective, and anatomically respectful approach.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Warraich RA, Kaleem A, Ahmed S, Kundi JA. The role of temporal fascia interposition in the surgical treatment of temporomandibular joint ankylosis. Annals of King Edward Medical University. 2018; 10(3).

[2] Pitman MJ, Tewfik TL. Complications of temporomandibular joint exposure. J Otolaryngol. 1999; 28(5):278–282.

[3] Converse JM, Wood-Smith D. Experiences with the temporalis fascia graft. Plast Reconstr Surg. 1963; 31:521–528.

[4] Wong CS, Strange RC, Lear JT. Basal cell carcinoma. BMJ. 2003; 327(7418):794–798

[5] Kroll SS, Evans GR. Reconstruction of the head and neck. Clin Plast Surg. 1994; 21(1):55–68.

[6] Gullane PJ, Arena S. The temporalis muscle flap: a versatile reconstructive option in head and neck surgery. Head Neck Surg. 1985;7(3):180–185.

[7] Papadopoulos O, Konofaos P, Chrisostomidis C. Use of the sternocleidomastoid muscle flap in facial reconstruction. J Craniofac Surg. 2008;19(2):482–486