Short Communication

# Temporoparietal Flap for Facial Reconstruction: Donor Site Morbidity

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## ABSTRACT

**Background:** Temporoparietal flap (TPF) is recommended when thin delicate tissue for medium sized defect is needed. The most used form of this flap is for auricle reconstruction. In this article usage of this flap for facial reconstruction other than auricle is discussed, emphasing on donor site morbidity.

**Method:** In this retrospective study, archived files of the Department of Oral and Maxillofacial Surgery, University of Medical Sciences, Mashhad, Iran were evaluated from 2016-2020. Patients whom TPF was used for facial reconstruction were included. Flap survival was checked and donor site morbidity was evaluated in the form of skin scar and frontal nerve branch injury.

**Results:** This flap was used in 8 patients for facial reconstruction. All the cases had experienced Alopecia and this was the greatest when the skin of scalp was also included. All of the patients could elevate the eyebrow that means intact frontal branch of facial nerve.

**Conclusion:** TPF is a versatile flap for facial reconstruction. However, alopecia is high in composite fasciocutaneous form of this flap.

**KEYWORDS**
Temporoparietal flap; Facial reconstruction; Donor site morbidity

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## INTRODUCTION

Defects in the face come from traumatic, pathologic or congenital events. Based on anatomic location, size and depth of the defect, different flaps have been suggested [1].

Temporoparietal flap (TPF) is recommended when thin delicate tissue for medium sized defect is needed [2]. This flap can be harvested in fascia, fasciocutaneous and osteofascial forms and can be used for reconstruction of frontal, eyebrow, external ear, lateral temporal, infraorbital, upper and lower lips [3-7]. (Fig. 1).

The most used form of this flap is for auricle reconstruction [8]. In this article usage of this flap for facial reconstruction other than auricle is discussed emphasing on donor site morbidity.



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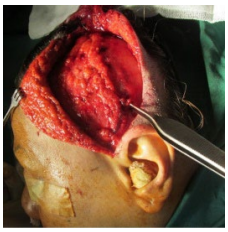

**Figure 1a:** Types of TPF based on composition a) Fascial

**Figure 1b:** Types of TPF based on composition b) Fascio-cutaneous

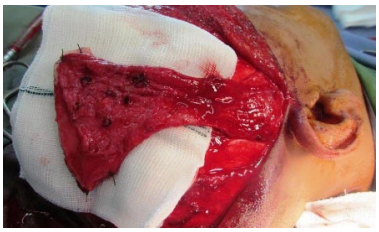

**Figure 1c:** Types of TPF based on composition c) Osteo-fascia

**Table 1:** Demographic information's of eight patients with TPF for facial reconstruction

| Cases | Age | Sex | Location of defect | Etiology | Type of flap | Donor site morbidity (Alopecia) |
|---|---|---|---|---|---|---|
| 1 | 12 | M | Frontal | Trauma | Fascia | + |
| 2 | 28 | M | Frontal | Trauma | Fascia | + |
| 3 | 18 | M | Lateral temporal | Trauma | Fascia | + |
| 4 | 65 | M | Infraorbital | Trauma | Fascia | + |
| 5 | 72 | F | Mandibular angle | Pathology (SCC) | Fascia | + |
| 6 | 35 | M | Upper lip | Trauma | FC | +++ |
| 7 | 28 | M | Inferior orbital rim | Pathology (COF) | OF | + |
| 8 | 48 | M | Maxilla | Pathology (SCC) | FC | ++ |

**Abbreviations**: M: Male; FC: Fascio-cutaneous; F: Female; OF: Osteo-Fascial; SCC: Squamous Cell Carcinoma; COF: Cemento-ossifying fibroma

## METHODS

In this retrospective study, archived files of the Department of Oral and Maxillofacial Surgery, University of Medical Sciences, Mashhad, Iran were evaluated from 2016-2020. Patients whom TPF was used for facial reconstruction were included. Flap survival was checked and donor site morbidity was evaluated in the form of skin scar and frontal nerve branch injury.

## ETHICAL APPROVAL

All procedures were approved by the institutional Ethics Committee number 940121.

## RESULTS

This flap was used in 8 patients for facial reconstruction that shown in Table 1. Patients were trauma cases and the others had defects from pathologic resection.
Schematic Fig. 2 shows the location of defects. Fascia form of flap was the most used form (5/8) (Fig.3).
Donor site morbidity: All the cases had experienced Alopecia and this was the greatest when the skin of scalp was also included (Fig. 4). Flap was survived in all cases but flap congestion occurred in a case (Fig. 5). All of the patients could elevate the eyebrow that means intact frontal branch of facial nerve.

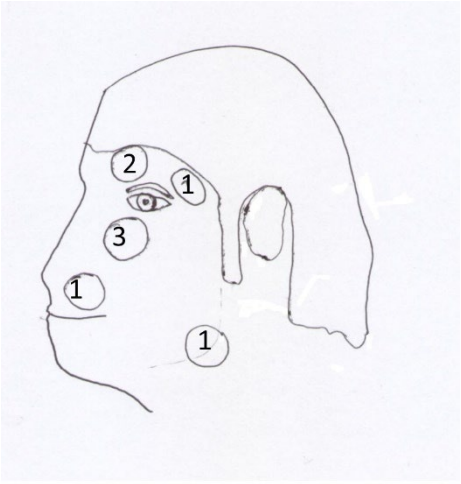


**Figure 2:** Schematic defect sites. Digit in circles indicates to the number of patients

## DISCUSSION

Different flaps have been introduced for facial, reconstruction. One important factor to choose a flap among available ones, is donor site morbidity



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**Figure 3a:** Temporoparietal fascia with skin graft is used to cover traumatic avulsion in frontal region

**Figure 3b:** Upper lip reconstruction

**Figure 4:** Alopecia around skin incision and harvested skin site. Hair bearing temporoparietal composite flap was used for infraorbital reconstruction

**Figure 5:** Flap congestion

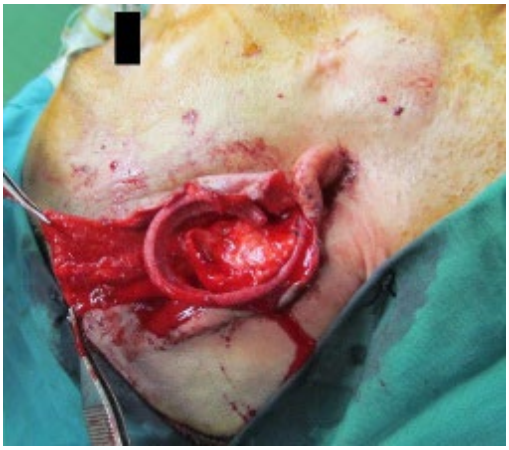

**Figure 6:** Temporoparietal fascia flap for auricle reconstruction

**Figure 7:** Infraorbital reconstruction with non-hair bearing temporoparietal composite flap



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[2, 9]. The most prevalent form of temporoparietal flap is fascia form that is used for auricle reconstruction (Fig. 6). This form has the lowest complication rate with alopecia as the most frequent and damage to the frontal branch of facial, nerve as the most important complication [10].

Alopecia is due to subfollicular plane of dissection and damage to hair follicles or electrocautery damage during hemostatis [11].

In composite TPF, where the scalp skin is also included, severity of complications also increased. Width of the harvested skin should be around 2cm to allow primary closure by aid of local flaps, however flap closure under tension leads to edge necrosis and wound dehiscence [12]. Secondary wound healing leads to ugly scar in visible region.

Good blood supply of TPF come from delicate surgical technique that preserve superficial temporal artery and veins. Clip ligation of these vessels during onco-surgery and prior radiotherapy of the face endangers flap blood supply. Broad pedicle is also recommended to prevent flap congestion [13].

Pivot point of this pedicled flap is at the junction of auricle with scalp. This flap can reach to all area of the face. Bipedicled variant is recommended for lip reconstruction, however with frustrating waiting time for pedicle division [14].

Composite TPF is almost used in male patients for reconstruction of hair bearing area of the face such as eyebrows, mustache and beards [15]. In bald male patient it also can be used for non-hair bearing areas (Fig. 7).

## CONCLUSION

TPF is a versatile flap for facial reconstruction. However, alopecia is high especially in composite fasciocutaneous form of this flap.

## FUNDING

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## COMPETING INTERESTS

None.

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