

# Outcome of Scalp Visor Flap for Post-Burn Facial Alopecia Reconstruction in Male Patients

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## ABSTRACT

**Objective:** To study the versatility and aesthetic outcomes of scalp visor flap for post burn scar alopecia reconstruction in male patients.

**Study Design:** Case series study

**Place and Duration of Study:** This study was conducted at the Department of Plastic Surgery, Jinnah Hospital, Lahore from May 2014 to June 2017.

**Materials and Methods:** A total of seven male patients were included. According to the size of defect created scalp visor flap was raised at galea-periostium space preserving superficial temporal artery bilaterally. Flap is rotated on recipient area as bucket handle for moustache and beard reconstruction and donor site is skin grafted or closed primarily. Division and inset carried out after 3 weeks and excess flap returned to cover the temporal region.

**Results:** There were 3 post flame burn, 2 chemical burn and 2 electric burn patients. Two patients required upper lip and 5 required both upper and lower reconstruction with donor site either skin grafted or closed primarily. All 7 flaps survived completely. Out of 7 patients, 4 (57.1%) have excellent, 2 (28.6%) have good and 1(14.3%) has fair results.

**Conclusion:** The scalp visor flap is a reliable and versatile hair bearing flap for male post burn scar facial alopecia management with excellent aesthetic outcome.

**Key Words:** Scalp visor flap, Hair bearing scalp flap, Male post burn scarring, Scar facial alopecia

**Citation of articles:** Humayoun W, Khalid K, Rabbani A, Khalid FA, Bashir B, Amin M. Outcome of Scalp Visor Flap for Post-Burn Facial Alopecia Reconstruction in Male Patients. Med Forum 2019;30(2):92-95.

## INTRODUCTION

The face is sign of recognition for a human being. Facial burn scars have not only physical effects but have more severe effects on one's personality and mental health. Facial burns vary from relatively minor insults to severe debilitating injuries that can lead to psychosis and low self-esteem.<sup>1</sup> Approximately 5.8 persons per 100,000 get burn annually.<sup>2</sup> Over 40% of burn injuries involve the head and neck region and can be caused by flame, electrical, steam, hot liquids, and chemicals. Burns may impart a tight masklike sensation to the face, distorting features and limiting facial

expression.<sup>3</sup> Appearance is altered by contractures, scarring, and pigmentary changes. The goal of the reconstructive surgeon is to minimize final deformity by restoring the patient to a near-normal appearance.<sup>4</sup>

Asian population facial skin is thicker as compared to Caucasian population and lead to much worse scarring due to high sebaceous gland activity. So Head and neck burns are a particular challenge for reconstruction.<sup>5</sup> Another major difference is the presence of facial hairs in male, which is the recognition feature for males and sign of manhood.<sup>6</sup> In our community religious and racial identity has increased its importance. Few religions support beard as a desirable practice and in tribes like Baluchistan and FATA its sign of male hood. So reconstruction of moustaches and beard is of utmost important in male patients.

Type of soft tissue defect or deformity defines the options of reconstruction but with advances in microvascular surgery trend of doing free tissue transfer has increased for major burns.<sup>7</sup> Free tissue transfer has major disadvantage of it does not consider male alopecia rather gives a famine look as most of flaps are from non-hairy areas leading patient to opt for secondary procedures like hair transplant and tattooing. In the present study we selected one of the robust and reliable pedicle flap that provides soft tissue and hair restoration simultaneously. Pedicle flaps have

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Received: August, 2018

Accepted: November, 2018

Printed: February, 2019

advantage of more reliability, better color match, easy to perform and comparatively less expertise requirement. Bi-pedicle Visor flap based on temporal vessels was used for reconstruction of beard and moustaches is a reliable flap with minimal complications. Donor site was either skin grafted or closed primarily after tissue expansion.

## MATERIALS AND METHODS

This case series was carried out at Plastic Surgery Department, Jinnah Hospital Lahore over a period of three years from May 2014 to June 2017 and comprised seven male patients. Male patients, post burn scar alopecia of face (moustache and beard area) and spared scalp, upper and mid face area were included. Females, scarred scalp skin and bald patients were excluded. Under general anesthesia, facial non hair bearing scarred skin was excised from upper lip and lower face and facial defect size calculated. Superficial temporal artery location was marked on both sides either with hand held Doppler or by light touch palpation, mirror image flap marking was done on scalp keeping pedicle width and length in mind. An incision was made according to size of defect and flap raised at galea-periosteum space preserving superficial temporal artery bilaterally. Flap is rotated on recipient area as bucket handle for moustache and beard reconstruction. Donor site is skin grafted or closed primarily after hemostasis. Flap in setting carried out after 3 weeks and excess flap returned to cover the temporal region (Figs. 1-4). The data was entered and analyzed through SPSS-20.

## RESULTS

Of 7 patients all adult male between age ranges 18–45 years mean age 30 years, 3 were post flame burn scar alopecia or acute wounds, 2 chemical burn and 2 electric burn patients. Out of these 7 patients 2 had upper lip reconstruction with donor site closed primarily and remaining 5 had multiple unit reconstruction i.e upper and lower lip, the where donor site was grafted (as most of patient did not opt for scalp expansion and were satisfied with camouflage effect or those with acute burn needing immediate reconstruction were given option of later scalp expansion and donor site closure). Of the 7 patients operated all flaps survived completely. Only minor complication in two cases of hematoma formation and partial graft loss which were managed conservatively. A plastic surgeon was asked to assess the cosmetic outcome (table 2) at 6 months on following five parameters by Likert scale, overall face look (1-5), Beard/Moustaches look (1-5), Direction of hair normal (1-5), Quality of skin (1-5), Donor site concealed or not (1-5). With 1 as very poor, 2 as poor, 3 as fair, 4 as good and 5 as excellent results. Overall score with minimum score of 5 to maximum of 25, was interpreted as, <6 as very poor, 6-10 as poor,

11-15 as fair,16-20 as good,21-25 as excellent. Showing 4 (57.1%) out of 7 as excellent result, 2 (28.6%) out of 7 as good and 1(14.3%) out of 7 as fair results (Table 1). Thus confirming that visor flap is a reliable and cosmetically acceptable reconstruction option for scar alopecia of hair bearing facial skin in men those who wish to keep moustache and beard with well camouflaged flap having minimal flap complications and donor site morbidity.

**Table No.1: Cosmetic outcome at 6 months of post-operative**

Cosmesis	No.	%
Excellent	4	57.1
Good	2	28.6
Fair	1	14.3
Poor	-	-
Very poor	-	-



**Figure No. 1: Pre-operative of patient of chemical burn having severe damage of cheek, upper and lower lip**



**Figure No. 2: Marking of Visor flap for cheek, upper and lower lip**



**Figure No. 3: Arc of rotation Visor flap for composite lower face reconstruction**



**Figure No. 4: Late follow up picture**

## DISCUSSION

Facial reconstruction in male hair bearing units may be required in cases of acute burn (electric, chemical and thermal burns), post burn scarring, and trauma or after tumor excision. In our study we focused only on male patients with post burn scar alopecia requiring soft tissue reconstruction affecting the hair-bearing buccomandibular or perioral region.

In males burn scar may cause significant disfigurement of the upper lip and lower face. Such patients frequently request reconstruction of the moustache and beard to hide the scars and give them an appearance which is more suited to their age, sex and ethnicity moustaches has ability to camouflage perioral scars and defects.<sup>8</sup>

There are many ways to address this problem ranging from simple skin grafting to complex flaps<sup>9,10</sup>, gsubmentalislanded<sup>11</sup> and scalp flaps are potential

source as donor site for hairy part of face. The use of scalp pedicled flaps in facial reconstruction has been in practiced for hundreds of years for large defects as both beard and submental flaps are reserved for smaller defects. Gillies<sup>12</sup> was one of the first to describe the use of scalp flaps based on the superficial temporal artery for lip and eyebrow defects reconstruction.

In this article, the use of bitemporal artery hair-bearing scalp flap for reconstruction of the moustache and beard area in seven patients has been described. The results shows that the scalp flap is one of the best-matched flaps that mimics the normal face colour, texture, and hair-bearing qualities for restoration of the middle and lower part of hair bearing the male face without significant donor site morbidity.<sup>13</sup> So fulfilling all these characteristics it is an excellent choice for the functional and aesthetic restoration of lower face.

Disadvantages include the multistage procedure and hair loss in flap as the androgenic alopecia sets in with advancing age if the flap was designed more anteriorly on the scalp. Scalp alopecia created with the flap harvested without scalp expansion is another disadvantage but most patients learn to camouflage it with change in hair style. One other disadvantage is, it can only be used in adults as bearded face in child is never acceptable. So visor flap is a safe option, quick to learn and easy to perform, having adequate blood supply that can achieve the main goal of operation, which is the restoration of a masculine appearance. And with care full flap planning or use of expander donor site morbidity and alopecia associated with the classic visor flap is virtually eliminated.<sup>14</sup>

## CONCLUSION

The study concludes that scalp visor flap is a reliable and versatile hair bearing flap for male post burn scar facial alopecia management with excellent aesthetic outcome.

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Concept & Design of Study:	Waseem Humayoun Kamran Khalid, Ammara Rabbani
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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