

Study of resurfacing of the entire facial aesthetic unit with full thickness skin grafting

Ujwala Dahiphale¹, Vaishnavi Dahiphale²

¹Consultant Plastic, Cosmetic, Laser & Cleft Surgeon, Department of Plastic Surgery, Government Medical College & Hospital, University Road, Jubilee Park, Chhatrapati Sambhajanagar, Maharashtra 431004, India.

² IIIrd MBBS Student, MGM Medical College, Navi Mumbai, Maharashtra, India.

Received Date: 10/01/2023

Acceptance Date: 19/02/2023

Abstract

Background: Skin grafting is one of the most commonly used techniques of the plastic and reconstructive surgeon. With full thickness skin graft usually texture and colour are more predictable with almost nil secondary contraction. It is a single stage simple procedure with better cosmesis. In this study an attempt has been made to study and evaluate resurfacing of facial aesthetic unit with full thickness skin graft. **Material and Methods:** Present study was prospective, observational study, conducted in patients of either gender and all ages who presented with facial disfigurement, underwent resurfacing of the entire facial aesthetic unit with full thickness skin grafting. **Results:** In present study, 14 cases underwent facial resurfacing at our hospital were studied. Majority cases were from less than 30 years age group (66.67 %) & female (86.67 %). Common etiology was burns scar (46.67 %), congenital pigmented nevus (20 %), basal cell carcinoma (13.33 %), xeroderma pigmentosa with multiple basal cell carcinoma (6.67 %), post traumatic (6.67 %) & post infective (6.67 %). Majority cases underwent resurfacing for forehead/chin/cheek/eyelid aesthetic unit area grafting. Common donor site area were from groin, postauricular & thigh region. Total grafts were done at 23 sites. Results at 6 months follow up, were evaluated by surgeons. As per surgeon's evaluation, colour match was good (43.48 %) & fair (39.13 %) in majority of cases, texture match was good (60.87 %) & Fair (30.43 %) in majority of cases. At junctional area, hypopigmentation (60.87 %) & stretching (17.39 %) was noted in majority of cases. **Conclusion:** Satisfactory results were noted among patients underwent entire facial aesthetic unit is resurfaced with full thickness skin grafts.

Keywords: functional restoration, full thickness skin grafts, facial resurfacing, plastic surgery

Corresponding Author: Dr. Vaishnavi Dahiphale

Email: dahiphalevaishnavi@gmail.com

Introduction

Skin grafting is one of the most commonly used techniques of the plastic and reconstructive surgeon.¹ The principles of reconstruction of parts of the body deformed as a result of trauma, burns or congenital disease are the same, but the demands made on the plastic surgeon when resurfacing the face and neck, are much exacting because a good result depends on many factors, i.e. restoration of function, skin quality, good colour, and texture match of the reconstructed part with the rest of the face, aesthetic units of the face, long term results and durability of the skin cover provided, patients compliance and dedication and post operative care.^{2,3}

There are different modalities to resurface facial aesthetic units like flaps/grafts. Traditionally skin grafting techniques are divided into full thickness skin grafts and split thickness skin grafts.⁴ Full thickness skin grafts which consist of grafts containing the epidermis and the entire dermis. Split thickness skin grafts which consist of grafts containing the epidermis and part of the dermis.

With full thickness skin graft usually texture and colour are more predictable with almost nil secondary contraction. It is a single stage simple procedure with better cosmesis.⁵ The patient will get delicate, easily moving facial skin of near normal colour and a mobile and symmetrical face, which is capable of smiling and making other facial expressions. In this study an attempt has been made to study and evaluate resurfacing of facial aesthetic unit with full thickness skin graft.

Material And Methods

Present study was prospective, observational study, conducted in Department of Plastic Surgery, Government Medical College & Hospital, Chhatrapati Sambhajinagar, India. Study duration was of 2 years (January 2020 to December 2021). Study protocol was approved by the institutional ethics committee and written informed consent was obtained from all patients.

Inclusion criteria

- Patients of either gender and all ages who presented with facial disfigurement, underwent resurfacing of the entire facial aesthetic unit with full thickness skin grafting, willing to participate in present study

Exclusion criteria

- Patients with full thickness defect
- Patients not willing to participate in present study

Study was explained to patients in local language & written consent was taken for participation & study. Details such as thorough history, socio-demographic profile, type of burn injury, physical examination findings, laboratory investigations & final diagnosis were noted.

All patients underwent surgery under general anaesthesia or local anaesthesia, for full thickness skin grafts for facial resurfacing. Results at 6 months follow up for total 23 sites were collected for Colour Match (G-Good, F-Fair & P-Poor), Texture Match (G-Good, F-Fair & P-Poor), Junctional Area (PA-Hyperpigmentation, P.-Hypopigmentation, HYT-Hypertrophy & S – Stretching). Separate entries were made for Surgeon's evaluation & Patient's evaluation. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

Results

In present study, 14 cases underwent facial resurfacing at our hospital were studied. Majority cases were from less than 30 years age group (66.67 %) & female (86.67 %). Common etiology was burns scar (46.67 %), congenital pigmented nevus (20 %), basal cell carcinoma (13.33 %), xeroderma pigmentosa with multiple basal cell carcinoma (6.67 %), post traumatic (6.67 %) & post infective (6.67 %).

Table 1: General characteristics

	No. of patients	Percentage
Age groups (in years)		
<20	4	26.67 %
20-29	6	40 %
30-39	2	13.33 %

40-49	2	13.33 %
50-59	1	6.67 %
Gender		
Male	2	13.33 %
Female	13	86.67 %

Table 2: Defect etiology

Burns scar	7	46.67 %
Congenital pigmented nevus	3	20 %
Basal cell carcinoma	2	13.33 %
Xeroderma pigmentosa with multiple basal cell carcinoma	1	6.67 %
Post traumatic	1	6.67 %
Post infective	1	6.67 %

In present study, majority cases underwent resurfacing for forehead/chin/cheek/eyelid aesthetic unit area grafting. Common donor site area were from groin, postauricular & thigh region. Total grafts were done at 23 sites.

Table 3: Area grafted

	Area grafted	Percentage of area of unit	Donor site
1	Forehead aesthetic Unit	100 %	Thigh
	Right Cheek	70 %	
	Nose	100 %	
2	Left forehead,	10 %	Postauricular
	Temporal & upper eyelid	100 %	
3	Forehead aesthetic unit	100 %	Bilateral groin
	Chin aesthetic unit	100 %	
4	Left 1/2 lower eyelid, temporal & infra-orbital region	80 %	Medical arm superficial temporal fascia & palatal mucosa
5	Left infraorbital	2 %	Bilateral Postauricular
	Preauricular	2 %	
	Right cheek	2 %	
6	Chin aesthetic unit	100 %	Groin
7	Chin aesthetic unit	100 %	Groin
8	Left Temporal	100 %	Postauricular
9	Right upper eyelid	100 %	Groin
10	Dorsum of nose	100 %	Postauricular
11	Right cheek aesthetic unit	100 %	Groin
	Dorsum of nose	90 %	
12	Right cheek aesthetic unit	100 %	Groin
13	Left cheek aesthetic unit	60 %	Groin
14	Bilateral lower eyelid	100 %	Bilateral Postauricular
15	Chin aesthetic unit	100 %	Groin

In present study, complications noted among recipients were CPN remnant at the forehead (4.35 %), Lower lid ectropion (4.35 %) & 1 x 0.5 cm marginal graft loss (4.35 %). While in donors were right groin stretching (4.35 %) & stretching (4.35 %)

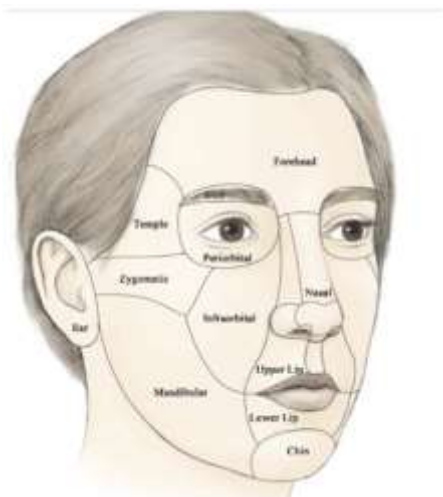


Figure 1

Table 4: Complications

Complication	No. of patients	Percentage
Recipient		
CPN remnant at the forehead	1	4.35 %
Lower lid ectropion	1	4.35 %
1 x 0.5 cm marginal graft loss	1	4.35 %
Donor		
Right Groin Stretching	1	4.35 %
Stretching	1	4.35 %

Results at 6 months follow up, were evaluated by surgeons. As per surgeon's evaluation, colour match was good (43.48 %) & fair (39.13 %) in majority of cases, texture match was good (60.87 %) & Fair (30.43 %) in majority of cases. At junctional area, hypopigmentation (60.87 %) & stretching (17.39 %) was noted in majority of cases.

Table 5: Surgeon's evaluation at 6 months follow up (23 sites)

Results	No. of patients	Percentage
Colour Match		
Good	10	43.48 %
Fair	9	39.13 %
Poor	4	17.39 %
Texture Match		
Good	14	60.87 %
Fair	7	30.43 %
Poor	2	8.7 %
Junctional Area		
Hyperpigmentation	3	13.04 %
Hypopigmentation	14	60.87 %
Hypertrophy	2	8.7 %
Stretching	4	17.39 %

Results at 6 months follow up, were evaluated by patient themselves. As per patient's evaluation, colour match was good (52.17 %) & fair (39.13 %) in majority of cases., texture

match was good (52.17 %) & fair (39.13 %) majority of cases. At junctional area, hypopigmentation (60.87 %) & stretching (17.39 %) was noted in majority of cases.

Table 6: Patients's evaluation at 6 months follow up (23 sites)

Results	No. of patients	Percentage
Colour Match		
Good	12	52.17 %
Fair	9	39.13 %
Poor	2	8.7 %
Texture Match		
Good	12	52.17 %
Fair	9	39.13 %
Poor	2	8.7 %
Junctional Area		
Hyperpigmentation	3	13.04 %
Hypopigmentation	14	60.87 %
Hypertrophy	2	8.7 %
Stretching	4	17.39 %

Discussion

Full thickness skin grafting are commonly used when cosmesis is an important consideration, to prevent wound contraction in areas such as on the face. Apart from primary closure and secondary healing, there is a broad range of possible reconstruction methods, such as skin autografts, local flaps, distant/regional flaps, and microvascular free tissue transfer.^{6,7} The facial region is especially sensitive with respect to the selection of an appropriate reconstruction method to provide functional and aesthetically pleasing results.

There are several surgical procedures to treat burn wounds including primary closure, burn wound excision with subsequent skin grafts, and skin substitutes. Currently, most burn patients survive their injuries. Following the initial resuscitation and stabilization of the burn patient, surgical wound closure and reconstructive surgery are typically performed to improve the functional and esthetic outcomes of burn wounds.^{8,9}

In present study 15 patients with 23 sites of soft tissue facial defects of varied etiologies have been evaluated for their site, aesthetic unit, colour and texture match, functional status of facial features as well as the junctional area of the full thickness skin graft with the normal settled down adjacent skin.

In study by Lakhani N,¹⁰ majority patients were of age between 20-30 years. 72.22% patients had other associated burn injuries with facial involvement. Most patients (18, 90%) were treated after 9 months post burns duration. All patients had multiregional involvement on face but cheek being the largest unit, was most commonly involved (18, 90%) followed by involvement of oral commissure and lips in 8 (40%) and orbital region in 7 (35%) patients. Full thickness skin graft (FTSG) and split thickness skin grafts (STSG) were most commonly performed procedures. Common complications included hyperpigmentation and hypopigmentation, contour distortion and obliteration of labiomental sulcus. Facial reconstructive procedure for burns scars should be selected based on region of face involved. Skin grafting is an effective method for reconstruction especially in areas with non-availability of advanced treatment modalities.¹⁰

Early tangential excision of the burnt skin and grafting became the standard of care in the majority of burn centers all over the world. The postoperative care of the grafted skin is very essential to achieve graft success. All phases of graft take including plasma imbibitions, revascularization and maturation depend upon this period. Close contact between the grafted

skin and the recipient bed is important for vessels to cross the gap, to decrease graft movement and to prevent fluid accumulation.

When selecting a skin graft donor site, not only skin characteristics, such as skin thickness, color, adnexal quality, and texture, but also a variety of other factors, such as surgical feasibility, scarring of the donor site, and patient satisfaction, should be considered. Considering these factors, the preauricular, posterior auricular, nasolabial fold, and upper eyelid skin areas are used for facial FTSG because they are well known donor sites for achieving good cosmetic results.^{11,12}

While the colour and texture match has been noted as satisfactory when compared to the local tissues in the area, the junctional transitional zone between full thickness skin graft and the normal skin is still in the healing process at our 6 months evaluations. It is desirable to wait for a longer period before it can be commented on the eventual aesthetics.

Conclusion

Whole aesthetic unit replacement gives better result than part replacement, though not a significant functional improvement has been present as expected in initial assessment, it has been appreciated that there has been improvement in the same post-operatively once the tissues have begun to settle down in due course of time. Satisfactory results were noted among patients underwent entire facial aesthetic unit is resurfaced with full thickness skin grafts.

Conflict of Interest: None to declare

Source of funding: Nil

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