

Depressed Scar Face—Management by Derma-Fat Graft

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THE Face is the index of human mind, indeed it reflects ones entire personality. Sophisticated people are now becoming increasingly conscious of their appearance. The superiority of the skin of the face without a blemish stands recognition by all the individuals. Despite this an extra-ordinary personal variation of attitude exist towards facial scars, amongst the afflicted by this deformity. Ugly scar face is not only a social and sometimes a physical handicap but may make an individual a nervous wreck.

Says John Frederic Nims,
"Take a knife and score flesh;
Leave a scar fingers find,
When the long nights grind;
Write it where, if you forget,
Grief and Shame will prick yet."

This psychological impact is most manifest in adolescence and at the marriageable age, more so in women. The Plastic Surgeon in his daily practice often faces this problem and the patients expect of him the complete eradication of the deformity caused by the depressed scar. The contour defect of depressed scar becomes further conspicuous by alternating areas of shadow and light. As is universally known, complete eradication of scar, however, is not practicable but the improvement is worthwhile.

The first fat transplant was reported by Neuber in 1893. Loewe (1913) advised the use of cutis graft i.e. the graft containing epithelium denuded piece of skin with some underlying fat. This was the basis of derma-fat graft, the first publication of which was done by Eitner in 1920.

According to Peer (1959) derma-fat graft is the most satisfactory tissue to correct tissue defects. Stark (1962) disagreeing with the said opinion writes, "The significant shrinkage in the size of fat graft (45%) makes them virtually valueless in the reconstructive Surgery." Gurney (1938) contrary to the previous view (Host Cell Replacement Theory) experimentally proved that original fat cells in the graft survived (Cell Survival Theory). This was later supported by Peer in 1950 by his experiments on human-being. Survival of fat depends upon the early vascularisation of its bulk and according to Peer (1950) the vascularisation was by direct anastomosis between the host ingrowing vessels and the original vascular system of the graft. This vascularisation was established within four days of such a transplantation.

Watson in 1959 recommended the use of derma-fat graft for mammoplasty. He strongly advocated that the dermis played an active and essential part in vascularisation. Encouraged by this report the

Authors started using derma-fat graft in the management of depressed scar of the face. Meanwhile in 1967 Boering and Huffnagle published a report on the use of derma-fat graft in face. However, our report on management of depressed scar by derma-fat graft seems to be the first of its kind.

MATERIAL & METHODS

Twenty cases of depressed scar of the face treated by derma-fat graft at Plastic Unit, Medical College and Rajendra Hospital, Patiala, are presented. These comprised of 11 Male and 9 Female patients. Most of the cases were young and were of marriageable age (Table I). The commonest site for the scar was cheek (Table II). Most of the scars were the aftermath of Cutaneous Leishmaniasis and the etiology of depressed scar in our series is shown in table III. The type of graft and donor area are shown in table IV and V respectively.

Table I
Age of the patients

Age	Percentage
0-15 years	nil
16-20 "	25 (5 cases)
21-25 "	60 (12 ")
26-30 "	10 (2 ")
31-35 "	5 (1 case)
Total	20 cases

Table II
Etiology of depressed scar face

Etiology	No. of cases	Percentage
Leishmaniasis	15	75
Trauma	5	25

Table III

Topographical distribution

Site of scar face	No. of cases
Check	17 L. 12 R. 5
Forehead	3
Chin	1
Total	20

Table IV

Type of derma-fat graft

Type of graft	No. of cases
Single derma-fat	17
Double derma-fat	3
Total	20

Table V

Donor site for derma-fat graft

Donor Site	No. of cases
Thigh	12
Abdomen	5
Buttock	3
Total	20

Face model (Fig. 1) of the patient in P.O.P. was prepared and amount of padding up material required for restoration of normal contour was assessed by using the wax to fill up the depression on the model. From this an acrylic mould was prepared and kept in Savalon for 24 hours so as to be available at the time of operation.

The scar, depending upon its size, is excised partially or in toto. The excision coincides with the wrinkle lines. Whole of the depressed area and some of the adjoining skin is undermined leaving no septa in

the cavity. Graft is taken from the buttock, thigh or abdomen. Impression is taken on a piece of lint from a previously prepared acrylic mould and then transferred to the donor site to outline the graft by closely pricking all around it by a straight needle dipped in gentian violet. Thin split skin graft is taken from the donor area. The impression still remain on the underlying dermis due to dye dots caused by needle

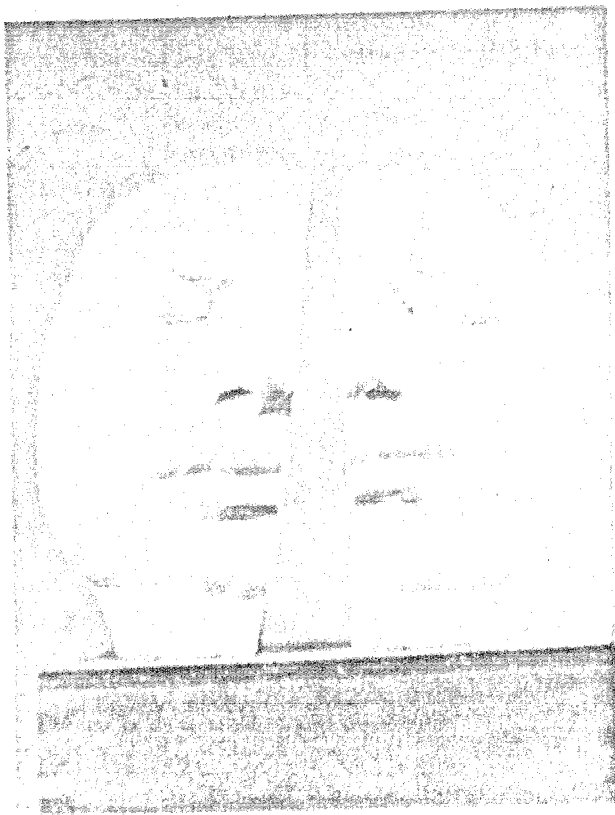


FIG. 1. Plaster Model of the Face

pricks. The graft is dissected out taking a little more fat than the required amount and subsequently any excess of the fat is removed, leaving about 30% more than the size of the mould. Donor area is closed by either direct suturing or by pre-

viously taken split skin graft.

Double derma-fat graft is removed in the same manner by marking out two impressions on the adjoining areas. Two grafts thus taken are then stitched together by few catgut stitches keeping the two dermal surfaces outwards.

After achieving a perfect haemostasis in the already prepared cavity, the derma-fat graft is immediately implanted into its bed and made to fit snugly. Tendency of the graft to curl is prevented by the use of transcutaneous silk sutures. The wound is then closed in layers using monofilament nylon or 5-0 silk for skin. No drainage is used. On completion of operation it would be noticed that there is an over correction. Adequate pressure dressing is tied which remains undisturbed for five days. Skin stitches are removed on 5th day and transcutaneous fixation sutures are removed between 6th and 8th days. It is preferable to use antibiotics during the post operative period to prevent sepsis and with it the extrusion of the graft.

DISCUSSION

In the management of the depressed scar of the face, it is essential to keep in mind that besides the scar there exists a contour defect.

The scar alone can be got rid off in one or multiple stages, but this is not the answer to such a problem. There is a contour defect and such a procedure may even accentuate it, thus producing a severe cosmetic deformity.

Depressed scar can only be improved by ensuring a fatty bed beneath the skin. Excision and direct suturing of the scar can

only be suitable in a scar associated with minimal depression and is totally useless in cases where moderate to deep depression is present. Partial excision of the scar may be done in a stage preceding the final procedure.

Therefore, the plausible methods of repair of such a contour defect is by employing :

- Rotation or transposition flap
- or subcutaneous pedicle flap
- or pedicle skin flap after wide scar excision
- or by synthetic implants
- and lastly by making use of derma-fat graft or double derma-fat graft

Local flaps such as rotation or transposition are useful only in mild to moderate depressed scars, such as a scar on the nasal bridge which can be dealt with a glabellar flap. The main drawback of most of the local flaps is the visibility of unavoidable scars along the suture lines, this usually disturb the patients unless it can be so placed as to be inconspicuous. In addition the local flap do not fill the depression as well as desired.

Subcutaneous pedicle flap can be used but it needs a prolonged fixation of the part and may lead to additional scarring of the adjoining donor area. Further the necrosis of the distal part of the subcutaneous flap can occur with delayed healing and very unsatisfactory results.

Skin pedicle flap after wide excision of the flap is a method useful only in cases where a deep wide depression on the face is associated with an equally big overlying

ugly scar. This procedure necessitates a multiple staged operation, prolonged fixation of the part, and finally an improper colour match. Thus it is contraindicated in small scars associated with varying degree of depression.

Synthetic implants are unphysiological and are likely to be extruded. Further these give a very hard feel to the repaired area.

Single or double dermis graft does not possess enough bulk to remove depression of any consequence so it can be used only occasionally.

Derma-fat graft is the most satisfactory method in the management of the majority of depressed scars of the face. This is particularly suitable when depression of the area is more pronounced than the scar itself. By building up of the contour defect the major deformity is mitigated and if the scar could be excised completely or minimum of it is left behind, the results with proper care are very satisfactory. The chief drawback in the derma-fat graft is the partial or unequal absorption of the graft. This can be counteracted by :

- i. Proper technique.
- ii. Over correction.

The proper technique implies, minimum of trauma to the fat, avoid drying of the graft, and application of the graft to a suitable bed i.e. one containing an adequate amount of capillary endothelial material, perfect haemostasis and proper fixation with no sheering strain or differential movement between the graft and the bed. The last is prevented by all round transcuteaneous fixation of the graft.

The key point in the procedure of derma-fat grafting is the over correction. About 30% of the over correction is necessary as there is always some absorption of the fat of the graft. It should be carried out more enthusiastically in the upper area and in the areas showing maximum depression. The peripheral and especially the dependent areas should have relatively less degree of over correction. In cheek region, a further allowance should be made for the resilient mucosal surface inside, in contrast to grafting on a firm background such as forehead where relatively lesser degree of over correction is desirable. It has been observed in a few of our cases that the lower part of the grafted area remains slightly over corrected even one to two years after operation. It is always better to be as exact as possible but putting a little bigger graft is safer than to err on the lesser side, because slight defatting is a simpler procedure than addition of more tissue. However, one or other may be required at times. Reduction or defatting was done in one case where in fact a creamy encapsulated fluid (necrosed fat) was evacuated and hardly any defatting was required to restore normal contour. Another patient required a little addition of the tissue in the upper part of the original depression.

Watson (1959) by injection and histological studies demonstrated the utility of dermis for early vascularisation of derma-fat graft. Early vascularisation prevents excessive absorption of the graft. Lack of proper vascularisation would lead to necrosis, liquefaction of fat. This liquefied fat may either be discharged

outside or remain as such to be absorbed later and replaced by fibrous tissue. Therefore the dermis is a very important part of the derma-fat graft because it favours:

- (i) Early and better vascularisation of the fat.
- (ii) It provides support and stability to the otherwise unwieldy fatty tissue.
- (iii) It adds bulk to the graft.

We have used double derma-fat in three cases and we feel that in this procedure, the degree of absorption was less as compared to a single derma-fat graft. Only slight over correction was necessary. Further it maintained its original shape much better than the single derma-fat graft where the dependant part may remain slightly overcorrected. However, number of cases done by this method in our series are too small to draw a definite conclusion. Double derma-fat graft certainly provides advantages accrued to dermis with double force. We strongly recommend further trial of this procedure.

FOLLOW UP

These cases have been followed up for a period varying from 8 months to 5 years. Initially the graft gave a contracted appearance and a firm feel. This may be due to oedema of the graft, because contraction of the graft at such an early stage (7—15 days) is not possible. The continued swelling and firmness may partly be due to the contraction of the graft. It was observed that this phase disappeared in 6 months to 1 year, and the grafted area by then had become soft and supple, alth-



Fig. 2 Pre-operative Appearance. Depressed scar left cheek



Fig. 3--Post-operative Photograph 10 months after Operation of Double Derma-Fat Graft



Fig. 4 Pre-operative Photograph



Fig. 5--Post-operative Photograph-2 years after the Operation

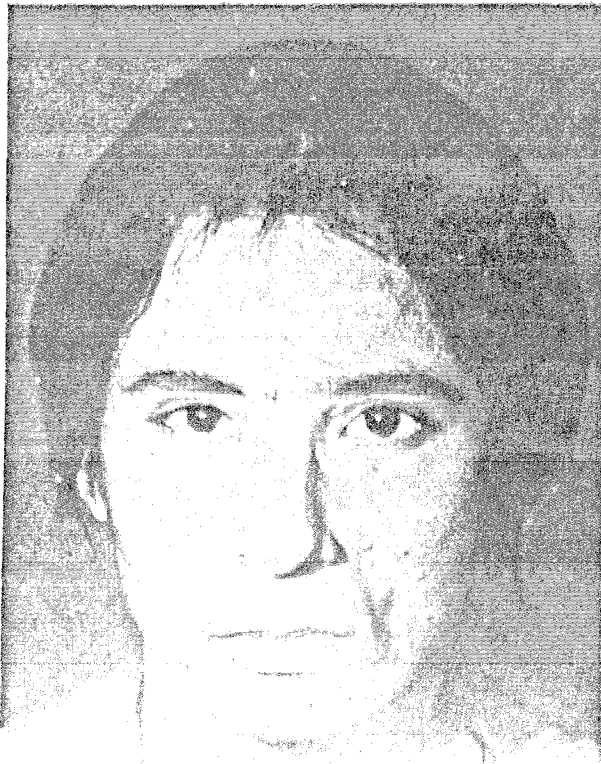


Fig. 6. Pre-operative Appearance
Depressed Scar Left Nasolabial fold and Cheek

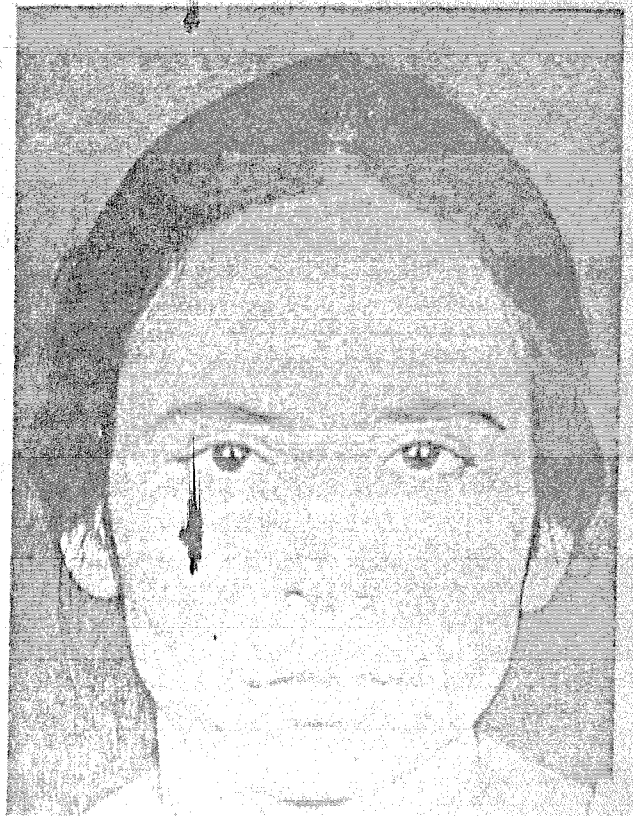


Fig. 7. Post-operative Photograph
6 months after derma-fat grafting



Fig. 8. Depressed Scar Forehead. Pre-operative Photograph



Fig. 9. Appearance 1 Year after Derma-Fat Grafting

ough the graft had been partially absorbed by that time. We have not come across sebaceous cyst formation in our cases.

RESULTS

The results have been very encouraging especially in cases where double derma-fat graft was used (figs. 2-9). Derma-fat graft is though not an ideal method of management of the depressed scar of the face, but in majority of these cases it is a very suitable procedure.

SUMMARY

- (i) Historical background of the derma-fat graft is given.

- (ii) Twenty cases of depressed scar of the face treated by single or double derma-fat graft are presented.
- (iii) The technique of the grafting is detailed.
- (iv) The advantages and disadvantages of this method are given and the other possible methods which can be used in such a situation are discussed.
- (v) Follow up of the cases varying from a period of 8 months to 5 years is reported.

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