

SKIN GRAFTING - A SUCCESSFUL SURGICAL TREATMENT IN VITILIGO - OMAN EXPERIENCE

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Abstract:

Epidermal grafting is a surgical procedure for resistant depigmentary disorder like localised vitiligo, segmental vitiligo, and leukodermas secondary to burns, DLE, etc. This therapy is gaining popularity because of the excellent cosmetic results and more and more dermatologists are accepting the challenge.

Here we present our successful experience in Oman of Autologous suction blister grafting and Partial Thickness Skin Grafting (PTG) in 30 patients. 121 out of 134 patches grafted i.e. 90.3% have shown excellent cosmetic results. Of the remaining, 5 grafts were partially taken up while the other 8 were completely rejected. Overall there was no complications of any sort and donor and the recipient sites healed without any residual scarring and with good cosmetic results.

In view of the excellent results, easy out patient procedure, requiring no anaesthesia and the affordable simple technique, the procedure is advocated to be a part of the routine procedure in dermatology units.

Introduction :

Vitiligo is common depigmented disorder of cosmetic importance in dark coloured individuals. Although it is benign in nature, it is a condition of great concern from the psychosocial impact in day to day life, e.g. girls sufferers find themselves difficult to get married, people hesitate to shake hands, eat together or even stay together because of the various

myths, beliefs and taboos attached to the disorder that it is contagious disease.

Treatment is still a dilemma and although the conventional therapy of PUVA (Psoralens+ Ultra-Violet A) has been a breakthrough, not all patients neither all the sites respond to it. It is known fact that lips, dorsum of hands and fingers, dorsum of foot are the common sites that are resistant to treatment. The segmental vitiligo also is resistant to the therapy. The successful epidermal suction blister and partial thickness skin grafting (PTG) has fit the bill as an alternative management of such resistant and localised cases of vitiligo. Failure to respond to Puva therapy only indicates that melanocytes are not available at these sites and they can be generated by skin grafting in these areas^(1,2).

There are various techniques of grafting such as autologous mini grafting⁽³⁾, Thiersch's grafting⁽⁴⁾, grafting with autologous epidermal culture⁽⁵⁾ and pure

Melanocyte culture⁽⁶⁾. The suction blister method which is one of such autologous epidermal grafting where the roof of the blister is used as graft and the Thiersch's partial thickness epidermal grafting, are the two methods that were used in this study.

Material and Methods

Investigations and Consent

All the procedures were done in the dermatology ward of Al Nahda hospital, Muscat, Sultanate of Oman. Patients were informed about the procedure and written consent was taken. Prior to the procedure, they were subjected to all investigations like CBC, BLOOD SUGER, VDRL, HIV, P.T., CT etc.

Selection :

The following criteria were used for selecting our patients.

- 1- Vitiligo patches not responding to conventional therapy like PUVA for more than 6 months.
- 2- Localised Vitiligo patches which were stationary and inactive for more than 6 months.
- 3- Least responding sites like dorsum of hands, feet, fingers, periungual region, lips, exposed areas of cosmetic significance.
- 4- Sizes not more than 5 cms.

Patients :

Thirty patients of resistant cases of Vitiligo who satisfied the above criteria were selected for autologous grafting. There were 21 males and 9 females.

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Different types of vitiligo cases were included. 4 had segmental vitiligo, 3 had post inflammatory leukoderma secondary to Herpes Simplex infection and DLE while 17 had localised vitiligo and the remaining 6 had chronic desiminated type. The duration of the disease varied from 3 years to 15 years and the mean duration was 7.78 years. The age varied from 12 years to 47 years with the mean being 26.17.

Procedure:

1st. Suction-Blister method :

Blister formation was achieved by use of negative pressure by using the standard suction machine available in any medical ward. Glass funnels of different diameter were used as suction cups. They were attached to the suction machine with the help of different size plastic adaptors. One or two cups were used per sitting depending upon the area to be grafted.

On fully stretched skin the suction cup was applied and pressure was gradually increased till it was maintained at 75 to 80 KPH of Hg. Multiple tiny blistering starts within 30 to 40 minutes which coalesce (Fig. 1) to form one large or 2 to 3 medium size blisters. The time taken for blistering can vary from 1 to 3 hours, the average being 1.5 hours. Some inject normal saline at the donor's site prior to suction as blistering is supposed to occur faster. The procedure is well tolerated and the discomfort is minimum.



Fig. 1

Grafts :

The tops of the suction blisters were used as grafts. It was freed by snipping around the periphery with pair of iris scissors and transferred on to a sofratulle placed into 0.9% normal saline in a glass dish. The epidermal grafts are very fine and thin as compared to the partial thickness grafts. The size varies from 2 cm to 5 cm with average of 2.5 cm x 2 cm. The inner surface of the graft was further treated by removing the remains of the fibrous tissue by a pair of tweezers which otherwise tends to curl the edges of the graft.

Once the fibrous tissue is separated the graft is ready to be transferred on the recipient site. It is done by lifting the graft along with Sofratulle on which it is placed and inverting it on recipient site. This helps in the smooth transfer of graft rather than just lifting it with forceps which if curled may be difficult to differentiate between the dermal and outer surface.

The grafts are placed next to one another till the recipient area is fully covered. Care is taken to see that there is no accumulation of fluid under the graft. After spreading the graft uniformly and without any wrinkling, it is sealed by using flexible collodion followed by pressure dressing. Where ever the areas are prone for maximum mobility the grafted site is immobilised for about a week time. After eight days, the collodion seal from the grafted area is removed by use of Acetone and the area is covered with antiseptic dressing for another week. A part of the stratum corneum of the epidermal sheet detaches like a shell in 7-10 days time. The scrubbing of the area is prohibited for the next 2 weeks.

B. Thierch Grafting :

The partial thickness grafts were obtained by use of Silver's Minature skin graft knife while the rest of the procedure remaining the same.

Donor- sites

The common donor sites that were used were the thighs, back, scapular area and gluteal region. Usually the choice of site was based on colour match. The donor site was sealed with duoderm, a synthetic biological material which helped in rapid healing of the donor site. The following donor sites were selected.

SITES	NOS
BACK	18
GLUTEAL R.	02
THIGHS	07
LUMBOSACRAL	01
TOTAL	28

Dermabrasion

Dermabrasion is done on the recipient site under local anaesthesia by using different sizes of dental Burs like the diamond, metallic tungsten burs etc. Dental electrical motor with minimal of 12000 to 20,000RPM was used. The edge of lesion is marked by a marker pen and dermabrasion includes 2-3mm of normal skin at the border of the lesion. 2% of Lignocaine with Adrenaline was used as local anaesthesia. The area was dermabraded till tiny bleeding spots appeared all over the recipient sites. The following recipient sites were used.

SITES	NOS
DORSUM FINGERS	36
DORSUM HANDS	31
FACE	21
FOREHEAD	3
PERIUNGAL SITES	09
DORSUM FEET	23
WRIST	05
LIPS	05
EYE-BROWS	02
NECK	01
TOTAL	134

FOLLOW-UP:

The patients were followed up every 2 weeks for 3 occasions and later on monthly for 4 to 6 months. Regular followup was done in most of the patients. Maximum followup done is for 3 years period.

RESULTS:

A total of 30 patients were grafted. 19 were with Suction blister method and 10 were with Thierch

Partial Thickness graft method. 25 of the 30 patients showed extremely good results. Out of the 134 patches grafted 121 i.e. 90.3% were extremely well taken with excellent cosmetic results (Fig. 2 to 9). 5 grafts were partially taken while 8 were rejected. Initially the colour of the grafts was either hypo or hyperpigmented, but it took 3 to 4 months for complete normal repigmentation.

Three patients developed hypopigmented halo measuring 1 to 2 mm, around the graft within 3 to 4 weeks of the procedure which cleared off after 2 to 3 months on its own probably due to the spread of the pigment (Fig. 10). There was no secondary infection or scarring observed in the suction blister technique in any of our patients. Three cases produced koebner's phenomenon i.e. new lesions appeared within 3 to 4 weeks after surgery, one on the donor's site and the other two at the recipient's site. 2 patient developed fine scarring at the donors site in PTG Technique. The patients who showed initial hypopigmentation, were given PUVA therapy two times a week for about 8 to 10 weeks.

Cosmetically the results were excellent more so on face and lips.

Discussion :

The separation of viable epidermis in vivo by production of suction blister was first demonstrated in 1964 by Klistalay Mustakallio KK⁽⁷⁾. Falabella⁽⁸⁾ further improved the technique by use of liquid nitrogen for producing blister but as grafting had to be done only after inflammation subsides it was necessary to wait for 48 hours for the procedure. Suction blister technique as described by Suvanprakorn et al⁽²⁾ was much improved method.

Complete detachment of the epidermis from dermis occurred between basal cell membrane and the basement membrane using a negative pressure ranging from 150 to 200 mm of Hg. As the separation occurs at the physiological junction⁽¹⁰⁾, the graft obtained is purely an epidermal one without any dermal tissues and hence scarring is avoided⁽⁶⁾. As Melanocytes and Melanin are located in the basal cell layer and to a lesser extend in the remaining parts of epidermis, the melanocytes and the pigment present in the isolated epidermis is now available to the depigmented areas⁽⁸⁾.

One of the greatest disadvantage of the conventional full thickness grafting is the cosmetic damages to the donor site since part of the dermis is re-

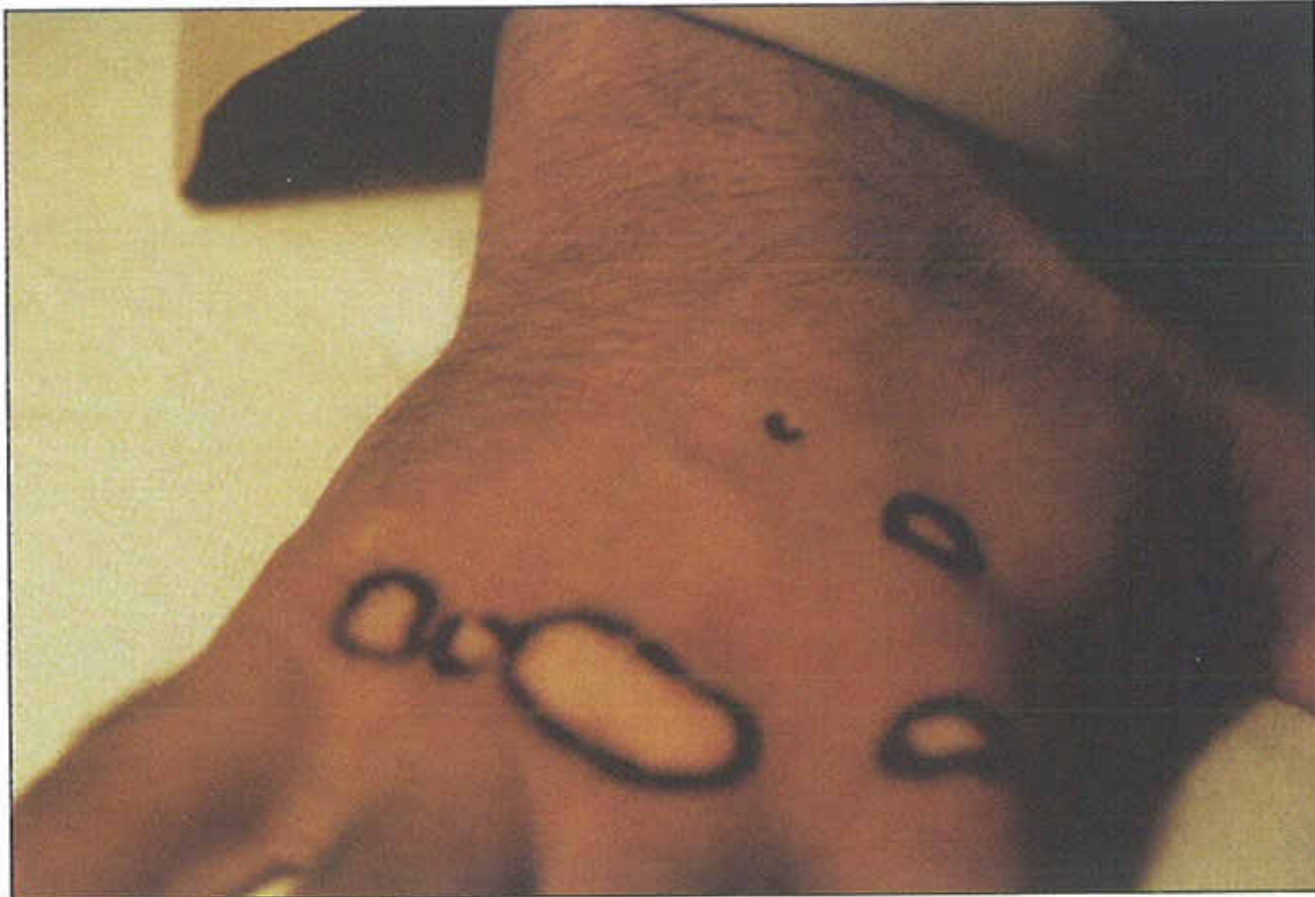


Fig. 2

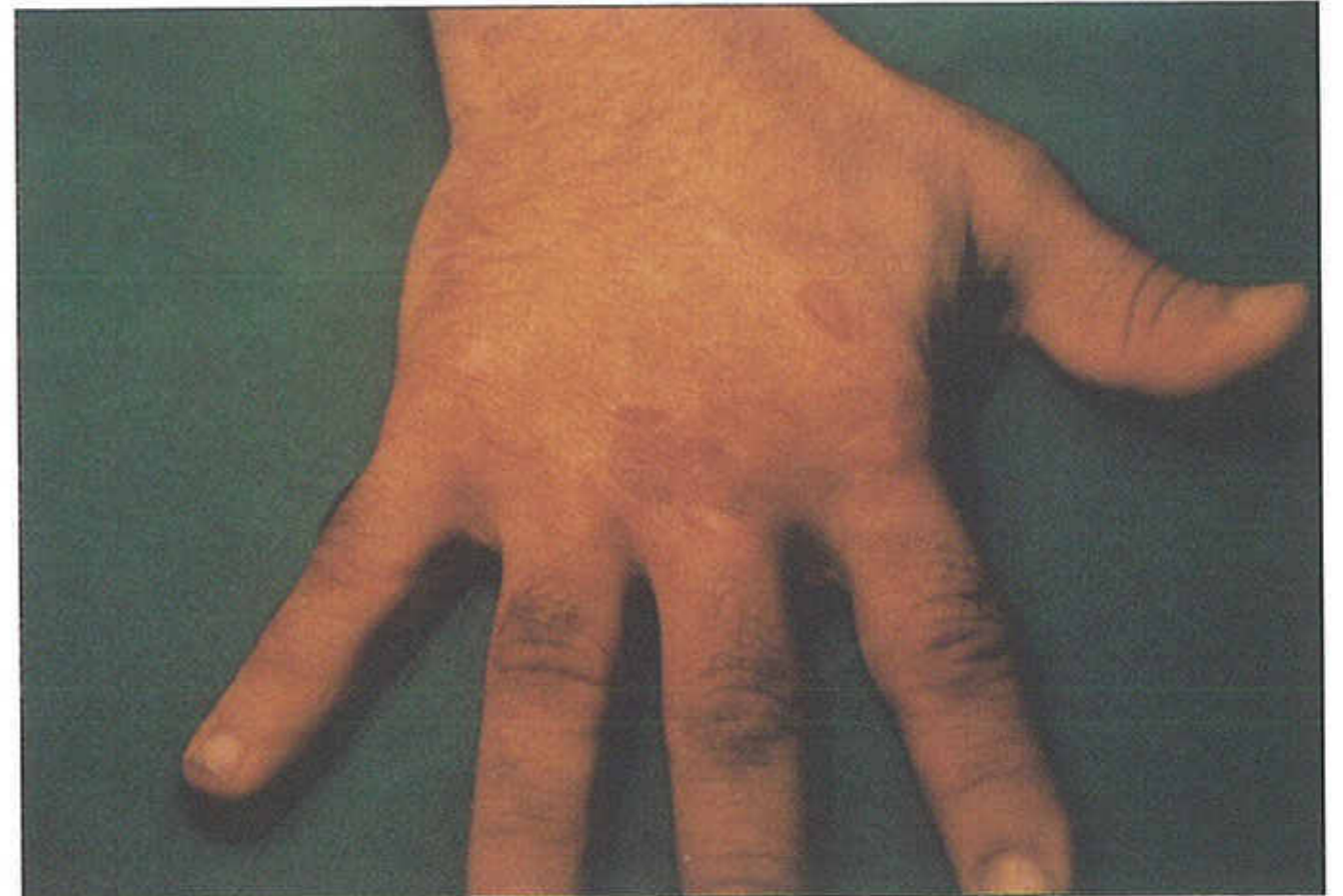


Fig.3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8

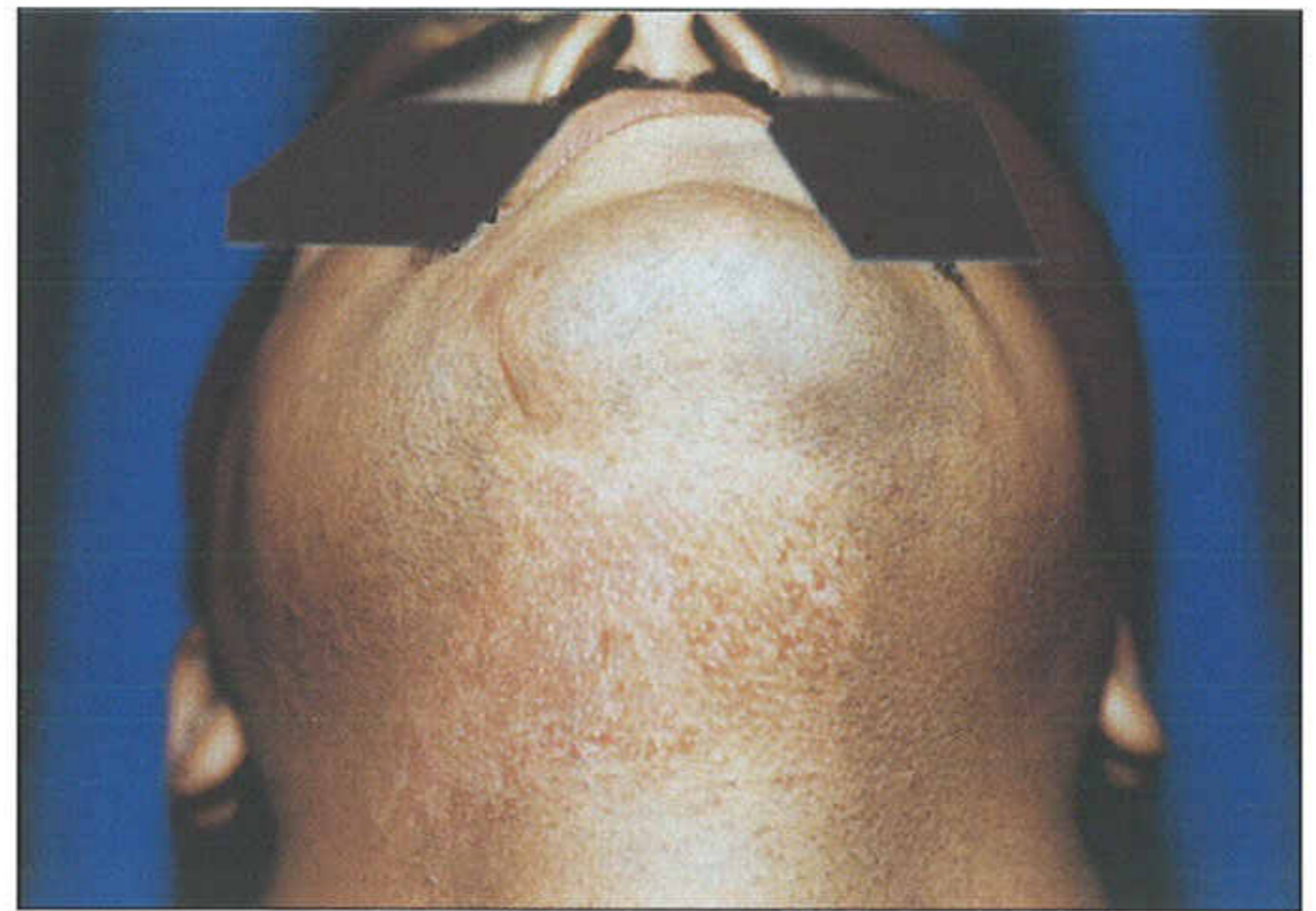


Fig. 9

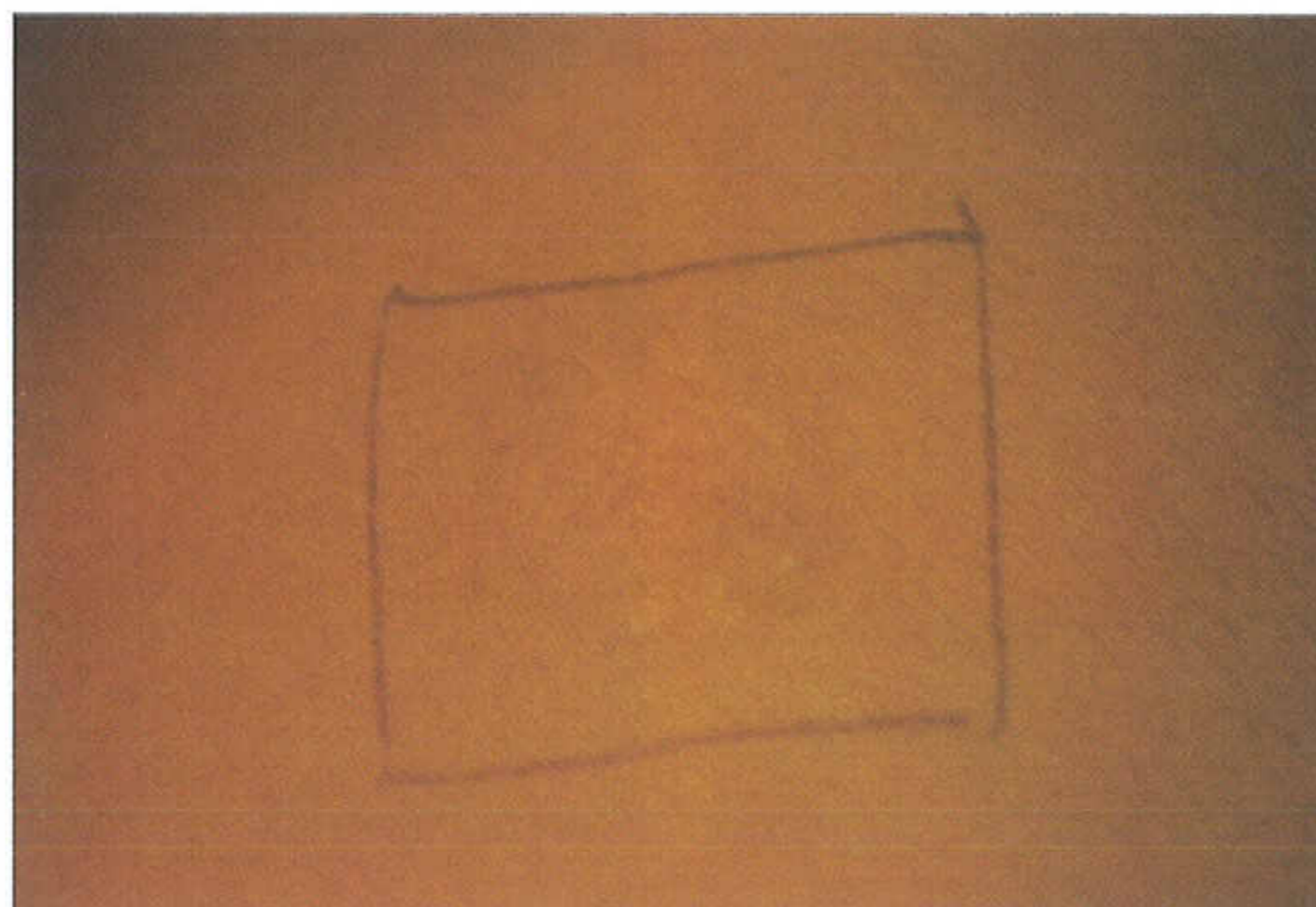


Fig. 10

moved which leads to scarring and undesirable bad cosmetic looks. Epidermal grafting prevents this undesirable effect since dermal tissue is untouched. Suction blister grafting provides very thin and fine grafts which is specially useful on face, eyebrows, neck and lips. Its limitation is the quantum of graft that can be available at a time and the time consuming procedure.

While in P.T.G. method, although the graft is bit thicker, it is suitable on any parts of the body. Moreover, the grafts can be obtained faster and larger areas can be grafted.

Our excellent cosmetic results observed in 90.3% of the patches grafted without any complications is consistent with the results of Y.V. Tawade et al⁽¹¹⁾ and Sharad Mutalik⁽¹²⁾.

The sites which responds extremely well is the face probably due to presence of abundant appendage tissue. The grafts take up very quickly on mucous membrane probably due to high vascularity. Both these procedures are extremely useful for treatment of segmental vitiligo involving limited areas⁽⁹⁾.

This procedure is a simple, office based painless, non-invasive economically viable technique, where you need no general anaesthesia, no bleeding, or scarring occurs and has excellent cosmetic results. The Suction blistering grafting and partial thickness grafting are therefore two practical methods that has enhanced one armamentarium of treatment in localised and stable cases of vitiligo.

REFERENCES:

1. Falabella R: Grafting and transplantation of Melanocytes for repigmenting vitiligo and other types of leucoderma, *Internat J. Dermatol*, 1989,28:363-369.
2. Suvanprakoran P, Sompong DA, Pongsomboon C et al:- Melanocyte autologous grafting for treatment of leucoderma, *J Amer Acad Dermatol*, 1985, 13;968-974.
3. Falabella R: Repigmentation of segmental Vitiligo by autologous minigrafting, *J Amer Acad Dermatol*, 1983, 9:514-521.
4. Behl PN, Bhatia RK: Treatment of vitiligo with autologous thin Thiersch's grafis, *Internat J Dermatol*, 1973, 12:329-331.
5. Brysk MM, Newton RC, Rajaraman S et al: Autologous cultured cells as a treatment for vitiligo (abstract), *J. Invest Dermatol*, 1988, 90:549.
6. Lerner AB, Halaben R, Klaus SN et al: Transplantation of human Melanocytes, *J Invest Dermatol*, 1987, 89:219-224.
7. Kiistala U, Mustakallio KK: In-vivo separation of epidermis by production of suction blisters. *Lancet* 1964, 1:1444.
8. Falabella R, Epidermal grafting. An original technique and its application in achromic and granulating areas. *Arch Dermatol* 1971, 104:592-600.
9. Michiyuki Koga, Epidermal Grafting Using Tops of Suction Blisters in the treatment of Vitiligo. *Arch. Dermatol* 1988, 124:1656-1658.
10. Kustula V: Suction blister device for separation of viable epidermis from dermis, *J. Invest Dermatol*, 1968, 50:129-137.
11. Y.V. Tawade, BB Gokhale, A. Parakh and PR Bharatiya: Autologous graft by Suction blister technique in Management of Vitiligo. *Indian J of Dermatology, Venereology and Leprology* 1991, 57:91-93.
12. Sharad Mutalik: Transplantation of Melanocytes by Epidermal Grafting. *J. Dermatol Surg Oncol* 1992, 18:1-4.