

## CONTINUING MEDICAL EDUCATION

### AUTOLOGOUS THIN THIERSCH'S GRAFTS IN VITILIGO: EXPERIENCE OF 8000 CASES, 50000 GRAFTS (1959-98) WITH MODIFIED TECHNIQUE IN 198 CASES IN THE YEAR 1997-98

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*The present study, spread over past four decades of experience gathered after operating 8000 stable vitiligo patients, reaffirms the value of thin Thiersch's grafts in treating this disfiguring disease. Under experienced hands, the success rate can be over 95%. However, selection of the patient, quality of the graft and the state of the donor and recipient sites can affect the final outcome.*

#### Introduction

Vitiligo is a major cosmetic disability in dark skinned patients. Ever since the introduction of thin Thiersch's grafts in vitiligo patches by Behl,<sup>1</sup> the therapy of resistant vitiligo was revolutionized. In the forthcoming decades to come, the research workers in this field all over the world advocated several modifications over the original procedure.<sup>2-12</sup> These included epidermal grafting (by suction or freezing blister)<sup>10</sup> and minigrafting<sup>4,8</sup> by punch or pinch or pinch grafts. The latter techniques were thought to be more easily undertaken even by a novice. The results, however, were cosmetically inferior to the original technique. In minigrafting, even after undergoing an operative stress, the patient had to patiently wait for the grafted dots to spread pigment to the surrounding depigmented halo. In other words, the agony of depigmented disorder persisted despite spending money in the operation and undergoing mental and physical trauma.

After experimental work in animals and human

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volunteers, the senior author (Behl), standardised the technique in the year 1959. In 1964, results of the initial study were reported.<sup>1</sup> Till the year 1998, 8000 cases of stable vitiligo have been operated with roughly 50000 grafted areas of sizes varying from 1/2 sq.cm to 25 sq.cm. Present detailed study extends over the work done in last two years. The experience thus gathered is discussed which will help in choosing the patient for vitiligo surgery for good results. From the clinical and treatment point of view, vitiligo has been divided into three types V1, V2, V3 (Table I).

Normally grafting is undertaken, when the disease has progressed to the late V3 stage, and is not repigmenting any further with medical treatment. Quiescent, non-progressive, resistant, recalcitrant patches of depigmentation are recommended for grafting. Before doing the grafting a detailed history and thorough clinical examination are important for successful thin Thiersch's grafting in resistant vitiligo patches (Table II).

Certain areas of body such as nipples, lips, glans penis, skin over bony prominences, show a lowered tendency of repigmenting despite prolonged medical treat-

ment. These areas have also shown good results by thin Thiersch's grafting.

### Materials and Methods

A total of 8000 patients of stable vitiligo, who showed no further pigmentation, were subjected to thin Thiersch's grafting and followed from six months to two years, from the year 1959 to 1998 (4 decades). Of them

Table I. Stages of vitiligo

Stages	Characteristics
Active (V1)	(a) New lesions developing (b) Lesions increasing in size (c) Borders ill-defined
Stable (V2)	(a) No new lesions (b) Lesions stationary in size (c) Borders hyperpigmented and well-defined
Healing (V3)	(a) Lesions decreasing in size (b) No new lesions developing (c) Presence of follicular and peripheral repigmentation

3725 were males and 4275 females. Their ages ranged from 16 years to 62 years, with a mean age of 32.5 years. A total of over 50000 patches were thus grafted. The size of each patch, however, varied, from 1/2 sq.cm. to 25 sq.cm. Smaller patches were usually done under local anaesthesia, while the larger patches required either general anaesthesia or spinal anaesthesia. Patients with multiple depigmented lesions were some times treated in two or three sittings when local anaesthesia was used. After general or spinal anaesthesia, a single sitting was preferred even in extensive lesions. In the last 2 years, the technique has been amended. Since then 198 cases have been performed.

### Procedure

Small areas less than 4-6 sqs. cms. are usually operated under local anaesthesia-0.5-1% xylocaine without epinephrine. In apprehensive, anxious and nervous pa-

tients, injection of diazepam helps to allay the apprehension and secure the cooperation. Larger areas are operated under general anaesthesia given by a trained anaesthetist. Smooth anaesthesia is very beneficial for taking grafts from donor areas and application of recipient areas. A chart is prepared showing recipient areas, number, size, location etc. and hung on the wall. This helps not to miss

Table II: Pre-requisites for doing Thin Thiersch's grafting

1. No new lesion should have developed in the previous 2 years
2. Recipient sites should be well-defined and have hyperpigmented borders.
3. Nutrition of the skin-both donor and recipient areas-should be good. There should be no evidence of atrophy or scarring.
4. There should be no bleeding diathesis ; general health should be good.
5. There should be no evidence of cutaneous infection.
6. There should be no keloidal tendency.

any location needing grafting.

Donor area was selected after thorough scrutiny avoiding depigmentation, scars, striae, infection etc. These interfere with taking of proper grafts. Parts-both donor and recipient-were cleaned, preferably with soap and water and then alcohol. The recipient site was abraded with a diamond brush to produce uniform capillary bleeding and epidermal removal. Edges were usually prepared with 1 mm steel brush; it extended 2-3 mm beyond the original site. After the bleeding has been controlled, thin Thiersch's grafts from the donor areas of the thigh or buttocks were removed with a dermatome or a blade, and applied to the recipient area extending at least 3 to 5 mm beyond the abraded area. This helps to prevent 'tyre patch' appearance and helps in matching of the edges. Proper thin grafts which did not extend below the inter papillary processes and papillary dermis were taken. Eye-lids were abraded after applying eye shields. Hairy regions especially the beard, scalp and pubis were difficult because of the pres-

ence of hair which lift the grafts as they grow. In these areas, double shaving, was done, once preoperatively and second time after abrasion just before putting grafts. Waist and joints were the other difficult areas because of mobil-

Table. III. Analysis of 8000 patients

<b>Total No.of cases</b>	<b>8000</b>
Total no.of grafts	50000
Large grafts	35000
Small grafts	15000
<b>Anaesthesia</b>	
Local anaesthesia	15000
General anaesthesia	35000
<b>Complications:</b>	
Haematoma	2%
Infection	0.4%
Peripheral type	1.5%
Graft rejection:-	
i) Small area	2%
i) Large area	5%
<b>Good response:</b>	
Small lesions :	95%
Large areas :	70.8%

ity; hence we immobilised the parts after surgery. On the feet and hands, framycetin tulle were applied over the grafts instead of collodion flexile used earlier. Spreading of graft was achieved with the help of blunt needles or back of scissors or dissecting forceps. Big areas were covered by overlapping the edges. No air, serum or blood was allowed under the graft. Once grafts had been properly applied, framycetin tulle were applied. Then a gauze was put on, and further secured with elastoplast. On the extremities, crepe/cotton bandage was firmly tied. On the eyelids, collodion flexile was followed by closing the eyes and gauze dressing. Excessive pressure was avoided in this area. Same applied to genitalia. Part was immobilised as far as possible, at least for the first 24 hours.

After 48 hours, gauze dressing was removed. Small windows of 1/2 cm diameter were made with acetone and dissecting forceps. After exposure of the windowed graft to fresh air for a couple of hours, thin piece of gauze or framycetin tulle was put on and crepe bandage applied. On the 5th to the 7th day, bandage was completely removed. Slowly the dressing was also removed with

acetone application pulling it from the centre towards the periphery making sure the edges were not lifted. The periphery of the graft was dark, crispy and dead, as it extended beyond the edges of the grafted area. By the tenth day, grafts were well taken and patient was ready for normal life.

**Modifications :** The following modifications have given better results.

1. Avoiding the use of collodion flexile, but ensuring that the movement over the grafted area was minimal.
2. In thin Thiersch grafting of lips, the stitches were applied (2-3 in number) over the mucosal side i.e. inner side of the lip and sides.
3. No windows were made; graft was checked by lifting the framycetin tulle cover.

**Observation**

After the operation, the patients were kept in hospital under aseptic room conditions. If the operated lesions were small and occupied arms and legs, some patients were discharged after 48 hours, and could resume

Table IV : Result after modification of the technique in 198 cases (1997-98)

Small grafts:	90	Large grafts:	140
<b>Results</b>			
Small areas-		99% taken up	
Large areas-		85% taken up	

normal life with care. The grafted areas were observed after 7 days, 15 days, 1 month, 3 months, 6 months or more (Fig. 1 & 2). There were 15000 grafted areas of size between 1/2 to 5 sqs cms. (small grafts) and 35000 of areas over 5 sqs.cms (large grafts). Table III and Table IV show the take up rate and pigmentation of these grafts.

Cases where the grafts were not taken properly, were regrafted. With this result improved to almost 100% in both small and large areas. After the graft was taken it took 3 weeks-3 months for perfect matching of colour and texture. Recurrence rate of vitiligo was low. It occurred in those cases where the disease was unstable.

**Complications**

In recent series, the incidence of complications was negligible. The milia and peripheral raised areas cleared with time. The overall complications seen in all 8000 cases were as follows :-

1. Infection: 32 patients had infection in 1 or more grafted area.

**Table.V. A comparison of follow up of two surgical techniques in resistant vitiligo**

	Thin Thiersch's grafts	Punch grafts
1. Size of graft	The size can be made flexible; graft can be made as large as 3"X8-10". So even large defects can be permanently camouflaged.	Size being small; even after several punches grafted on a patch can't cover the defect completely.
2.Thickness	Being uniformly thin, it merges in the grafted area.	They render an irregular surface of grafted area.
3.Time consumed	For surgery 1/2-2hrs take up 7-10 days colour matching-few months	For surgery 3-10 h time Take up few months colour matching year
4. Colour matching	As whole depigmented patch is covered, so colour matching is instantaneous and excellent results in short time.	As intervening areas of depigmentation are left, these are at the mercy of the grafted punches, which may or may not work even after months.
5. Cosmetic acceptability	Cosmetically highly acceptable. After a few months, many grafted areas are indistinguishable from normal skin.	Cosmetically less acceptable both in immediate and later stages.
6. Complications	They are minimal. No cobble stone appearance.	Cobble stone appearance of the patch is an often encountered sequelae.

2. Haematoma : 160 patients had haematoma in a part of grafted area.

3. Peripheral tyre appearance was seen in 750 grafts. Many of them were regrafted.

4. Grafts not taken up: Smaller grafted areas had a lower (2%) while larger ones a higher (5%) rate of detaching from causes including infection, and haematoma.

The complications were usually seen when large

areas were grafted.

**Discussion**

Vitiligo is a problem that causes great mental anguish to patients who have the disease, especially in dark skinned patients. As Omar Khayyam had said, " A black spot (mole) on a fair face is a blessing; a white spot on a dark face, a curse". Treatment of V1 and V2 stages of vitiligo has already been standardised by us.<sup>1,5,6,13.</sup>

Our results show, fair to good response in 95-99% in small areas and 80-90% in large areas at the first sitting. Defects can be repaired at the second sitting pushing the response to almost 95% in moderate to large areas. Most of the patients are ambulatory unless large areas are grafted; patients return to work immediately or within 10 days at the most in cases where large areas are grafted.

Grafting of lips is a difficult procedure. Firstly the grafts are not available from other mucous membranes. Our initial experimental work with donor skin from the prepuce did not prove helpful and hence had to be discarded. Now we get the donor skin from the buttock. Beacuse of continuing salivation, slippery surface, movement of lip and need for eating, grafts are difficult to apply. These difficulties

are overcome by stitching the grafts on the sides and inner borders, keeping the grafts dry by continuing pressure and feeding through the tube while the grafted area is covered with polythene material.

First problem encountered during the procedure of skin grafting was the presence of fibrosis of the skin a complication of over enthusiastic treatment with local medicaments. Dermatologist should be trained to realise when to stop the topical psoralen and UVR treatment. Evidence of irritation and inhibition of further

repigmentation should suggest withdrawal of topical treatment.

Second problem was auto-immune reaction in a certain percentage of cases (about 5%) resulting in either the grafts getting depigmented or a depigmentary border. With steroids and ACTH, this type of reaction can often be controlled.

Third problem was the fear of recurrence of vitiligo because of genetic predisposition, flare up of trigger causative factors and auto-immune reaction. This fear though genuine, is allayed by explaining to the patient that recurrence rate is as much after as before the surgery and in a way every person has a certain amount of risk in getting vitiligo. In properly treated cases with conservative therapy and surgery in V3 stage, risk is usually minimal. After all, the surgery is only a permanent cosmetic repair compared to a temporary 'cover up' camouflage. It is not a cure, by any means. In segmental vitiligo the fear of recurrence is the least, hence the results are most gratifying.

Falabella,<sup>2,5,6</sup> has recommended minigrafts and epidermal grafts for achromic areas by the modified suction device. According to him, his technique has the advantage of less cosmetic damage (at the donor site) by production of suction blisters compared to the use of the dermatome or the blade. In our experience the scarring at the donor site is minimal and often cosmetically acceptable, especially on the unexposed areas of buttock which we recommended for donation of grafts. His experience is, however, limited to a few cases, while we have done skin grafting on over 8000 patients and over 50000 areas. The other advantages of our method are: 1. Time patients stay in the hospital for few hours/a day, and are ambulatory and dressing is taken off after 7-10 days. 2. Area done—Because of speed with our technique, we have done 15-50 sq. inches or so at one sitting. 3. Recipient areas—Grafts are regular and there are no achromic fissures.

A comparative evaluation of the two techniques is interesting (Table V).

In substance, this study leaves no shadow of doubt about the undisputed superiority of thin Thiersch's grafts over punch grafts. In days to come epidermal sheet cultured grafts may show a comparable results and may even be used for extensive regions as thin Thiersch's graft can be obtained only from limited skin.

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