

# Simple but effective blister forming trick in suction blister technique (SBT)

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## Abstract

**Introduction:** Vitiligo is a common skin disorder of our country. Many of the patients are refractory to medical treatment. Dermato-Surgery is very rewarding in these cases. Thus proper selection of technique will play a major role in achieving good therapeutic and end cosmetic results. Suction blister technique is convenient and cost effective, less time consuming, pure epidermal graft, excellent colour match, pigment spread from the graft to surrounding area- upto 46% and maximum pigmentation within 3-4 months happens without any scar.

**Materials and Method & Results:** Suction Blister Technique: The in vivo separation of epidermis from rest of the skin by production of a suction blister resulting in complete physiological dermoepidermal split was possible using this technique.

The piston of 10c.c. syringe is removed and instead of 3 way connector, an assembly line consisting of polyvinyl tubing (I.V. Line) cut both ends is attached. One end of the cut IV tube to its needle end piece of 10 c.c. and 50 c.c. syringe in the other end. The basal rim of this 10 c.c. syringe is then applied to the fully stretched donor site. Suction is then given by 50 c.c. syringe to create negative pressure. After the blister formation, the 50 c.c syringe is withdrawn after securing that end with an artery forceps. Both ends of the IV tube is now tied with Mersilk Suture material and artery forceps is with dawn. Due to the negative pressure inside the basal rim of syringe, it remains adherent to the donor site in a vertical position along with the portion of IV tube properly secured, not to allow any air leak. Multiple such 10c.c. syringes (8-10 or more) can be applied similarly next to each other as per the area of recipient site requirement. Time required for separation is 45 mins to 2 hours. Blister is cut all along its border with curved iris scissors and its roof is everted over glass slide.

Using 50 ml syringe as a vacuum creating device instead of the expensive and cumbersome vacuum devices as the time taken for the blister formation is the same. We don't use any manometer or even 3 way connectors in this method. In this method we needn't inject intradermal saline into the blisters as blisters formed are appropriate and chances of small or improper blisters is very rare.

**Conclusion:** The use of IV polyvinyl tubing and securing the ends with suture instead of 3 way connectors or any vacuum creating devices is very cost effective and promising method to create intact and proper blisters in Suction Blister Technique.

Suction blister grafting is a cost effective procedure, with a slight modification it can be done in a minor o.t with satisfactory outcome and or lip vitiligo, it is the procedure of choice.

**Keywords:** Vitiligo occur.

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## Introduction

Vitiligo is an acquired skin disorder characterized by patchy depigmentation of the skin.<sup>1</sup> Vitiligo affects approximately 0.5% to 2% of the population worldwide, and the prevalence appears to be equal between men and women<sup>2</sup> The prevalence of vitiligo is often said to range from 0.09 to 8%, especially in India.<sup>3</sup> Vitiligo occur on the skin in different parts of the body and sometimes also on the mucous membranes. A number of therapeutic options for repigmentation are available. Psoralens and UVA treatment is the most important treatment for generalized vitiligo that affects more than 10%–20% of the cutaneous surface. For localized vitiligo, topical corticosteroids or calcineurin inhibitors are the most valuable treatments.<sup>4</sup> Depending on the type, extent, and duration of vitiligo, conventional medical therapies such as topical and systemic corticosteroids, topical immunomodulators, and phototherapy are not

always successful, and repigmentation is often incomplete.

Surgical techniques have also been introduced for stable, segmental and unresponsive vitiligo. A number of dermatosurgery techniques are available to promote repigmentation of vitiligo in adults and children, such as mini- or punch grafts, split-thickness skin grafts, cultured epidermal sheets, cultured melanocyte suspensions, follicular grafts and suction blister grafts.<sup>5-9</sup> Among these methods, the highest success rates have been achieved with split-thickness skin grafts and epidermal blister grafts.

Epidermal blister grafting involves the formation of epidermal blisters by application of a negative pressure to the normally pigmented skin. After blister formation, the depigmented epithelium is removed and the roofs of the pigmented donor blisters are transplanted to the denuded lesional areas.<sup>10</sup> Suction blister technique is convenient and cost effective, less

time consuming, pure epidermal graft, excellent colour match, pigment spread from the graft to surrounding area- upto 46% and maximum pigmentation within 3-4 months happens without any scar.

### Materials and Methods

The study was conducted on 10 patients with Vitiligo that was resistant to usual treatments and with limited involvement in the affected sites. They were admitted to the dermatology ward of the Derma Solutions, Marathahalli. Patients excluded from the study included those with unstable disease. All patients were advised to discontinue previous treatments at least one month before the grafting procedure to minimize any possible drug effects.

On the day of surgery, a donor site usually front or lateral aspect of thigh was infiltrated with xylocaine. The piston of 10c.c. syringe is removed and instead of 3 way connector(Fig. 1a), an assembly line consisting of polyvinyl tubing (Fig. 1b) cut both ends is attached. 10 ml syringe connected with 50 ml syringe through rubber of the i.v drip set and placed on the donor bed. The basal rim of this 10 c.c. syringe is then applied to the fully stretched donor site. Suction is then given by 50 c.c. syringe to create negative pressure (Fig. 1d). After the blister formation, the 50 c.c syringe is withdrawn after securing that end with an artery forceps. Both ends of the IV tube is now tied with Mersilk Suture material (Fig. 1c) and artery forceps is withdrawn. Due to the negative pressure inside the basal rim of syringe, it remains adherent to the donor site in a vertical position along with the portion of IV tube properly secured, not to allow any air leak. Both ends of the IV tube is now tied with Mersilk Suture material and artery forceps is withdrawn. Due to the negative pressure inside the basal rim of syringe, it remains adherent to the donor site in a vertical position along with the portion of IV tube properly secured, not to allow any air leak. Multiple such 10c.c. syringes (8-10 or more) can be applied similarly next to each other as per the area of recipient site requirement. Excellent blister forms in 2-3 hours time. Time required for separation is 45 mins to 2 hours. Blister is cut all along its border with curved iris scissors and its roof is reverted over glass slide.

### The syringe

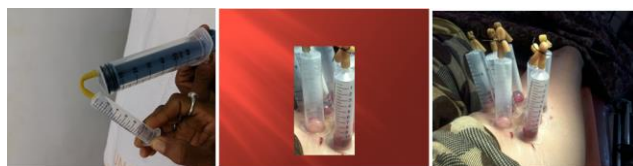
The donor site was dressed with antibiotic ointment and gauze. After removing the roof of the donor and recipient site blister, donor graftable epidermis was placed on the recipient site, sutured with nylon and then covered with antibiotic ointment and Vaseline

gauze. To prevent shifting of the graft, wet sterile cotton was applied over the area and covered with sterile gauze, with the dressing firmly bound in place with a compression bandage. After surgery, a 7-day course of antibiotic was given and the patient was advised to keep the site immobilized for a week. The dressing was changed after a week and sutures were removed after 2 weeks. Repigmentation rates were evaluated by comparing images of the lesions every month for 3 months after surgery.

### Photographs

#### 50 CC syringe attached to 10 cc syringe with IV tube

#### Blister Formation



**Fig. 1:** Shows parts of equipment used for blister formation.

Panel (a) shows Connector ; Panel (b) shows Polyvinyl tubing Panel (c) shows Mersilk Suture material ; Panel (d) shows the Vacuum Device

### Results

In this study, 10 patients with stable Vitiligo were evaluated for response following suction blister grafting, without pre- or post-graft phototherapy. Blister induction in the donor site was done on the day of surgery. Blister formations by Vacuum technique are shown in Figures 2a&b. First signs of pigmentation appeared after 2-4 weeks in the grafted site and ultimately in all the 10 patients treated 80% pigmentation appeared after 12 weeks. In all the patients, pigmentation progressed beyond the graft margins. Regression did not occur in the grafting site in any of the patients.

Blister grafts are cut and applied on dermabaded vitiligo patches



**Fig. 2:** Shows Blister grafting procedure  
Panel (a) shows raising suction blisters by the Syringe method. Panel (b) shows Suction Blister cut; Panel (c) shows Grafting of Blisters

Before and after SBT surgery: 3 months



**Fig. 3:** Pre and post treatment pictures of patients  
Panel (a) shows before treatment; Panel (b) shows 3 months after SBT surgery  
Panel (c) shows before treatment; Panel (d) shows 3 months after SBT surgery

## Discussion

Vitiligo is a fairly common pigmentary disorder of skin resulting from a loss of melanin which causes depigmentation of the skin.<sup>11</sup> Vitiligo is not a life-threatening disease; however, it frequently induces emotional distress.<sup>12</sup> A number of therapeutic options for repigmentation of vitiligo are available yet they commonly show unsatisfying outcomes.<sup>13</sup> Systemic or local administration of psoralen combined with UVA (PUVA) or topical corticosteroids are currently widely used.<sup>14</sup> The success rate of PUVA treatment is relatively good but recurrence after discontinuation is frequent.<sup>15</sup> Among the treatment methods for vitiligo are surgical procedures in which active melanocytes are transferred to the affected site. Surgical treatments are satisfactory when they are tried on patients with a stable type of vitiligo, which is unresponsive to conventional therapies.<sup>16-18</sup>

Transplantation of cells cultured *in vitro* from a small piece of donor skin is also used for treatment of large areas by expanding the melanocyte population; however, this method is very expensive and requires special and advanced laboratory facilities.<sup>19</sup> Suction blister grafting is accomplished by suction of viable epidermis from dermis and pigmented epidermis is

used for coverage of achromic areas. In most studies in the literature, when epithelization was completed (usually after 1 week) phototherapy was used to induce proliferation and migration of melanocytes in the recipient sites.<sup>20,21</sup>

In our study reepithelialization was completed in about two to three weeks and skin color normalized in most cases about half a year later. In all the patients greater than 75% pigmentation was seen. No serious complications were reported. As shown in figure the suction blister technique was showing satisfactory outcome for the treatment of lip vitiligo.

The technique is inexpensive and easy and obviates the need of cumbersome and heavy equipment. In the proposed method no need to use any manometer or inject intradermal saline into the blisters as blisters formed were appropriate and chances of small or improper blisters was very rare. The use of IV polyvinyl tubing and securing the ends with suture instead of 3 way connectors or any vacuum creating devices is very cost effective and promising method to create intact and proper blisters in Suction Blister Technique. Thus in conclusion Suction blister grafting is a cost effective procedure, with a slight modification it can be done in a minor O.T.

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## Conflict of interest

None.

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