

*Research Article***Minipunch Grafting in Stable Vitiligo.****Sherif S. Awad, Rasha TA Abdel Aziz and Safaa Bahgat.**

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Abstract

Vitiligo is a result of disrupted epidermal melanization with an undecided etiology and incompletely understood pathogenesis. Various treatment options have resulted in various degrees of success. Various surgical modalities and transplantation techniques have evolved during the last few decades. Of them, miniature punch grafting (PG) has established its place as the easiest, fastest, and least expensive method. Various aspects of this particular procedure have been discussed here. The historical perspective, the instruments, evolution of mini grafting down the ages, and the methodology, advantages, and disadvantages have been discussed.

Keywords: Mini grafting, mini punch grafting, punch grafting, vitiligo surgery.

Abbreviations:

NB-UVB: Narrow band- Ultraviolet B phototherapy, **PG:** Punch grafting

Introduction

Vitiligo is a common skin disorder characterized by development of progressive circumscribed depigmentation of the skin and possibly the hair due to the absence of active melanocytes (Yaghoobi et al., 2011).

Disease can appear at any age but more frequently seen in individuals less than 20 years of age. It affects about 0.1%-2% of general population and familial incidence is about 30%. The disease shows no regards for race, gender or socioeconomic background of affected individuals (Nicolaidou et al., 2009).

Vitiligo is characterized by milky-white patches anywhere on the body, it may affect any site of the skin, but affects mainly those sites which are exposed to trauma and pressure such as knees, elbows and fingers (David and Wiete, 2001). Hands and fingers are known to be difficult-to-treat sites (Rafal et al., 2007). An associated skin manifestation in vitiligo is the phenomenon of "koebnerization", where pressure or friction on the skin can cause new lesions or enlargement of the existing ones (Matin, 2008).

The treatment of vitiligo aims to minimize the disease progression, to attain repigmentation and to achieve cosmetically pleasing

result. Treatment options include medical treatment, phototherapy and surgical treatment.

Non-surgical and surgical therapies are available for vitiligo. Surgical therapies can be considered for stable vitiligo patches, that are resistant or respond unsatisfactory to non-surgical therapies (Njoo and Westerhof, 2001).

The punch grafting is relatively simple technique that can be used in an outpatient clinic. There are several studies on stable vitiligo treated with autologous punch grafting (Singh and Bajaj, 1995).

Subjects and methods

We performed a clinical study on 15 patients with stable vitiliginous lesions attending the Dermatology Outpatient Clinic of Minia University Hospital. A written informed consent. Complete history taking. Proper counseling was done as the nature of the disease, procedure, expected outcome and possible complications were clearly explained to the patients. The instruments required are 1.5 mm punch in 15 patients. The normally minigrafts were transferred to the recipient depigmented site using the needle of the syringe with proper placement of grafts in the recipient

chambers. All patients were followed up and were assessed at each visit for the degree of repigmentation and any adverse events by naked eye. NB-UVB phototherapy sessions twice weekly were done. Data were analyzed using Statistical Package for the Social Sciences (SPSS), Version 22. Quantitative data were presented by mean and standard deviation, while qualitative data were presented by frequency distribution.

Results

After three months of follow up; Spread of repigmentation started as early as the second week in many cases. Full repigmentation (100%) reported in 2 patients (13.3%), and over 75% percentage of repigmentation reported in 6 of patients (40%) and over 40% percentage of repigmentation reported in 3(20%) cases. 4 patients revealed failed pigmentation. Cobblestoning was reported in 6 patients (40%) while the remaining 11 patients (60%) showed no cobblestoning.

In the first month, the repigmentation percentage ranged from (0-30) with a mean \pm SD (28.6 \pm 21.7). In the second month, it ranged from (0-70) with increased mean \pm SD of (45.9 \pm 30.8). In the third month, it ranged from (0-100) with increased mean \pm SD of (60.2 \pm 45.37).

Discussion

This study aimed to evaluate the effect of punch grafting on stable vitiliginous lesions. Surgical correction of vitiligo and other cutaneous achromia has come a long way in the last five decades. However, among all other methods, autologous miniature punch grafting has established its place as the easiest, fastest, safest, and least aggressive means of vitiligo surgery.

In punch grafting procedure, the sequence of repigmentation has been described to occur in the form of dissociation of melanocytes from the basal membrane and from the adjacent keratinocytes then proliferation, migration and dendrites repositioning and reconnection with the surrounding cells to repigment the surrounding vitiliginous area (Haass and Herlyn, 2005).

All these steps are finely regulated via growth factors and cytokines released by epidermal and dermal cells along with cell matrix adhesion molecules.

During the repigmentation process, cobblestoning was recorded in 6 patients (40%) while the remaining 11 patients (60%) showed no cobblestoning. Lahiri et al., (2006) demonstrated that cobblestoning occurred in 35% of cases. Also a study of Fongers et al., (2009) who reported that 19 out of 70 patients (27.1%) showed cobblestones. This condition can be explained by Falabella (2003) who recommended using size of 1–1.2mm for punch biopsies to overcome this problem. Malakar and Dhar, (1999) reported that the rate of cobblestoning was substantial in with time.

Regarding the age, in the present study younger age patients responded well to punch grafting in comparison with older one, which agrees with the study done by Jill et al., (2012) who showed that younger patients have the greatest improvement.

Conclusion

In conclusion, it is important to emphasize that punch grafting technique is simple, effective and safe surgical method for treating stable vitiligo. Phototherapy-induced stimulation of melanocyte migration from the basal membrane and hair follicle reservoir.

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References

1. Yaghoobi R., Omidian M., Bagherani N. (2011): Vitiligo: a review of the published work. *The Journal of dermatology*; 38: 419-431.
2. Nicolaidou E., Antoniou C., Stratigos A., Katsambas AD. (2009): Narrow-band ultraviolet B phototherapy and 308-nm excimer laser in the treatment of vitiligo: a review. *Journal of the American Academy of Dermatology*; 60: 470-477.
3. David NM and Wiete W (2001):

- Vitiligo pathogenesis and treatment. *Am. J. Clin. Dermatol*; 2 (3): 167–181.
4. Rafal C., Waldemar P., Tomasz, D. Bogna, K. Jan, S. Wileta, W. (2007): Autologous cultured melanocytes in vitiligo treatment. *Dermatol Surg*; 33: 1027–1036.
 5. Matin R (2008): Vitiligo in adults and children. *BMJ Clin Evid*; 4(1):1717-1723.
 6. Njoo MD and Westerhof W (2001): Vitiligo: pathogenesis and treatment. *Am J Clin Dermatol*; 2: 167–181.
 7. Singh KG and Bajaj AK (1995): Autologous miniature skin punch grafting in vitiligo. *Indian J Dermatol Venereol Leprol* 1995; 61:77–80.
 8. Haass NK. and Herlyn M. (2005): Normal human melanocyte homeostasis as a paradigm for understanding melanoma. *J Investig Dermatol Symp Proc*; 10: 153–163.
 9. Lahiri K., Malakar S., Sarma N., Banerjee U. (2006): Repigmentation of vitiligo with punch grafting and narrowband UV-B (311nm)—a prospective study. *International journal of Dermatology*; 45: 649-655.
 10. Fongers A, Wolkerstorfer A., Nieuweboer-Krobotova L., Krawczyk P., Toth GG, van der Veen JPW (2009): Long-term results of 2-mm punch grafting in patients with vitiligo vulgaris and segmental vitiligo: effect of disease activity. *Br. J. Dermatol*; 161:1105–1111.
 11. Falabella R (2003): Surgical treatment of vitiligo: why, when and how. *J Eur Acad Dermatol Venereol*; 17:518–520.
 12. Malakar S. and Dhar S. (1999): Treatment of stable and recalcitrant vitiligo by autologous miniature punch grafting: a prospective study of 1,000 patients. *Dermatology*; 198: 133-139.
 13. Jill FH, Chan JL, Pandya AG (2012): Characterization of Clinical Response in Patients with Vitiligo Undergoing Autologous Epidermal Punch Grafting. *Dermatologic Surgery* 38:14-19.