

Conventional Suture Material versus Staplers in the Closure of Donor Area in Hair Transplant. Which is Better?

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Abstract

Androgenetic alopecia is associated with a lot of psychological stress and hair transplant is the surgical modality of choice when medical treatment fails. The hair transplantation techniques are becoming more and more advanced with each passing day with focus on the aesthetic outcome and being more patient friendly and convenient for the surgeon too. Closing the donor area is a challenge as it leaves a scar and decreases the chances of second transplant if needed. Thus the technique of donor area closure and the choice of suture material are important determinants of the final cosmetic outcome of donor area. In this study we have compared the cosmetic outcome of conventional suture material (prolene) with staplers in the closure of donor wound area.

Aim: The aim of the study was to compare the aesthetic outcome of donor area scar following the closure of donor area with prolene and staplers.

Material and Methods: Twenty eight patients with androgenetic alopecia (grade III-V) were enrolled for the study. The patients were divided into two groups. In one group prolene 3-0 was used while in the other group staplers were used for the closure of donor wound area. Written informed consent was taken from all the patients and procedure was explained to them. All the patients were followed for six months post-transplant.

Results: The cosmetic outcome of using prolene and staplers in the closure of donor area was almost equivalent as far as the scar formation is concerned.

Conclusion: Prolene and staplers are both effective in the closure of donor area in follicular unit hair transplant, but staplers can be convenient as far as closing donor area is concerned as it needs not much surgical skills and saves time in closing donor area also.

Keywords: Follicular hair transplant; Prolene; Staplers; Donor area

Introduction

Androgenetic alopecia or male pattern baldness is a clinical condition characterized by hair loss that occurs due to an underlying susceptibility of hair follicles to circulating androgenic miniaturization. It is the most common cause of hair loss and will affect up to 70% of men and 40% of women at some point in their lifetimes. Men typically present with hairline recession at the temples and vertex balding, while women normally present with diffuse thin hair loss over the top of their scalps with preservation of the frontal hairline. Both genetic and environmental factors play a role, and many etiologies remain unknown. Hair restoration or transplantation is used to treat hair loss, a condition that affects 50 million men and 30 million women in the United States. Follicular Unit Transplantation (FUT) is a hair restoration technique where a patient's hair is transplanted in naturally occurring groups of 1 to 4 hairs, called follicular units. FUT is considered an advance over older hair transplantation procedures that used larger grafts and often produced a cobblestone, pluggy and unnatural look. In a properly-performed follicular unit transplant, the results will mimic the way hair grows in nature and will be undetectable as a hair transplant. Follicular unit extraction (FUE) is a minimally invasive technique used in hair restoration procedures to extract individual follicular units from the scalp in preparation for transplantation. ARTAS is a latest addition to the therapeutic armamentarium of hair transplant surgeons. The system, which was developed by Restoration Robotics, features an image-guided robotic arm, small dissection punches and an interactive computer interface. However cost is a major limiting factor [1-4]. Hence need of the hour is how can a hair transplant procedure be made both patient as well as surgeon friendly, save time and simultaneously give better aesthetic outcome.

Aim and Objective

The aim of this study was to compare the outcome of the scar in donor area by using staplers and prolene.

Material and Methods

Twenty eight patients with androgenetic alopecia (grade III-V) were enrolled for the study. The patients were divided into two groups. In one group prolene 3-0 was used while in the other group staplers were used for the closure of donor wound area. Written informed consent was taken from all the patients and procedure was explained to them. All the patients were followed for six months post-transplant. Patients with keloidal tendency, active infections, bleeding tendencies and those taking anticoagulants were excluded from the study.

Under local anaesthesia and using proper tumescent anaesthesia, a strip measuring upto 1.5 cm was taken from the occipital area and closed using 3-0 vicryl continuous suture for dermal closing with

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Received September 05, 2015; **Accepted** October 8, 2015; **Published** October 12, 2015

Citation: Mubashir S, Sajad P, Hassan I, Jabeen Y, Sacchidanand S (2015) Conventional Suture Material versus Staplers in the Closure of Donor Area in Hair Transplant. Which is Better? *Hair Ther Transplant* 5: 139. doi:10.4172/21670951.1000139

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single trichophytic closure. For the cutaneous sutures in half of the patients closure was done by using prolene 3-0 and in other half by staplers which were removed after one week in both the groups. The patients were followed up every month for a period of six months an objective measurement of the scar was done visually and by photo documentation and the final outcome was compared at the end of 6 months (Figures 1-5).

Results

Out of twenty eight patients five patients were lost to the follow up, three from staplers and two from prolene group. In the prolene group the average width of the scar was 1.28 mm after 6 months, while in the stapler group the average width of scar was 1.35 mm. There was no infection, tissue necrosis or keloid formation in both the groups at the site of closure. Thus no significant difference was noticed between the two groups as for the cosmetic outcome and patient satisfaction is concerned.

Discussion

The modern era of hair transplantation in the western world was ushered in the late 1950s, when New York dermatologist Norman Orentreich began to experiment with free donor grafts to balding areas in patients with male pattern baldness. Dr. Orentreich demonstrated that such grafts were “donor dominant,” as the new hairs grew and



Figure 1: Donor area strip excision.



Figure 2: Closure of donor area with staplers.



Figure 3: Scar at the end of six months using staplers.



Figure 4: Closure of donor area with 3-0 prolene.



Figure 5: Scar at the end of six months using prolene 3-0.

lasted just as they would have at their original place [5]. The term “follicular unit” was introduced by Dr. Robert Bernstein in his 1995 publication “Follicular Transplantation”. Follicular Unit Transplantation (FUT) is a procedure where hair is transplanted

from the occipital area or back of the scalp and sides of the scalp (which are resistant to androgenetic alopecia) to balding areas of the scalp. This is accomplished by using naturally-occurring groups of 1, 2, 3, or 4 hairs, called follicular units. The arrangement and positioning of these follicular unit grafts determines the aesthetic qualities of a hair transplant, and so this arrangement must be decided on a case-by-case basis as implantation of follicles on the frontal scalp needs to be done at an acute angle and as we progress to the vertex the angle of implantation increases and on vertex angle of implantation changes in centrifugal pattern. In case of miniaturization the angle of slits and direction should be done in consistent with preexisting hairs so that after transplantation it should look completely natural and be indistinguishable from one's original hair [6,7]. The suture materials which are routinely used for the closure of wounds are made of natural materials such as silk, linen strips, cotton etc. With the development of synthetic polymers and fibers, synthetic suture materials were introduced for wound closure. The suture material used depends upon the specific site and clinical technique as well as the surgeon's preference. The goal of wound closure is to bring the edges of the wound together not only with sufficient strength to prevent dehiscence, but also with minimal residual tension and compression of the tissue to promote healing with a cosmetically acceptable scar. Staple closure is one of the methods of closure of the donor area in follicular unit hair transplantation [8,9]. Bernstein *et al.*, in their bilateral comparison study of suturing with Poliglecaprone 25 versus staples documented that the scar width on the staple site was 1.72 mm compared to 1.42 mm on the suture site [10]. Kumaresan *et al.* in their study of the use of staples in wound closure demonstrated that, the average width of the scar was 1.82 mm at the end of one year post-surgery. The scar was cosmetically acceptable in majority of the cases [11]. In our study there was no significant difference in the scar size of prolene and staples, however staple closure saves time and is easy and is associated with lesser chances of wound infection. As far as the scar size is considered prolene gives a lesser width scar but comparing other variables (like infection rate, ease of application and duration of surgery), staples score over the conventional suturing

The staple closure scar is more defined and is often easily identifiable through the hair; this is due to the small amount of stretch on the wound edges. Focal hair loss along the suture line, which is due to the strangulation and destruction of hair follicles, is not observed in staple closure. Israr *et al.* in their prospective study comparing staples, silk, Prolene, and Vicryl for scalp closure, reported no difference in healing in all the four groups. Stapling has been reported to be cosmetically acceptable alternative to suturing for simple paediatric scalp lacerations in various studies [12]. Staples and sutures wounds have demonstrated similar mechanical and histological characteristics in various animal

models. Other advantages of staples closure include that they are easy and faster to apply, they form an incomplete loop with decreased strangulation and they lack residual cross mark. Staple closure is reported to shorten the duration of surgery by five times as compared with the suturing technique [13,14].

Conclusion

Prolene and staplers are both effective in the closure of donor area in follicular unit hair transplant, but staplers can be convenient as far as closing donor area is concerned as it needs not much surgical skills and saves time in closing donor area also.

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