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Moustache restoration after cleft lip repair

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ABSTRACT

Background: We strive to achieve a functional and aesthetic repair in cleft lip patients bestowing them with all natural landmarks and making the evidence of the repair undetectable for better quality of life and complete social acceptance. The last to offer is a moustache for an adolescent male cleft lip patient. **Aim:** The current study is a review of moustache restoration carried out for patients after cleft lip repair. It includes 18 cases with a follow-up of 6 months to 2 years. **Materials and Methods:** Follicular unit extraction using 0.9 mm motorized punches is the preferred technique. Alternative method is follicular unit transplant strip technique, where individual hair follicles are dissected for a 0.5-0.6 cm × 5-6 cm strip of scalp. Each follicle serves as a micro graft. Grafts are implanted in premade needle tracks flush to the skin. Spacing is 2-3 mm in the first sitting. Second sitting may be planned 6-8 months later to add density. **Results:** Hair growth along the scar is delayed, it begins 4-5 months after the transplant, and complete growth is seen by 6 months. There can be 7-10% loss of grafts. **Conclusion:** Follicular unit micro grafting can be used for restoration of moustache after a complete cleft lip repair. Moustache provides animation of the face, restoration of aesthetic landmark, taking away the typical cleft lip look and building up confidence of the patient.

Key words: Cleft lip, follicular unit extraction, follicular unit transplant, hair transplant, moustache

INTRODUCTION

Male patients with cleft lip should be offered complete reconstruction of facial aesthetics at the appropriate age, to enjoy good social life.^[1,2] Reconstruction of the moustache animates a male face, adds confidence and breaks the cycle of self-pity, giving a feeling of

completeness.^[1,2] Though camouflage for the cleft lip scars may not be required, but a moustache takes away the typical cleft lip look and builds the confidence of the patient.^[1,2]

The scar of a unilateral cleft lip repair is a hair less, and the prolabium of a bilateral cleft lip repair is always devoid of hair follicles.^[3] Moustache restoration is the last procedure offered, after all the functional problems have been corrected and the patient has reached adulthood. The current study reviews 18 male patients who had cleft lip repairs carried out in childhood and approached for moustache restoration in their adulthood. The shortest follow-up is 6 months and longest 2 years.

MATERIALS AND METHODS

The number of grafts, the technique used, the number of sittings required and the method of implantation in unilateral and bilateral cleft lip cases are listed in Table 1.

Preferred technique for hair restoration for post cleft lip moustache restoration

Our method of choice is follicular unit extraction (FUE), where selected single hair follicles, containing only one robust hair are individually extracted with a 0.9 mm motorized punch and implanted as micro grafts.^[4] The second method available is follicular unit transplant (FUT).^[5] FUT is carried out by excising a strip of the scalp 0.5-0.6 mm wide × 5-6 long, from the level of the occipital protuberance. The depth of the strip is restricted to the sub-dermal level. Scalp defect is closed in two layers. The strip is then slivered along the width, to create single rows of hair containing 4-5 follicles each. Each of these slivers is dissected to yield single hair follicular units.^[5] Natural units of 1, 2 or 3 hair are divided into single hair micro-grafts [Figure 1]. These grafts are implanted flush to the skin with an inter digitating pattern or brick wall pattern, to create an illusion of fullness, matching the exit angle of

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moustache hair.^[3,5,6] Each of the follicular units survives like a micro skin graft.

OBSERVATIONS AND RESULTS

In our review of 18 cases of post cleft lip repair moustache restoration [Table 1], we had 11 cases of unilateral and 7 cases of bilateral cleft lip. Out of these, 3 moustache restorations were done with FUT scalp strip harvesting technique and 15 cases were done with FUE, individual FUE technique. All bilateral cleft lip repair and 15 patients of unilateral cleft lip repair required 2 sittings (84%). While 3 unilateral cleft lip patients had their moustache restoration in single sitting (16%). Graft Implantation by stick and place was used in 16 patients (88%) while implanters were used in 2 cases. Unilateral left lip patients required 40-110 grafts per sitting, whereas bilateral cleft lip patients required 70-180 grafts per sitting.

The result, 7 months after first sitting of moustache restoration, in a 21-year-old male having bilateral cleft lip repair with Abbe flap using 76 single hair micro-grafts is seen in Figure 2a and b. In this photograph, you can observe grafts spaced 2-3 mm apart in 4-5 rows. The lower lip flap donor area has also been grafted, to create a short goatee beard to hide the scar. Another 70-100 grafts are planned for a second sitting

to add density over these areas. Some grafts are also implanted between the adjacent normal moustache hairs, to break the miss match created by thicker scalp hair.

A result of 12 months of two sittings of moustache restoration in a unilateral cleft lip can be seen in Figure 3a and b. A total of 110 single hair micro-grafts were placed in 5-7 rows, in order to achieve dense packing and additional grafts, were added between adjacent moustache for preventing miss match. The scalp hair appears thicker in caliber and grows faster, requiring attention to trimming. Patients reported very good personal satisfaction and building of confidence, especially after two sittings of moustache restoration.^[3]

DISCUSSION

The FUE individual extraction technique avoids linear scar and suturing over the donor area [Figure 4]. FUE does not require a team of assistants to sliver and dissect the grafts. With FUE, you can select single robust hair units [Figure 5] for moustache restoration.^[4] However, FUE requires training and development of skills. For an occasional requirement, the hair follicles can be best harvested as a strip from the scalp. Restricting the depth of strip harvesting to sub-dermal level preserves lymphatics, veins, nerve endings, avoids neuromas, postoperative numbness and ensure faster healing.^[5] Harvesting from the level of occipital protuberance offers long lasting permanent hair follicles that, in later life, are not affected by the process of hair miniaturization like the rest of the scalp.^[5] Two layered; closure ensures a thin cosmetic scar. Follicles with 2 and

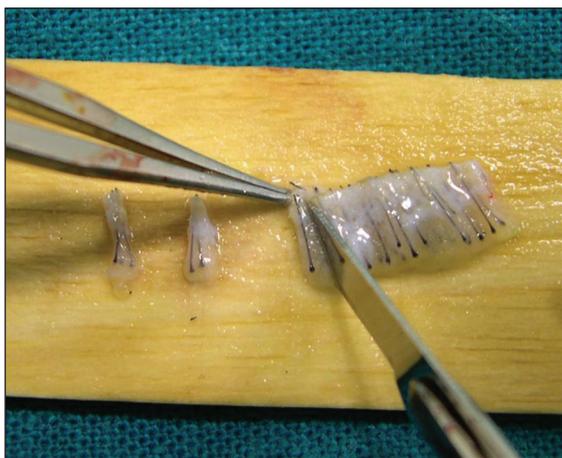


Figure 1: Natural 2 and 3 hair units are divided into single hair grafts



Figure 2: (a) Bilateral cleft lip repair with Abbe flap. (b) 76 grafts also over lower lip donor area now ready for second sitting

Table 1: Cleft type technique of transplant sittings required method of implantation and number of grafts used

Cleft lip	Number of cases	Technique of hair transplant		Number of sittings required		Method of implantation used		Number of grafts minimum to maximum per sitting	
		FUT strip	FUE extraction	One sitting	Two sittings	Stick and place with premade tracks	Use of implanter	Minimum	Maximum
Unilateral cleft lip	11	2	9	3	8	10	1	40	100
Bilateral cleft lip	7	1	6	None	7	6	1	70	180
Total	18	3	15	3	15	16	2		

FUT: Follicular unit transplant, FUE: Follicular unit extraction

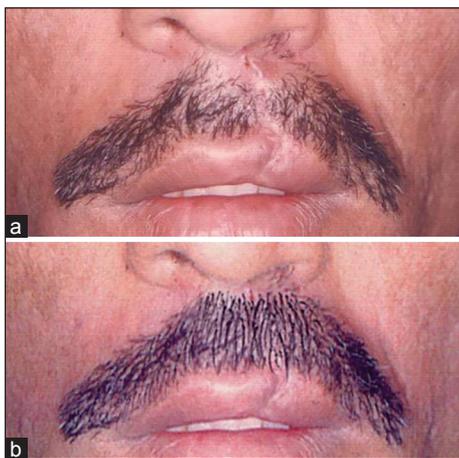


Figure 3: (a) Unilateral cleft lip requesting moustache restoration. (b) Two sittings 110 grafts seen after 12 months

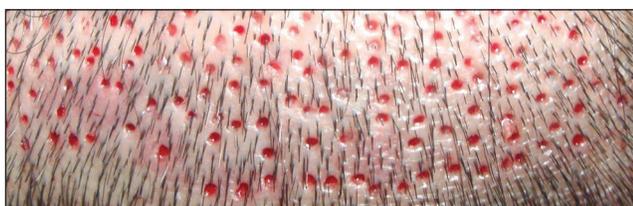


Figure 4: Follicular unit extraction donor area after selective harvesting of single hair grafts

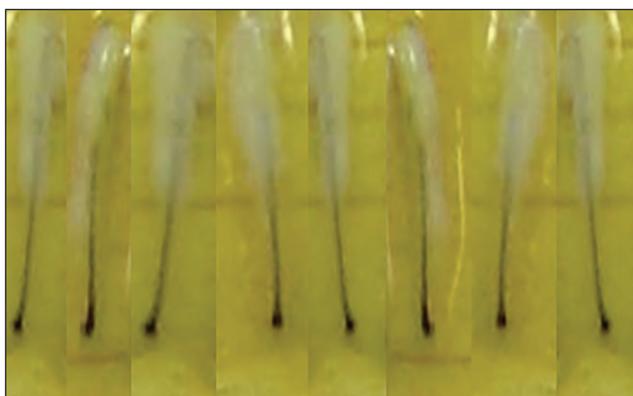


Figure 5: Selective harvesting of robust single hair grafts for moustache restoration

3 hair each dissected out of the FUT harvested strip, are divided into single hair grafts required for moustache restoration.

The layout of grafts and placement sites are marked with needle punctures. An assistant stretches the mobile lip transversely to stabilize the skin. Then, 20G or 19G hypodermic needles are used to create 5-6 mm deep needle tracks flush to the skin along all the punctured sites.^[7] The angle of the needle controls direction and depth of the hair. Now either of the methods can be used for placement of the grafts along these needle tracks.

The method we prefer for implanting the grafts is “stick and place.”^[7] In this method a 20G or 19G hypodermic needle is guided along the premade tracks with the left hand and partly withdrawn to hold the skin site open, simultaneously a graft is slide along the slope of the bevel with a forceps in the right hand, and the needle withdrawn while holding the graft in, this is called “stick and place.” The technique is similar to eyebrow restoration.^[8] Sliding the graft along the bevel facilitates placement. The epidermis of the graft must be kept 0.5-1 mm above the skin, avoid placing deep for the possibility of epidermal cysts, grafts are naturally pulled into the skin during healing as the tissue swelling subsides.

Acquiring skills for implantation can today be replaced with the simpler use of implanters.^[8] Single hair grafts can be loaded into the needle tip of an implanter device and pushed in place with a built-in sliding plunger.

Spacing of the hair grafts needs to be at 2-3 mm apart to ensure easy placement of grafts, prevent popping of adjacent grafts during close placing and ensure good graft survival especially along the scar and either side of the scar.

Care of the grafts after implantation

Patients are instructed to have limited lip movement. Avoid very expressive talking, vigorous laughing. Have limited mouth opening and take food in small bites. Do not touch or rub the upper lip for 2 days. Two days later they can splash water and clean the area lightly with shampoo without rubbing on the grafts and dry it by pressing with a folded towel. A thin layer of Neosporin eye ointment can be applied over the grafts for next 8-10 days. This cleaning can be performed on alternate days to 10 days. The dry scabs are holding the grafts in place these loosen up around 8-10 days and will fall off during the cleaning by 8-10th postoperative day. After 10th postoperative day, patients begin application of 5 drops of minoxidil 2% lotion and use antioxidants, iron, calcium, amino acids, biotin supplements in a planned program to improve regrowth of the grafted hair roots.^[9,10]

The hair growth from grafts implanted after cleft lip repair is delayed. All the hair grafts do not commence growth together, 30-40% grafts grow at 4-5 months, but all the grafts start growth by 6 months. There is a need to be patient to appreciate the complete result, wait and watch. A second sitting should not be hurriedly planned before 6 months. Keeping in mind the possibility of loss of grafts or failure of the grafts to grow and patient's

desire for high density, it is a good practice always to counsel the patient for the requirement of two sittings.

Failure in 7-10% growth of grafts can be attributed to poor technique, scarring, and excessive handling of the graft. This can happen during graft dissection, repetitive attempts at graft insertion during implantation, which squeeze the follicle making it nonviable. Placement of the grafts can be facilitated and made easy by premaking the needle tracks, stretching and supporting the skin during implantation. The loss of grafts and failure to grow improves with experience.

The 3 patients with unilateral cleft lip who required only one sitting were cases of narrow scars and graft placement required, was closed to the philtrum where natural moustache density is less. These patients therefore did not require second sitting for the addition of density. The addition of density was required to compensate the 7% and the 10% failure or loss of grafts in 2 cases of bilateral cleft lip. The other patients desired second sitting only for better density. The second sittings were planned 6 months apart to allow time for the growth of previously placed grafts and to permit placement of grafts in between the previously implanted hair roots and to allow for replacement of the grafts that failed to grow.

Pattern and shape of the existing moustache serves as a guide. Two types of moustache hair patterns are seen. Some moustaches have all the hair growing forwards while some have hair directed outwards or laterally on either side. Some moustache has a gap at the philtrum while some moustache has a gap at the philtrum while some moustache have continuous cover across the midline. Most commonly the grafts are directed downwards and outwards with increasing lateral tilt towards the angle of the mouth. The moustache area from 2 mm below the nostril to 2 mm above the white roll is covered in 5-7 inter digitating rows. A moustache restoration in unilateral cleft lip requires 40-110 single hair grafts per sitting. Whereas the a larger area and requirement to add density to the adjacent natural hair builds up a need for 70-180 single hair grafts per sitting in bilateral cleft lip cases.

CONCLUSION

Follicular unit micro grafting with a single hair, imparts natural appearance, layout and replacement for the restoration of the moustache in unilateral and bilateral cleft lip male patients in their adulthood. It can be used to place a few beard hairs and cover the Abbe flap, donor area from the lower lip as well. It allows precise control of the angle, depth and direction of placement to match the surrounding hair. Implanting with hypodermic needles ensures minimal injury with faster healing. Premaking the needle tracks and a wider 3 mm spacing initially prevents popping. Second sitting is required to create good density and replace some lost grafts. The technique involves careful planning and acquiring surgical skills. The rewards for the labor are encouraging.

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