

Surgical correction of upper lip deficit in patients with cleft lip using dermis fat graft

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Background: This study aimed to assess dermis fat graft (DFG) as a choice to correct the tissue deficit in the free border of the upper lip in cleft lip repair surgery. **Materials and Methods:** Thirty-five individuals who referred to Alzahra Hospital at 2013–2014, with lip deformity following the primary repair surgery of cleft lip underwent surgery by DFG technique. Outcomes were assessed 4 months after the surgery based on comparison of preoperative and postoperative photographs. **Results:** the results in 18 (51.42%) patients were excellent, 10 (28.57%) good, and 7 (20%) intermediate according to the satisfaction of patients and investigators in terms of filling of lip deficit and motion of the upper lip. Moreover, complications and pain were minimal after 4-month follow-up. **Conclusion:** This method introduces an admissible method with 80% good to excellent results based on satisfactory of patients and surgeon.

Key words: Dermis fat graft, repair surgery, secondary cleft lip deformity

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INTRODUCTION

Lips have a principal esthetical and functional role in the face. Patients with congenital cleft lip are susceptible to a variety of deformities. Among them, the most common type is cleft lip with cleft palate 46%, cleft palate alone 33%, and cleft lip alone 21%. Both environmental agents and genetic factors are important in the presence of cleft lip.^[1,2]

Despite recent advances in surgical techniques in primary correction of the cleft lip deformity, the need for secondary revision procedures is still prevalent.^[1,2] Secondary lip deformities usually present as a defect in the free border of the upper lip, which consists of the orbicularis oris muscle, subcutaneous tissue, vermilion, and center of the lip.^[1,3]

Popular techniques are “Z” plasty, advancement of lateral vermilion, V–Y advancement, mucosal

transposition flaps, or the Kapetansky double pendulum flaps.^[4,5] The use of dermis grafts, a strip of skin that has been detached from the subcutaneous tissue, for facial contouring, correction of saddle nose deformity, and lip augmentation has been presented previously.^[6-8] We aimed to assess dermis fat graft (DFG) to correct the tissue deficit in the free border of the upper lip in the secondary cleft lip deformities.

MATERIALS AND METHODS

This study was performed as a cross-sectional and observational assessment on the outcomes of the DFG technique in patients with lip deformity, secondary to the previous surgery to repair the congenital cleft lip conducted at 2013–2014 and approved by the Isfahan University of Medical Sciences (Research Project number: 194109).

Thirty-five individuals who referred to the center of cleft lip and palate due to lip deformity, following

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previous cleft lip and palate repair with standard technique underwent cleft repair surgery using DFG. All patients had undergone cleft reconstructive surgery at least once and for maximum of three times. Patient's information including age, gender, and type of primary cleft lip comprising unilateral or bilateral and complete or partial was recorded. Age of the patients varied from 3 to 6 months. All patients signed the consent form.

The shape of the upper lip by means of preoperative and postoperative photographs in standardized projections was compared. Postoperative photographs were taken 4 months after surgery.

Operation was performed under general anesthesia with nasotracheal intubation. The recipient site of DFG was prepared by creating a submucosal pocket along the vermilion or by a surgical incision. The amount of DFG required was estimated based on the length of the lip and extent of deformity. The outline of the amount of graft was marked on the groin. The region was deepithelialized and then the graft was harvested. The donor site was closed directly. Excess subcutaneous fat was trimmed off. Regarding the resorption, more amount of the graft tissue was used than required. The wider the dermis, the more augmentation was achieved.

After primary preparation, the proper amount of graft was introduced into the created tunnel through a small incision 1–2 mm away from labial commissure. The graft was manipulated to sit facing outward and make the site of secondary lip defect bulge. After insertion, two small incisions were sutured with the edge of graft to fix it. From site of the surgery incision, proper and required bed for DFG was prepared and the graft was placed in the site and further stages were the same. All suturing was done with 5/0 absorbable sutures. Most of the patients were discharged in a day after operation. After 4 months, the surgery achieved results was assessed.

RESULTS

Thirty-five consecutive patients with lip deformities following primary cleft lip repair surgery who had referred to cleft lip and palate clinic participated in this study.

Participants included 21 males and 14 females. Twelve patients had primary unilateral lip deformities and 23 patients had bilateral. Thirty-two patients have complete and 3 patients have incomplete cleft lip. The mean age was 9 years (range 5–18 years).

There were no perioperative complications such as bleeding, infection, or wound disruption. Four patients received

further operations to correct the residual deformities. Moreover, the donor-site scar was inconspicuous. The results were as follows after 4 months by satisfactory of surgeon and patients: 18 (51.42%) patients were excellent, 10 (28.57%) good, and 7 (20%) intermediate. Evaluation was based on the photographs of the patients and motion of the upper lip. Length and width of the upper lip, red line and white line of lip, and volume of vermilion were considered while evaluating the results.

DISCUSSION

The result of 35 patients with cleft lip deformity and deficit showed that using this novel method, autograft, instead of allograft, can be efficient for these patients. After 4-month follow-up, we called patients and asked about satisfaction after surgery. About 52% of patients had high satisfaction and the others had moderate.

Presence of a notch in vermilion is a common outcome in cleft lip repair surgery [Figure 1]. This deformity might be the result of technical problems in the primary corrective operation, or the tissues of this area may have a defect primarily. However, some patients have severe tissue deficit and making a beautiful appearance by readjustment techniques is impossible and other volume enhancers should be performed.

Various materials have been suggested for volume enhancement of free vermilion of upper lip such as fat, dermofat, dermis, and labial minor grafts.^[1,8,9] Regarding the facts that DFG is a rife and accessible reserve in the body, the technique is relatively easy to perform, and harvesting it from donor site does not bring any serious morbidity and also has a more appropriate volume and less resorption and it is an appropriate volume enhancer with long-term clinical results.

In the study of Patel and Hall,^[3] DFG technique was used usually in combination with a Z plasty of the dry vermilion.



Figure 1: Before and after cleft reconstructive surgery

In their study, a few number of patients were included compared with our study and they studied a different age group from our study patients. Staebel and Verheyden^[4] also used DFG for the correction of secondary cleft lip deformities, but their method features a precisely dissected pocket to define the deficit to be augmented. Another study suggested fat grafts a safe and effective way to improve symmetry and enhance facial proportions in patients with cleft lip.^[5] As suggested by Niechajev,^[6] there are lots of advantages in using DFG for lip augmentation. The use of the autologous material is biologically correct and thus easily accepted by patients and surgeons alike. However, dermofat and autologous fat graft methods used are less reliable because it is difficult to predict the degree of absorption and patients are at increased risk of developing an infection.^[7,8] However, none of these complications were reported in our study.

Among other methods used for correction of secondary lip deformities, the Whistle flap procedure, which was studied by Grewal *et al.*,^[9] provided a versatile and reliable option for the correction of vermilion defects from secondary cleft lip deformities. Another method is the use of tongue flap for the reconstruction of the upper lip as studied by Guerrero-Santos.^[10] However, this method causes the discomfort to the patient of spending approximately 3 weeks with the tongue flap retained between the lips.

As described above, there are various surgical methods depending on the size of defects and the clinical characteristics of patients, each of which has its own benefits and drawbacks.

CONCLUSION

Regarding the results, ease of harvesting of dermograft, its abundance, minimal morbidity of donor-site and surgery complications, and high degree of patient satisfaction, we suggest this method as an admissible method with 80% good to excellent results.

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Conflicts of interest

There are no conflicts of interest.

AUTHORS' CONTRIBUTION

HA, AAK, and RM conceived and designed the study and interpreted the data. MH and NEA participated in the design of the study and drafted the manuscript. HA and AK managed patients. All authors read and approved the final manuscript.

REFERENCES

1. Mommaerts MY, Nagy K. Analysis of the cleft lip-nose in the submental-vertical view. Part II. Panel study: Which is the most important deformity? *J Craniomaxillofac Surg* 2008;36:315-20.
2. Schwenzer-Zimmerer K, Chaitidis D, Berg-Boerner I, Krol Z, Kovacs L, Schwenzer NF, *et al.* Quantitative 3D soft tissue analysis of symmetry prior to and after unilateral cleft lip repair compared with non-cleft persons (performed in Cambodia). *J Craniomaxillofac Surg* 2008;36:431-8.
3. Patel IA, Hall PN. Free dermis-fat graft to correct the whistle deformity in patients with cleft lip. *Br J Plast Surg* 2004;57:160-4.
4. Staebel C, Verheyden CN. The use of dermal fat grafts for the correction of secondary cleft lip deformities. *Plast Reconstr Surg* 2009;123:151e-2e.
5. Jones CM, Morrow BT, Albright WB, Long RE, Samson TD, Mackay DR. Structural fat grafting to improve reconstructive outcomes in secondary cleft lip deformity. *Cleft Palate Craniofac J* 2016;54:70-4.
6. Niechajev I. Lip enhancement: Surgical alternatives and histologic aspects. *Plast Reconstr Surg* 2000;105:1173-83.
7. Coleman SR. Facial recontouring with lipostructure. *Clin Plast Surg* 1997;24:347-67.
8. Wakami S, Harada T, Muraoka M, Ishii M. Rectangular mucosal flap with artificial dermis grafting for vermilion deformity in cleft lips. *J Plast Reconstr Aesthet Surg* 2010;63:22-7.
9. Grewal NS, Kawamoto HK, Kumar AR, Correa B, Desrosiers AE 3rd, Bradley JP. Correction of secondary cleft lip deformity: The whistle flap procedure. *Plast Reconstr Surg* 2009;124:1590-8.
10. Guerrero-Santos J. Use of a tongue flap in secondary correction of cleft lips. *Plast Reconstr Surg* 1969;44:368-71.