

Comparison of the Effects of Sheen Graft Surgical Technique and a New Tip Plasty Technique on Nasal Tip Changes: A Randomized Clinical Trial

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Abstract: Management of the nasal tip is the most challenging step in rhinoplasty. Control over nasal tip projection is essential. A variety of techniques can be used to improve the position of nasal tip. The aim of the present study was to compare the changes of nasal tip between a novel tip plasty technique and the conventional sheen graft one. In this clinical trial study, 60 patients referring for rhinoplasty to the Department of Oral and Maxillofacial Surgery, Tabriz University of Medical Sciences, were included. The subjects were randomly divided in two groups: a new tip plasty technique was used for the first group and the conventional sheen graft technique for the second group. The nasal tip changes were compared between them. The means of tip projection were 28.92 ± 4.16 and 26.95 ± 7.30 preoperatively in groups A and B, and they were 33.00 ± 3.86 and 31.29 ± 6.35 after surgery, respectively, with no significant differences in between. The means of tip rotation before surgery were 114.10 ± 7.53 and 113.08 ± 9.94 in groups A and B, while these figures after surgery were 119.46 ± 7.21 and 117.58 ± 8.92 , respectively. The new technique is as effective as conventional technique in improving nasal tip. Although the new technique of rhinoplasty is much easier.

Keywords: Tip plasty, graft, Nasal.

INTRODUCTION

One of the structures with an important role in facial esthetic is the nasal tip; therefore, it is important to achieve an appropriate form for it during nasal surgeries. Various techniques have been conventionally used to create a proper form for the nasal tip, including nasal tip grafting, cartilage resection, dome division and cartilage suturing [1,2,3]. Techniques such as cephalic resection and transection were used extensively in the past; however, they are not currently used due to their destructive and irreversible nature [4].

If the supporting structures of the nose are preserved, more beneficial results can be achieved; otherwise, ptosis of the nasal tip will be inevitable. In different surgical techniques, problems such as narrowing of the nasal tip, loss of a definitive nasal tip, asymmetry and ptosis of the nasal tip are common. In addition, placing a strut in the columella region will result in an abnormal mucosa on the nasal tip and loss of the normal columella-lobe interface [5]. In 1984, Sheen used a single graft to shape and fill the nasal tip [6].

In recent years, use of graft materials that are invisible and cannot be palpated has become very popular [7]. The new tip plasty technique, which

consists of a vertical incision on the most projected area of the dome and separating the cartilage from the underlying mucosa has been used to create a more delicate nasal tip and eliminate cartilage connections.

In the present randomized clinical trial, the new tip plasty technique was evaluated and compared with the conventional Sheen graft technique in terms of the projection and rotation of the nasal tip.

MATERIALS AND METHODS

The present randomized clinical trial was carried out in the Department of Oral and Maxillofacial Surgery, Tabriz Faculty of Dentistry and in Tabriz Shams Hospital. The subjects consisted of 60 patients who were candidates for rhinoplasty for the first time in their lives. The subjects were 18–30 years of age. All the subjects were examined in relation to their systemic health status and those with any systemic conditions, a history of trauma to the head and neck region, a history of orthognathic surgery, cleft lip and palate, and sinusitis were excluded from the study. All the subjects signed an informed consent form before being included in the stud after they received adequate explanation about the surgical procedures. The subjects were divided into groups A and B (n=30) using random numbers table. The surgical operations were carried out

by one experienced maxillofacial surgeon in both groups using the closed technique. Before surgery, the subjects underwent standard rhinoplasty photography. A digital Canon camera with a 100-mm lens was used for photography, at a distance of 20–25 cm between the patient and the camera. Each patient's head was placed in natural head position (NHP) during photography and the patient's Frankfort plane was made parallel with a reference line placed in the background. In addition, the camera was placed perpendicular to the reference line.

Group A

A vertical incision was made on the most projected area of the dome and the cartilage was separated from the underlying mucosa. The extent of separation was determined by the severity of the projection of the nasal tip. In cases in which the nasal tip was projected the separation was minimal and in cases the nasal tip had no projection a greater amount of cartilage was separated. Then the lower lateral cartilages were placed in their anatomic locations.

Group B

Sheen graft technique was used in this group. After separating the lower lateral cartilages, a cephalic incision was made in a manner to preserve at least 6 mm of the lower lateral cartilages. Then the dome area was sutured and the lower lateral cartilages were placed in their anatomic locations. After carrying out lateral osteotomy, a piece of cartilage, measuring almost 5×7 mm, was placed at the tip of the nose.

In all the subjects, inter-cartilaginous incision was used to gain access to the osseous and cartilaginous areas of the nose and if necessary the dorsal hump of the nose was removed and the osseous irregularities were corrected with the use of a rasp. The criterion used for the removal of the nasal hump was a line connecting the nasofrontal and nasal tip points. In all the subjects, complete transfixation incision was used to gain access to the demi-septum area.

In all the subjects, 2 mm of the septum margin was removed and the lower lateral cartilages were released using a marginal incision made at the cutaneous area of the vestibule. The cephalic portion of the lateral crus cartilage was removed to preserve 6 mm of the cartilage.

Six months after the surgical procedures, all the patients underwent photography under the standard conditions mentioned above. Then the amount of nasal tip rotation and projection were determined with the use of a ruler and a protractor by someone blinded to group assignment of the subjects.

SPSS 13 was used to analyze differences before and after surgery in each group and the differences between the two groups, with independent

samples and paired samples t-tests. Statistical significance was set at $P < 0.05$.

RESULTS

Table 1 presents nasal tip rotation (TR) before and after surgery in both groups.

Table 2 presents nasal tip projection (TP) before and after surgery in both groups.

Table-1: Tip rotation before and after surgery

Groups	TR before	TR after	P value
A (N=30)	7/53 114/10±	± 7/21 119/46	$P < 0/05$
B (N=30)	± 9/94 113/08	± 8/92 117/58	$P < 0/05$
P value	$P > 0/05$		

Table-2: Tip Projection before and after surgery

Groups	TP before	TP after	P value
A (N=30)	28±92 ±4/16	33±3/86	$P < 0/05$
B (N=30)	26/95±7/30	31/29±6/35	$P < 0/05$
P-value	$P > 0/05$		

DISCUSSION

Management of the nasal tip is one of the most important components of rhinoplasty and its surgical correction is one of the most difficult aspects of rhinoplasty[8,9].

Different techniques have been used in different studies to correct the nasal tip and different results have been achieved.

In a study by Coskun *et al*[10], it was concluded that open rhinoplasty results in a significant decrease in nasal tip projection.

Unger *et al*[11] reported that cartilage dividing technique decreased nasal tip projection in their subjects.

Koetoo *et al*[12] used versatile graft technique and reported that it improved the nasal tip status in their subjects.

Ortiz-Monasterio[13] reported that use of cartilage graft technique in rhinoplasty resulted in an improvement in the nasal tip status.

In addition, Margulies *et al*[14] use columella strut technique and reported an improvement in the nasal tip status after rhinoplasty.

In a study by Emsen[15], use of the three-dimensional pyramid cartilage technique resulted in an improvement in the nasal tip projection.

Wulkan [16] reported that the multi-lock system is an appropriate choice to manage the nasal tip projection and rotation in rhinoplasty.

In the present study use of a new technique resulted in a significant increase in the nasal tip projection compared to the preoperative projection. In addition, this new technique significantly improved the nasal tip rotation.

The Sheen technique, which consists of the use of a single graft, has been used for a long time and has yielded successful results.

In the present study, too, use of this technique significantly improved the nasal tip projection and rotation compared to the situation before surgery. However, it should be pointed out that there are some possible complications associated with this technique, including infection, graft displacement, visibility of the graft and resorption of the graft [17].

In general, the incisions and appropriate profiles of the nasal tip should be designed in a manner to provide maximum support for this anatomic structure.

In the Goldman technique, the incision in the lower lateral cartilage area is made at the interface between the intermediate and lateral crura and the medial crura are suture together, which results in an increase in nasal projection. The lateral crura are not sutured and collapse medially. This technique results in significant narrowing of the nasal tip and loss of the form and shape of the nasal tip. In addition, there is the possibility of nasal tip asymmetry and nasal tip pinching and ptosis over time [5].

Contrary to the Goldman techniques, in the technique used in the present study no sutures are used in the medial crura area. Therefore, the medial and lateral crura are placed in their natural anatomic positions. In addition, no segment of the cartilage is removed, which is considered the specific advantage of this technique over other techniques.

In the present study, use of the new technique resulted in results similar to those achieved with the Sheen technique. Both techniques resulted in improvements in the nasal tip status and rotation. However, the new technique had some advantages, including less complications and ease of the technique.

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