The Use of Spreader Grafts and Columellar Strut as Septal Extention Graft in Dorsal Nasal Deviation

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Abstract

Background: Shortening of the nose in rhinoplasty surgery specially in dealing with nasal dorsum in deviated noses caries a considerable risk. For that issue, we used certain technique which is the use of bilateral spreader grafts and collumellar struts as septal extension grafts to avoid this complication in our rhinoplasty series of surgeries for correction of deviated nasal dorsum.

Aim of Work: Assessment of the use of bilateral spreader grafts with collumellar struts in rhinoplasty surgery for correction of deviated nasal dorsum to avoid shortening of the nose.

Patients and Methods: The population study is 19 patients who are candidate for rhinoplasty surgery for correction of deviated nose. They underwent surgery through open approach rhinoplasty in which after correction of their deformity we used long spreader grafts with collumellar strut as septal extension grafts to achieve good tip projection. Assessment of patients done according to the photographs taken and patient’s satisfaction.

Results: Of the 19 patients who have undergone this procedure, 15 were available for follow-up. Seven patients showed excellent results, six patients were considered as a good outcome and two patients attained fair results requiring a secondary operation.

Conclusion: Bilateral spreader grafts if combined with collumellar strut and used as septal extension graft proved to be effective to guard against shortening of the nose in cases of deviated cartilaginous nasal dorsum.

Key Words: Spreader grafts – Collumellar strut – Deviated nose – Septal extension grafts.

Introduction

CAUDAL septal extension grafts are segments of perpendicular cartilage which are secured to the caudal septum and extend into the columella [1]. The caudal segment of septal cartilage provides architectural support to the nasal tip. Loss of that caudal septal support will substantially affect the stability of the nasal tip and thereby result in aesthetic as well as functional problems [2]. Thus, the main purpose of the caudal septal extension grafts is to stabilize the nasal base and the tip. The dimension of the graft may vary from a medium-sized strut to a large plate of several centimeters side length [3]. In deviations of the caudal septum, the septal extension graft may be used in order to secure a midline position of the septum [4]. Serving the same purpose, bilateral extended spreader grafts may be used to stabilize the caudal margin of the septum in the midline and to give additional support to the medial crura [8]. The caudal septal extension graft creates a firm conjunction between the septum and the columella/tip complex. By suturing the medial crura to the graft in the desired position, the surgeon is enabled to definitely determine tip and columella position in terms of projection, rotation and nasolabial angle [6]. The caudal septal extension graft is the most powerful tool to hold the tip in a definitive position. Therefore, it is especially useful when the corrected nose must with stand strong tractional and gravitational forces in the long term, as it is the case in correction of an under projected and under rotated nasal tips with heavy soft tissue mantle. The graft proved to be effective in restoring the lost tip support in patients with caudal septal deficiency [2].

Patients and Methods

There were 19 patients with nasal deviation subjected to the use of bilateral spreader grafts and collumellar strut as septal extension grafts who attended the outpatient clinic ENT Department Kasr Al-Ainy Hospitals in the period between January 2012 to January 2014. Through an open approach, an inverted ‘V’ shape incision in the columella was done and the nose is skeletonized. Cartilage was taken from the septum to design two long spreader grafts and a collumellar strut. The length of the spreader graft is equal to the distance...
from the anterocaudal border of the nasal bones to the anterocaudal septal angle plus the planned nasal elongation. However, if the cartilage is thicker than what is ideal for the dorsal outline, it can be shaved but this must be done on both sides of the cartilage proportionately to avoid asymmetry of the nose. A columella strut is then prepared. The width (cephalocaudal dimension) of the columella strut will be equal to the width of the medial crura plus the deficiency in nasal length in millimeters. The spreader grafts are aligned with the dorsal portion of the septum and extended beyond the caudal septum, proportional to the intended lengthening. These grafts are sewn in position using 5-0 prolene in at least two sites. The columella strut is placed in position and is sutured in two sites to the medial crura only. The portion of the columella strut extending cephalically beyond the medial crura is situated between the two spreader grafts. To achieve additional projection, the medial crura are then advanced anteriorly on the columella strut and are fixed in position using 5-0 prolene sutures. Long lasting sutures are necessary because there will be a good deal of sustained force on the spreader grafts. Other sutures as interdomal sutures or transdomal sutures are placed as necessary.

The results are obtained through assessment of tip projection and its alignment with the nasal dorsum. This is achieved by comparison between the preoperative and postoperative photographs and the patients’ satisfaction. According to this the results are categorized as excellent, good and fair results.

**Results**

Of the 19 patients who have undergone this procedure, 15 were available for follow-up, including 12 male and 3 female patients. The patients’ ages ranged from 19 to 45 years [Mean age=29.1 with standard deviation=5.7]. All cases were primary rhinoplasty. The duration of follow-up was at least two months. Seven patients 46.67% showed excellent results, six patients 40% were considered as a good outcome, two patients 13.3% attained fair results requiring a secondary operation.
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Fig. (3): Male patient 26 years old with no history of trauma. (A,B,C) are the preoperative pictures. (D,E,F) are the postoperative pictures.

Discussion

The magnitude of nasal length deficiency and the extent of soft tissue shortage play a cardinal role in the management of a short nose. Nasal length deficiency can be classified as mild, moderate or severe. A mild degree of nasal length deficiency is 1 to 2 mm, moderate is 3 to 5 mm and any length deficiency beyond 5 mm is considered severe [7]. Byrd, et al. [8] introduced the septal extension graft as a new surgical method for defining the nasal tip. They showed the preoperative and postoperative analysis of patients with columella struts. It was obvious that tip projection was not sufficiently controlled unless the columella strut was fixed to the caudal septum and to the medial crus. Septal extension grafts can provide a reliable tip support and augmentation without over rotation and also maintain the nasolabial angle [9].

The primary source for a cartilage graft is the nasal septal cartilage. If harvesting the septal cartilage is not possible as in cases of a previous septal cartilage harvest, a history of septoplasty, insufficient quantity of tissue because of anatomical characteristics or severe ossification, then an autologous rib cartilage can be considered. Some authors used nasal bone or foreign material for septal extension graft. Emsen [10] used removed nasal hump as spreader graft in the correction of crooked nose. Resected hump is difficult to be used as septal extension graft, requiring more labor to design. Han et al., [11] used porous high density polyethylene sheets for septal extension grafts in Asian rhinoplasty. When the plan is to use the bony septum for septal extension graft we must be concerned, because it may be resorbed faster and much more than septal cartilage [12]. However, Peer [13] in 1952 had proved that an autogenous vomer or ethmoid bone graft would survive in soft tissues without contact to living bone. Dupont et al., [14] showed that the autogenous vomer bone graft survives and provides a good permanent postoperative correction of the nasal deviation. Dini et al., [15] had proved that septal bone grafts for straightening deviated nose were evident in all cases through late tomography with good results. Bone is more difficult to shape than cartilage and can be easily fractured [16]. Fixation of bone grafts to the L-strut is also difficult; authors drilled several holes to allow a precise and secured fixation of the graft. When an extension graft is fixed to the caudal septum for lengthening and projection of the nose, the summation force (including the generated reaction force, the postoperative scar contraction force and gravity) may provide a decrease of projection. This force can shift the cartilage grafts to either side of the caudal septum and subsequently lead to collapse and deviation of the
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nasal tip or failure of nasal elongation. So, to maintain tip projection, additional support to the septal extension graft is required [17]. Care should be taken in the case of a deviated nose or caudal septal deviation since the septal extension graft can exaggerate these deviations. In these situations, an additional cartilage reinforcement using bilateral spreader grafts must be considered. Bilateral spreader grafts if added, they proved to be a more proper method of controlling tip projection than columella struts alone. Unpredictability is a major disadvantage of the septal extension cartilage graft placed between the medial crura without the support of the spreader grafts especially if the sutures are absorbed. If happened, the caudal septum may dislodge to one side resulting in a deviation of the basal unit. This is not possible with the technique described here due to the presence of the spreader grafts. Techniques that advocate the use of spreader grafts alone or in conjunction with a columella strut without spreader graft extension harbor the same disadvantage [18]. In contrast, fixing a single spreader graft to the medial crura may create undue rigidity to the nasal tip or may result in asymmetry [8]. Our technique is versatile and avoids the adversities posed by other methods. In addition, if one notices that the strut is not providing enough projection, the columella can be advanced between the spreader grafts and fixed in a more anterior position to achieve additional projection.

Conclusion:

We found that this technique architecturally and aesthetically sound, and we recommend it for consideration when nasal lengthening is part of the aesthetic objectives.

References

استخدام الرفع القارية ودعاة فتحة الأنف كرقة لزيادة طول الحاجز الأنفي لتجديد الأنف المعقوف.

انه من المتوقع دائما في حالات تجميل الأنف ان يحدث نقص في طول الأنف خاصة حالات تجميل الأنف المعقوف. ويرجع ذلك بسب أن الجراحة على الحاجز الأنفي تشمل دائما اخذ رقع واستئصال للجزء الذي يظهر فيها الإجدرة مما يؤدي إلى ظهور نقص في طول الأنف.

لقد تم في هذه الدراسة استخدام طريقة وضع الرقة القارية ودعاة وسط فتحة الأنف واستخدامهم كرقة لزيادة طول الحاجز الأنفي وذلك لمنع حدوث نقص في طول الأنف جراء عملية التجميل. هذا وقد تمت هذه الدراسة على بعون عشر مريضا ووجد انه من الممكن الاعتماد على هذه الطريقة في عمليات تجميل الأنف المعقوف.