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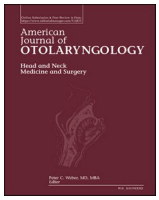

Cog graft, a new septal extension graft for designing nasal tip rotation and projection in rhinoplasty

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ABSTRACT

Background: Adjusting the nasal tip rotation and tip projection according to the patient's face and wishes is a very important stage in rhinoplasty with the use of a cog graft positioning the tip point in the appropriate place is possible by adjusting the nose length, tip projection and tip rotation together.
Objective: The aim of this study is to facilitate positioning the tip rotation and projection in the appropriate place according to the patient's needs in rhinoplasty with Cog graft.
Materials and methods: Cog graft was applied in 32 patients who underwent rhinoplasty. Cog graft was prepared from costal cartilage in 10 patients and from septal cartilage in 22 patients. Cog graft was prepared by shaping the superior edge of the septal extension graft like a gear wheel. It is fixed to provide desired projection to the caudal septum. In the position where rotation and projection are evaluated adequately, the graft is fixed with sutures. They were followed in average 18 months (between 6 and 24 months).
Results: Twenty of the patients were primary cases and 12 were revision cases. The targeted rotation and projection results were achieved in all patients. All patients had satisfactory esthetic results.
Conclusions: Cog graft is a useful graft with which we can adjust the nose length, projection and rotation appropriately and in a short time with a single graft.

1. Introduction

One of the most important issues in rhinoplasty is to adjust the tip projection and rotation in accordance with the patient's face, wishes and generally accepted rules. Appropriate positioning of the tip point can be possible by adjusting the nasal length, tip projection and tip rotation together. In patients in whom the tip point cannot be adjusted in the appropriate position, patients will either complain that the tip of the nose is too high or too low. The result will be noses that are not compatible with the patient's face.

Many graft and suture techniques have been previously described to adjust type projection and rotation. These include septal extension grafts of various shapes, columellar strut grafts, onlay grafts and shield grafts. Suture techniques such as septo-columellar suture, lateral crural steal suture and rhinolift have also been described [1–4].

Septal extension grafts are frequently used graft in rhinoplasty to provide adequate nasal tip projection and rotation. The graft is harvested from the patient's septal cartilage and is used to extend the caudal septum and provide support to the nasal tip [3]. The use of septal extension grafts can help improve nasal breathing and create a more aesthetically pleasing nasal tip by extending the septum and providing support for the nasal tip [2,3,5].

The use of septal extension grafts is considered a safe and effective technique in rhinoplasty. However, it is important for the surgeon to carefully evaluate the patient's nasal anatomy and determine if a septal extension graft is appropriate for their individual needs [6,7].

Adjusting the nasal tip rotation and projection together in rhinoplasty is of great importance to achieve pleasing results. To serve this purpose, in this study, we would like to introduce a new modification of the septal extension graft, which we define as Cog graft.

2. Material and methods

This study consisted of retrospective chart reviews of existing medical records and therefore did not require IRB approval. No identifiable patient data was reported, and consent was not required. Revision or

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Fig. 1. Cog graft preparation.

primary rhinoplasty patients aiming to increase nasal tip projection and rotation were included in the study. The Cog graft was created from septal cartilage or costal cartilage.

2.1. Technique

In this study, open rhinoplasty approach was applied to all patients under general anesthesia due to the severity of the cases. Traditional transcolumellar and bilateral infracartilaginous incisions were made and the skin and soft tissue coverage are elevated at the supraperichondrial and subperiosteal levels over the cartilage and bony skeleton, respectively.

Cog graft was created from septum or rib cartilage. It is applied to the caudal septum to extend the tip of the nose forward and downward as needed. The front part is wider than the back. Notches resembling gear wheels have been created on the front part. These notches are prepared for placement of the transdomal suture. There are several notches from cephalic direction to caudal. When the tip suture is shifted and fixed in the cephalic direction, the nose becomes shorter and rotation increases. When it is shifted and fixed in the caudal direction, the nose lengthens and the rotation decreases. Projection increases in both cases.

This graft is a multifunctional graft designed to strengthen and correct the caudal septum, as well as to extend it forward and downward to the appropriate extent and to adjust its rotation through suspending on the adequate gear wheels. Tip plasty was made after nasal tip projection and rotation were created as desired with nasal dorsal stabilization with the help of Cog graft. Incisions were closed with sutures. Finally, an intranasal silicone splint and external splint were placed. These splints were removed on 7th day after surgery, respectively (Videos 1–2) (Figs. 1–3).

3. Result

Between September 2021 and September 2023, A total of 32 patients, 23 women and nine men, were included in the study. Cog graft was used in a total of 32 patients (20 of the patients were primary cases and 12 were revision cases). Cog graft was prepared from costal cartilage in 10 patients and from septal cartilage in 22 patients. Eighteen of the patients were female and 14 were male, their ages ranged from 19 to 51. All patients were followed for 6–24 months. The desired type projection and rotation was achieved in all patients.

4. Discussion

The septal extension graft is a valuable tool in rhinoplasty, providing additional support and length to the nasal septum and helping to achieve a more balanced and aesthetically pleasing nasal profile [2,3]. The septal extension graft was first introduced in 1997 by Byrd et al. in an attempt to achieve nasal lengthening, tip projection, rotation and, shape [3]. The septal extension graft is a type of graft frequently used in rhinoplasty to provide adequate nasal tip projection and rotation. The graft is typically harvested from the patient's septal cartilage and is used to lengthen the nasal septum and support the nasal tip [2]. During the procedure, the septal extension graft is placed between the existing septum and the nasal tip cartilage, effectively extending the length of the septum and providing additional support for the nasal tip. This can help to achieve a more balanced and aesthetically pleasing nasal profile [2,5].

Cog graft is a very useful and strong septal extension graft type designed to both correct and strengthen the caudal septum and obtain the desired projection and rotation in patients with weak or crooked caudal septum.

The rotational septal extension graft we described formerly was a thinner graft that was attached with a needle in the middle. Rotation and projection were adjusted by rotating it around the needle. Since the Cog graft is a wider and stronger graft than this graft, it also has the function of correcting and strengthening the caudal septum, unlike (R-SEG) [8].

The most important feature of the Cog graft is the notches resembling gear wheels on the anterior surface. Thanks to these notches, the nose length, rotation and projection can be adjusted as needed with a single graft by sliding the tip up and down. In this respect, it differs from other classical septal extension grafts and allows more effective use of the cartilage in the hand. After the tip is placed in the appropriate notch and the appropriate rotation, projection and nose length are adjusted, the remaining excessive part is excised and the final shape is given. Thanks to the notch where the tip suture is placed, the tip is prevented from sliding downwards or upwards over time and undergoing undesirable changes. In classical septal extension grafts, when the graft is not suitable, it is removed, reshaped and reapplied, sometimes there is a need to repeat these surgical step many times. Thanks to the gear wheels in the Cog graft, the change is achieved only by sliding the stich to other notch over the gear wheels, and there is no need to repeatedly disassemble the graft and adjust its shape. Thus, unnecessary waste of time is prevented.

5. Conclusion

Adjusting the tip projection and rotation together and in harmony is one of the most important points of rhinoplasty. Cog graft is a useful graft with which we can adjust the nose length, projection and rotation appropriately and in a short time with a single greft.

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amjoto.2023.104173.

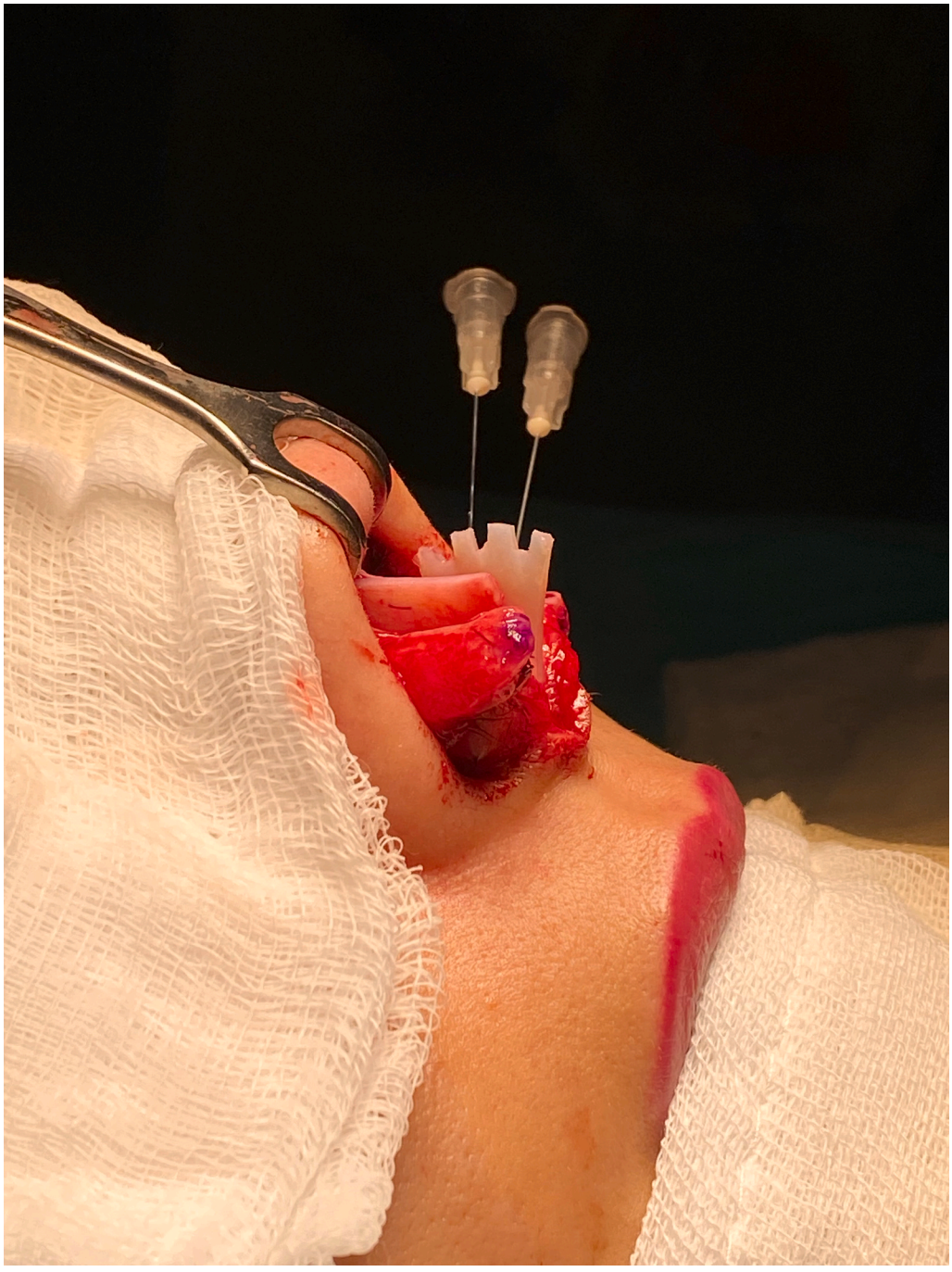

Fig 2. Fixation of the cog graft in the nasal tip.

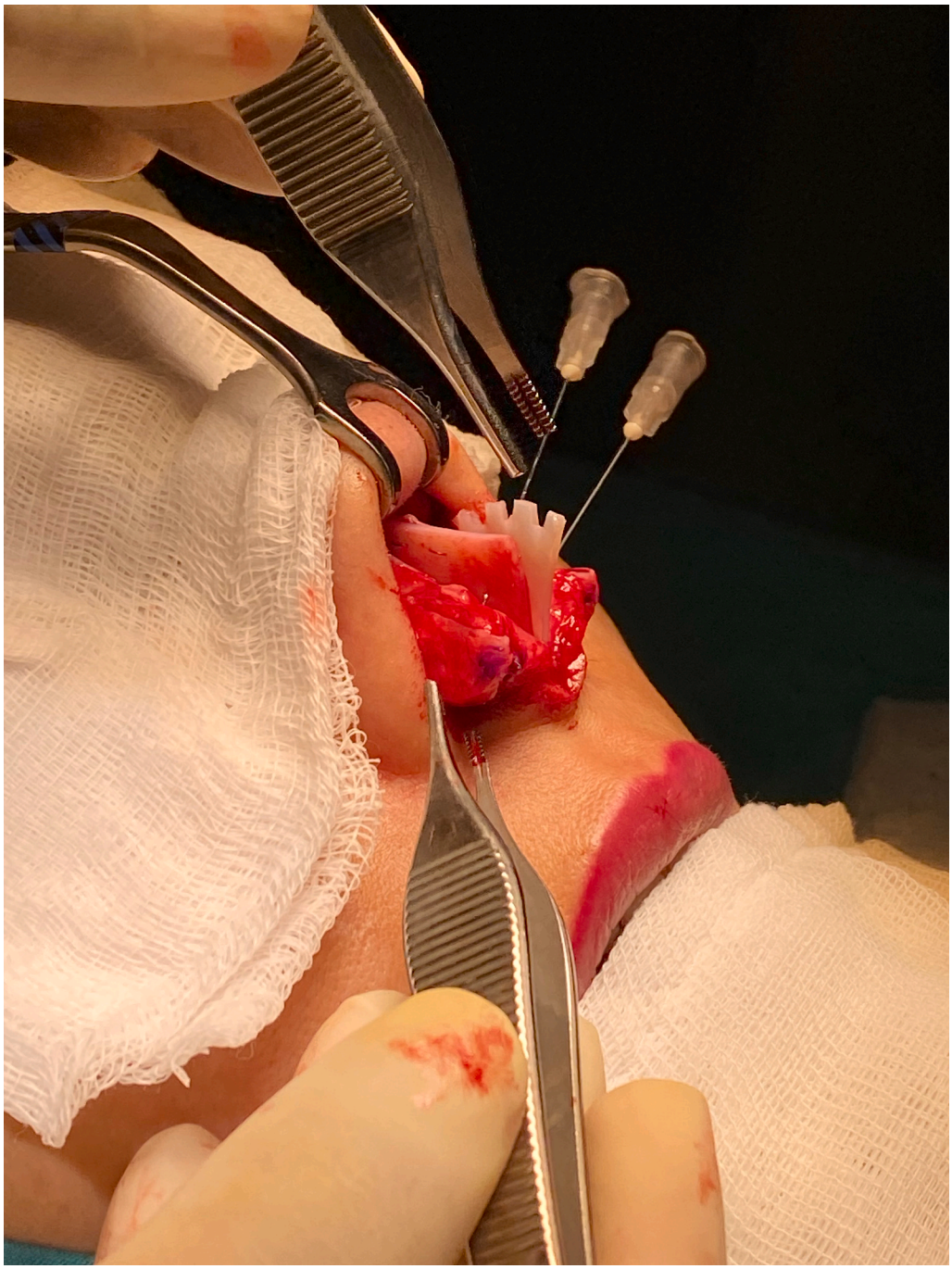

Fig. 3. Fixation of cog graft in adjusting the nasal tip.

Funding

None.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

For this retrospective type of study informed consent is not required.

Declaration of competing interest

None.

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