

# The T- Graft to Control Nasal Length and Nasal Tip Position

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## Abstract

The T-graft is a new tool in the armament of structural rhinoplasty. The graft makes it easy to create a well- balanced nasal framework both for beginners and more experienced rhinoplastic surgeons. Due to its multifunctional character the T-graft allows the surgeon to control nasal length as well as nasal tip projection and -rotation. The T-graft is indicated in many anatomical features like in patients with a short nose or heavy soft tissue envelope, but also in patients with under projection of the nasal tip, under- or over-rotation of the nasal tip and deviations of the caudal nasal septum.

## The T Graft to Control Nasal Length and Nasal Tip Position.

### Introduction

The main goal in rhinoplasty is to create a well-balanced nasal skeleton that dictates a new shape to the overlying soft tissue envelope that is in pleasing harmony with the rest of the face. Nasal length, nasal tip projection and -rotation, the amount of columellar show as well as other aspects should all be in harmony. To reach this goal a combination of surgical techniques can be applied such as resection or reallocation of bone and cartilage, or adding structure and support using nasal grafts. In literature, most of the described grafts used in rhinoplasty have one specific function. For example, the spreader graft to reconstruct the roof of the middle vault [1], or a septal extension graft to lengthen the nasal septum [2]. The T-graft is different, it is a multifunctional graft. Depending on the position of the graft in relation to the caudal septum, it can be used as a septal batten- , splinting- or septal extension graft. The graft has two extensions (Figure 1). One extension at the caudal-anterior margin that acts like a columella strut graft. This structure allows the surgeon to very accurately control the position of the domes or tip defining points but also the nasolabial angle. The second extension is positioned at the posterior site of the T-graft. This spreader-like extension is helpful to control deviations of the caudal cartilaginous septum and to provide additional stabilization of the graft. Due to its multifunctional character the T-graft allows the surgeon to increase nasal tip support and to control nasal length as well as nasal tip projection and -rotation. These abilities make the T- graft helpful in finding the “sweet-spot” regarding nasal length, nasal tip projection and rotation. In other words, this graft is a new tool in creating a well-balanced and aesthetical pleasing shape of the nose. The T-graft is indicated in many anatomical features like in patients with a short nose or heavy soft tissue envelope, but also in patients with under projection of the nasal tip, under- or over-rotation of the nasal tip and deviations of the caudal nasal septum.

### Data availability statement

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

### Technical Description

The T-graft can be applied in all types of rhinoplasty. In our series we used the T-graft exclusively in open approach rhinoplasty, so far in 54 patients (39 females, 15 males) ranging from 18 – 61 years. Preferably

the T-graft was harvested from nasal septal- or rib cartilage. Auricular cartilage is unattractive because it is too floppy and curved to achieve an accurate and successful outcome. The dimensions of the graft are depending on the individual needs. In our series the average size of the T-graft was 25 mm (extension-strut component) and 20-30 mm (extension- spreader component). The procedure is performed in general anesthesia. Local infiltration of the nose, approximately 3.5 cc, is performed with lidocaine 2% and adrenalin 1:80.000. Topically 200 mg of cocaine is applied in the nasal cavity before surgery is started. Per operative amoxicillin/clavulanic acid 1000/200 mg is administered intravenously, which is continued orally for 1 week postoperatively (500/125 three times daily). At the end of surgery the nose is lightly packed with a 2 cm gauze with antibiotic ointment for a duration of 24 - 48 hours, and dressed with tape and an external splint for one week.

### *Surgical Technique.*

The T-graft is moved in cephalic- caudal direction alongside the caudal margin of the nasal septum in order to determine the optimal balance of the nose regarding nasal length and nasal tip projection (Figure 2 a-c). Once the desired position is determined the graft can be suture fixated to the nasal septum. This can be performed with (non-) soluble sutures like Nylon or PDS 4/0. Preferably this is performed with 3 sutures in order to prevent cantilever and to provide sufficient stability. After fixation, the T-graft can be tailored with a blade to the match the exact required final dimensions. The T-graft can have two functions depending on the final position in relation to the nasal septum. These functions are splinting- / septal batten graft, or septal extension graft.

#### *Splinting- / septal batten graft .*

When the T-graft is placed at the level of the caudal margin of the nasal septum it acts like a splinting- or septal batten graft. When the caudal margin of the nasal septum is deviated the T-graft is placed on the concave or non-deviated side. This can be combined with scoring of septal cartilage on the concave side of the deviation in order to weaken the cartilage before the T-graft is suture fixated. In this fashion the T-graft and straightens and stabilizes the deviated nasal septum. In similar fashion the T-graft can act like a septal batten graft to improve tip support when the nasal septum is too floppy. Indications for this position are tick skinned patients, a floppy cartilaginous nasal framework or under projection or -rotation of the nasal tip.

#### *Septal extension graft.*

When the T-graft is placed more caudally in relation to the caudal margin of the septum, it behaves like a septal extension graft (Figure 3). For example, to correct the short nasal septum. This position can also be used in the over-rotated nasal tip. Downward rotation can be achieved when the domes are suture fixated to the strut part of the T-graft. Due to the spreader-like extension the T-graft is more stable compared to an end-to-end septal extension or with the use of extended spreader grafts.

After fixation of the T-graft, the next surgical step is fixation of the lower lateral cartilages to the T-graft with two or three 5/0 or 6/0 tongue-in-groove (TIG) sutures [3]. Depending on the position of these sutures the surgeon can very precisely control the nasolabial angle and columellar double break. The strut component of the T-graft can extent in-between the domes for maximal tip support (thick skin) or as a spacer between the domes to provide an adequate amount of volume in patients with a pinched nasal tip. Alternatively the strut part can trimmed 2-3 mm below the final position of the tip defining points for a softer appearance of the nasal tip.

## **Discussion**

In our preliminary series the main indication for surgery was a short nose (N=18), severe under projection or - rotation of the nasal tip (N=22), over-rotation of the nasal tip (N=6), excess columellar show (N=8). The T-graft is a multifunctional structure, made of one single piece of cartilage. This property has advantages compared to a combination of single grafts like a septal extension graft in combination with extended spreader grafts and a nasal tip graft, like a shield- or cap graft. Compared to single grafts the T-graft is more stable

and economic in cartilage consumption. The technique of the T-graft can be combined with all kinds of modifications of the lower lateral cartilages. For example, with suture techniques such as lateral crural steal or dome creation sutures but also with lateral crural overlay, lateral strut grafts or (articulated) rim grafts. In case the T-graft is not exactly in the midline the caudal margin of the graft can be beveled before TIG fixation of the lower laterals. Additional suture fixation can be performed using a “columellar retraction suture” [4]. The advantage of this mattress suture technique is that the columella does not come forward (caudal) when the footplates of the lower laterals are brought closer to the T-graft. As a consequence, the nasolabial angle will not increase as seen with a traditional mattress suture in this area.

Informed consent was obtained from the patients involved in this report. There are no conflicts of interest.

Taken together, the T-graft makes it easy and straightforward to create a well- balanced nasal framework both for beginners and more experienced rhinoplastic surgeons.

## Keypoints

- The T-graft is a multifunctional graft, the graft determines nasal length and nasal tip projection. Therefore, it simplifies the creation of a well-balanced and aesthetical pleasing shape of the nose.
- The T-graft can have two functions; splinting- / septal batten graft or septal extension graft.
- With the use of the T-graft there is no need for additional grafts to increase nasal tip projection like a columellar strut graft, cap- or shield graft.
- Compared to single grafts the T-graft is more stable and economic in cartilage consumption.
- The T-graft is indicated in many anatomical features like in patients with a short nose or heavy soft tissue envelope, but also in patients with under projection of the nasal tip, under- or over-rotation of the nasal tip and deviations of the caudal nasal septum.

## References.

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## LEGENDS

Figure 1.

Picture of the T-graft, the dimensions are indicated in mm. Different parts of the T-graft:

: septal batten or - extension, depending on the position of the T- graft.

: strut element to determine the position of the domes of the lower lateral cartilages.

: spreader like extension.

Figure 2 a-c.

Schematic drawings of the surgical steps. a) The T-graft is moved in cephalic- caudal direction to determine the optimal balance of the nose regarding nasal length and nasal tip projection. b) The T-graft is suture fixated to the caudal septum, sutures are indicated by black dots. c) The lower lateral cartilages are fixated to the T-graft with 2-3 tongue-in-groove sutures.

Figure 3.

Per-operative picture, open approach rhinoplasty. In this case the T-graft is positioned as a septal extension graft. White dashed lines indicate the dimensions of the T-graft. Note the short caudal margin of the cartilaginous septum (1). The next surgical step is tongue-in-groove fixation of the lower lateral cartilages. The domes (2) will be sutured to the strut element () of the T-graft.



