Aesth Plast Surg (2019) 43:202–205
https://doi.org/10.1007/s00266-018-1237-4



# "Dual-Knot Fixation" Technique for Better Stabilization of the Extended Columellar Strut Graft with the Anterior Nasal Spine


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Received: 31 July 2018 / Accepted: 10 September 2018 / Published online: 1 October 2018


**Abstract**

*Introduction* Extended columellar strut graft (ecsg.) is one of the most crucial cartilage tissues used especially in secondary rhinoplasties. Stabilization of an ecsg. with the anterior nasal spine (ans.) is very important. Regular suture placement is the most common practice. Nevertheless, this kind of suture fixation may result in sliding of the ecsg. through either side of the ans. Suture placement like the figure of eight may prevent sliding of the ecsg. to sides. However, the figure of eight suture forces the graft to turn around during its fixation.

*Method* I have tried to solve these two problems with a simple still better suture technique. After passing the suture through the hole of the ans., a stabilization knot is tied over the spine tip. Then passing the suture through the lower end of the ecsg. and fixating it with a second knot named as the "fixation knot" results in very good stabilization and prevents both side sliding and rotation of the graft. This stabilization technique can be called "dual-knot fixation" (dkf.). Opening a small notch at the lower tip of the graft may help to hide the "stabilization knot" inside the graft which will help to obscure the tiny space between the cartilage and the bone, and thus the bonding process between the graft and spine would be better.

*Level of Evidence V* This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to Table of Contents or the online Instructions to Authors www.springer.com/00266.

**Keywords** Rhinoplasty · Knot · Secondary · Graft · Fixation

## Introduction

The extended columellar strut graft (ecsg.) is one of the most crucial cartilage tissues used especially in secondary rhinoplasties. It is preferred in patients who have a major deficiency in tip projection and support [1].

Stabilization of an ecsg. with the anterior nasal spine (ans.) is very important. The graft is sutured through the periosteum of the ans. or through a hole created through the ans. [1] Utilization of at least two 4-0 PDS suture is recommended [1], but I prefer to use 5-0 polypropylene suture for this fixation.

Regular suture placement as shown in Fig. 1a of the illustration is the most common practice. Nevertheless, this kind of suture fixation may result in sliding of the ecsg. through either side of the ans. which may cause a tilt of the columella toward one side and shortening of the tip projection.

Suture placement like the figure of eight as shown in Fig. 1b of the illustration may prevent sliding of the ecsg. to sides. However, the figure of eight suture itself forces the graft to turn around during its fixation which complicates the stabilization.

## Method

I have tried to solve these two problems with a simple still better suture technique as shown in Fig. 1c of the illustration. After passing the suture through the hole of the ans., a stabilization knot is tied over the spine tip (Figs. 2

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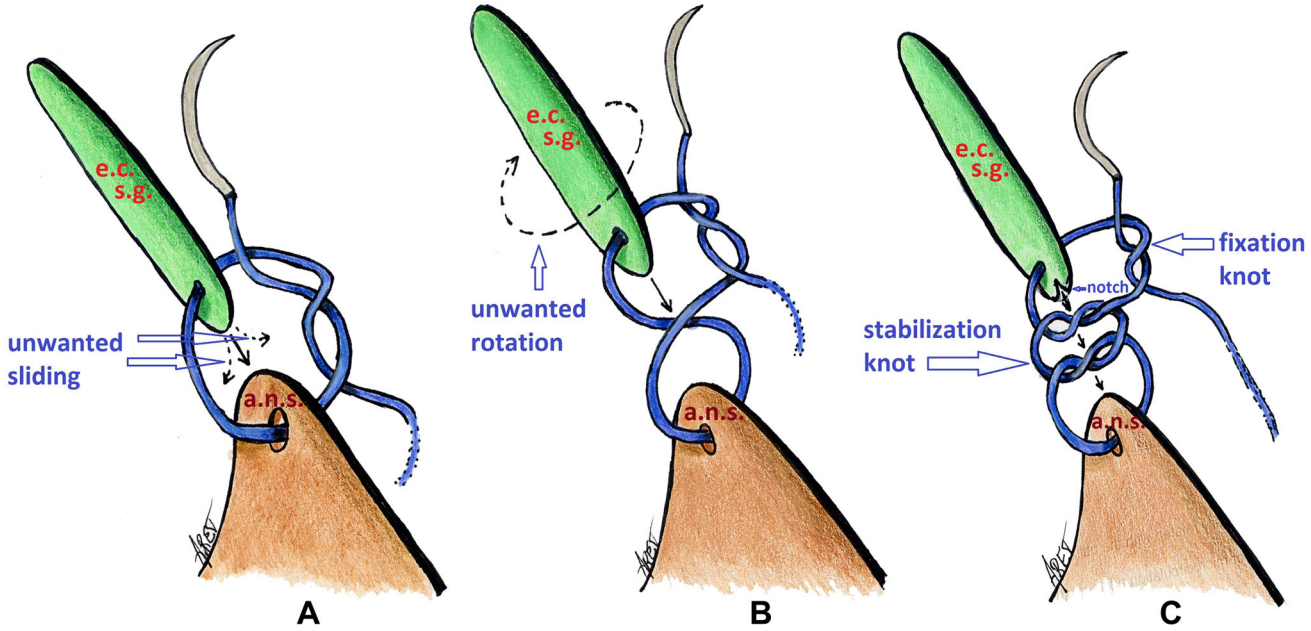


**Fig. 1** (ecsg. = extended columellar strut graft; ans. = anterior nasal spine) **a** Regular suture fixation of an ecsg. with the ans. Dotted arrows show possible unwanted sliding paths of the cartilage graft. **b** Figure-of-eight-shaped suture fixation of an ecsg. with the ans. Dotted arrow shows the direction of unwanted rotation force applied by the suture. **c** "double-knot fixation" of an ecsg with the ans. "Stabilization knot" is settled inside the notch and between the cartilage graft and the nasal spine. "Fixation knot" approximates the ecsg. to ans

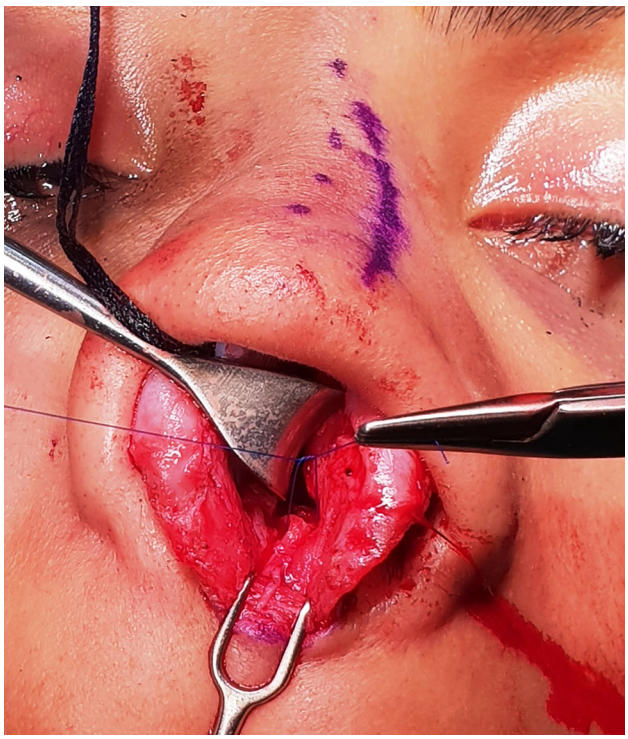

**Fig. 2** Tie of the stabilization knot

**Fig. 3** Tied stabilization knot

**Fig. 4** Tie of the fixation knot

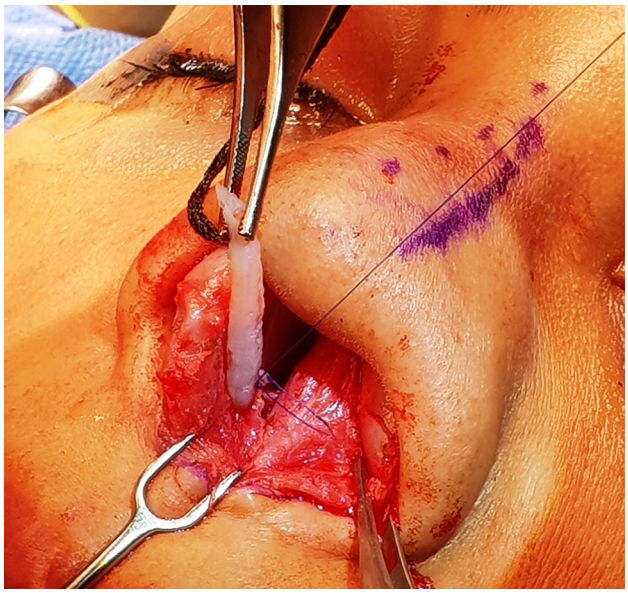

**Fig. 5** Tied fixation knot

and 3). This knot will precisely determine the exact point where the strut graft should settle down. Then passing the suture through the lower end of the ecsg. and fixating it with a second knot named as "fixation knot" results in very good stabilization and prevents both side sliding and rotation of the graft (Figs. 4, 5 and 6). This stabilization technique can be called "dual-knot fixation" (dkf.).

The second boosting suture is advised to strengthen the stabilization. This can be a regular suture as shown in Fig. 1a of the illustration.

**Fig. 6** Tight fixated extended columellar strut graft

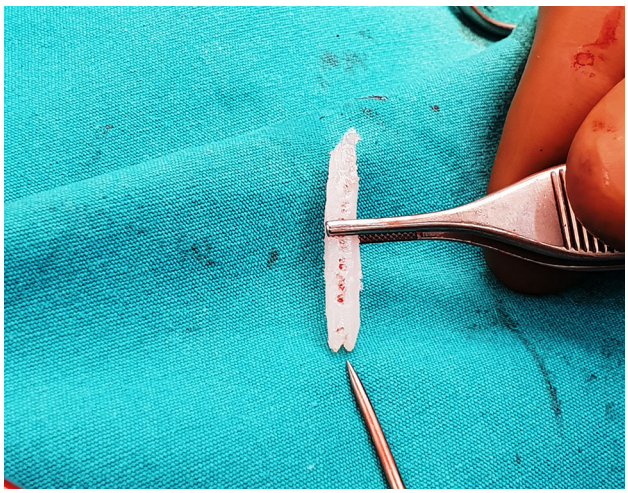

**Fig. 7** Notch at the lower tip of the graft

The only disadvantage of "dkf." suture is the creation of a tiny space formed by the "stabilization knot" between the graft and the spine which may cause a non-bonding risk between the two tissues. Use of polypropylene can prevent the formation of any malposition due to non-binding. Additionally, in the late postoperative period, the fibrous tissue that will be formed around the fixation point will form enough bonding and prevent the formation of any malposition between the ecsg. and the ans. Opening a small notch at the lower tip of the graft (illustration Fig. 1c, Fig. 7) may help to hide the "stabilization knot" inside the graft which will help to obscure the tiny space between the cartilage and the bone and thus the bonding process between the graft and spine would be better.

Use of the "dkf." technique for better stabilization may not be restricted for this specific region. It is a versatile suturing technique. In any fixation point where one mobile cartilage graft end should precisely approach to the end of the other cartilage or bone, this fixation technique can be used.

**Compliance with Ethical Standards**

**Conflict of interest** The author declares that he has no conflict of interest.

## References

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