

# A Novel “Gun-Barrel” Rhinoplasty Ruler for Precise Graft Measurement

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## INTRODUCTION

Open structured rhinoplasty is the most complex and challenging procedure undertaken by the facile plastic surgeon. The aim is to achieve harmony between the esthetic desires of the patient and the functional performance of the nose, considering the patients' anatomical and physiological limitations.<sup>1,2</sup> Success relies upon the expertise of the surgeon to first recognize how the individual patients' needs can be met, and then execute this plan with precision. It is therefore paramount that all graft dimensions, but particularly the septal extension graft (SEG), be accurately measured during the planning stage of intraoperative reconstruction, and before cartilage grafts are fashioned.<sup>3</sup> We have developed a novel modification of the sterile ruler that enables precise measurements of spreader graft and SEG dimensions. There are two main advantages of this modification. First, the slender body of “gun-barrel” can easily be placed in the narrow plane between septal and upper lateral cartilages where the unmodified ruler would buckle and bend upon contact with adjacent structures. The second advantage is provided by the tip modification, which ensures accurate measurements can be obtained once the 3 mm ruler tip redundancy has been removed. We share our technique so that colleagues in the field can obtain these measurements with ease.

## DESCRIPTION OF TECHNIQUE

### Ruler Modification

The 15 cm plastic-coated cardboard ruler accompanies the surgical skin marker pen on the sterile set-up (Figure 1). The first step is to shorten the ruler by making a straight cut along the 0 cm line to remove the 3 mm tip redundancy, as pictured. Next, a longitudinal cut is made along the long axis of the ruler from the 0 cm end to the 5 cm mark. Finally, this is joined by a perpendicular cut made from the inferior margin of the ruler. The inferior segment of the first 5 cm of the ruler is then removed thus creating the “gun-barrel” ruler as pictured.

### Graft Measurement

With the ruler in the surgeon's dominant hand, it is introduced between the septal cartilage and mucoperichondrium up to the nasal bones passing easily in this plane thanks to the modified shape (Figure 2). This is performed on both sides, and the required spreader graft length is noted by the scrub nurse or assistant.

The surgeon can then introduce the ruler vertically between the medial crura of the lower lateral cartilages until reaching the maxillary crest. Exchanging the ruler into the nondominant hand the surgeon can set the nasal tip height against the ruler using their dominant hand and records the required SEG height (Figure 3). Once SEG height has been recorded, the SEG width can be determined. This will of course depend on the desired orientation with respect to the native caudal septum, be that end-to-end or end-to-side, and the degree of membranous septum that needs to be occupied by the SEG for a tongue-in-groove technique.<sup>4</sup> The SEG width measurement can be made with the ruler in the horizontal orientation, with the nasal tip held in the desired position. These measurements are recorded by the scrub nurse for later reference.

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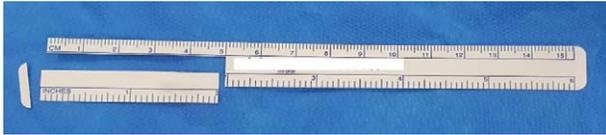
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### Graft Mapping

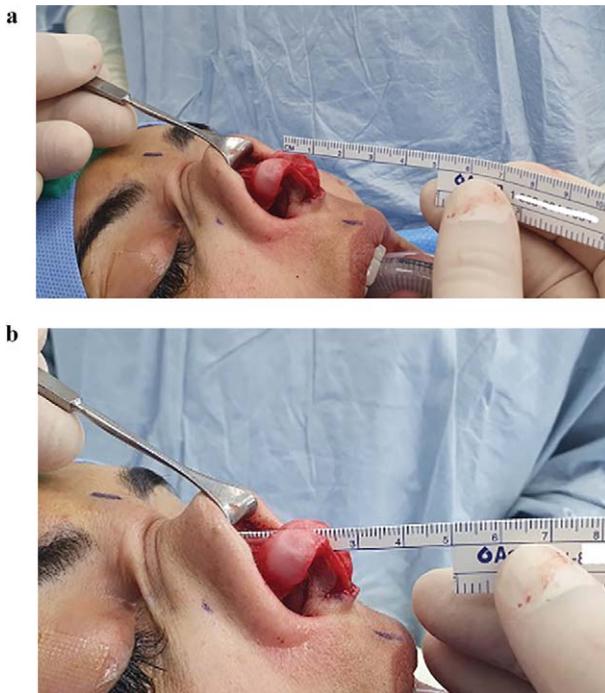
Once the graft measurements have been taken the grafts can be mapped onto the cartilage before they are fashioned. The ruler is once again utilized to ensure precise graft dimensions and the grafts are marked using the surgical skin marker before the cartilage is cut. An example of graft mapping is pictured Figure 4 and the on table result, in this case, is displayed in Figure 5.



**Figure 1.** "Gun-barrel" ruler modification.



**Figure 3.** Measurement of septal extension graft length.



**Figure 2.** (A) Introduction of the ruler into the nose. (B) Measurement of spreader graft length.

### Main Points

- A simple ruler modification that enables accurate graft measurement in rhinoplasty surgery.
- Negates the need for approximations.
- Aids cartilage graft economy.



**Figure 4.** Cartilage graft mapping.



**Figure 5.** On table result.

## CONCLUSION

Open structured rhinoplasty is a complex procedure that presents many challenges to the surgeon. This simple ruler modification technique provides a useful tool for obtaining precise measurements of the required cartilage grafts for successful reconstruction and negates the need for approximations. It can be applied to nasal septal, autologous, or allograft rib cartilage with equal utility and has no additional cost as it takes advantage of the sterile ruler that typically accompanies the surgical skin marker pen. We have found this technique particularly valuable in ensuring cartilage graft economy where graft material is limited.

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**Informed Consent:** Informed consent: Written informed consent was obtained for the use of clinical photography in accordance with the 1964 Declaration of Helsinki and its later amendments.

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## References

1. Unadkat SN, Saleh HA. Restoring balance and symmetry to the aging nose. *Facial Plast Surg.* 2021;37(2):205-210. [\[CrossRef\]](#)
2. Sözen T, Dizdar D, Göksel A. Awareness of facial asymmetry and its impact on postoperative satisfaction of rhinoplasty patient. *Aesth Plast Surg.* 2021;45(1):214-220. [\[CrossRef\]](#)
3. Patel PN, Abdelwahab M, Shukla ND, et al. Functional outcomes of septal extension grafting in aesthetic rhinoplasty: A cohort analysis. *Facial Plast Surg Aesthet Med.* 2021;23(3):172-179. [\[CrossRef\]](#)
4. Spataro EA, Most SP. Tongue-in-Groove technique for rhinoplasty: Technical refinements and considerations. *Facial Plast Surg.* 2018;34(5):529-538. [\[CrossRef\]](#)