

# The Nasal Locator: An Innovative Instrument to Define the Exact Point of Osteotomy in Preservation or Structural Rhinoplasty

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## Abstract

One of the most common components of most dorsal preservation (DP) techniques is subdorsal septal excision. Whatever the instrument used for this procedure (piezoelectric, Rongeur, or long scissors), it is paramount to be able to determine the exact subdorsal point (SDoP) at which the osteotomy/ostectomy (or cartilage cut) has been reached. First, to avoid any unnecessary extension of the osteotomy that increases the risk of fracture spreading into the cribriform plate and a consequent cerebrospinal fluid leak; second, to be sure that the subdorsal cut is high enough and can be combined/unified with the planned radix osteotomy. In addition, transverse osteotomies are usually necessary in both preservation and structural rhinoplasties. Even though many surgeons are satisfied with their osteotomy lines, it sometimes proves difficult to be sure of their position, especially during a DP rhinoplasty when both the transverse lines have to go in the direction of the planned radix osteotomy. We have developed the Nasal Locator (NL) to precisely define various nasal points of interest, such as a subdorsal cut (cartilaginous or bony), or a transverse or medial osteotomy line. It ends in two tips. The lower tip is placed at the point we wish to determine (e.g., SDoP or a transverse osteotomy), while the upper tip is fixed a certain distance from it (in all three dimensions), showing its exact location.

Our in-depth research of the literature and the market has not revealed any device similar in form and function to the NL.

We have been using the NL for almost 2 years and are confident of its usefulness. It is easy to use, and practically no time is needed to become familiar with it. During surgery, it is needed for less than 30 seconds and is risk-free. It is fully sterilizable and can be used repeatedly.

## Keywords

- ▶ nasal locator
- ▶ subdorsal point
- ▶ dorsal preservation
- ▶ preservation rhinoplasty
- ▶ structural rhinoplasty
- ▶ instrument

Subdorsal septal excision is one of the most common components of most dorsal preservation (DP) techniques, which involves the removal of a strip of the cartilaginous septum and a segment of the perpendicular plate of the

ethmoid bone (PPE). A progressive cut or removal is usually performed using a long saw piezoelectric instrument tip, a Rongeur, or long scissors, depending on the surgeon's preference.

In all techniques, regardless of the instrument used, determining the exact subdorsal point (SDoP) at which osteotomy/osteotomy (or cartilage cut) has been reached is of paramount importance for the surgeon.

Additionally, transverse osteotomies are usually necessary in preservation and structural rhinoplasty. Although many surgeons are satisfied with their osteotomy lines, it sometimes proves difficult to be sure about their position, particularly in DP rhinoplasty where the transverse osteotomy lines must align with the planned radix osteotomy.

## Materials and Methods

### The “Nasal Locator”

We developed a tool that can help surgeons precisely define various nasal points of interest, such as subdorsal cut (cartilaginous or bony) or transverse or medial osteotomy lines (see ►Supplementary Video 1).

#### Supplementary Video 1

“The Nasal Locator. Complete Video. Dr. George Mireas.” (4 min 15 s) Online content including video sequences viewable at: <https://www.thieme-connect.com/products/ejournals/html/10.1055/a-2330-3837>.

This tool has two tips (see ►Fig. 1). The lower tip is placed at the point we wish to determine, such as SDoP or a transverse osteotomy line, whereas the upper tip is fixed at a certain distance (in all three dimensions) from the lower tip, showing its exact location.

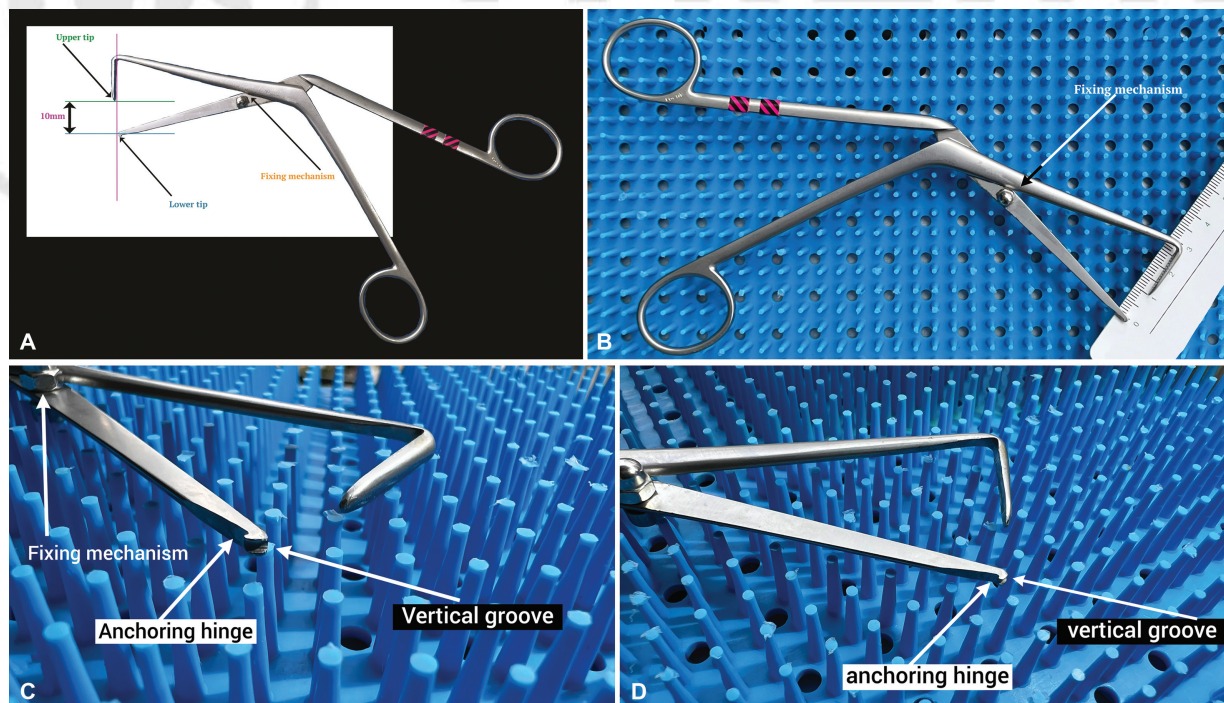
The tool has a mechanism to fix the distance between the two tips when completely closed, preventing further closure. A 10-mm distance is believed to work in most cases. The inner surface of the upper tip delineates a straight line that shows the lower tip when the tool is closed.

The lower tip has a vertical groove for better stability when placed on the PPE. The lower surface of the lower tip is specially designed to end with an anchoring hinge to slide and set in an osteotomy line and thus determine the exact point of a transverse (or other) osteotomy. This tool is made of stainless steel and is completely sterilizable.

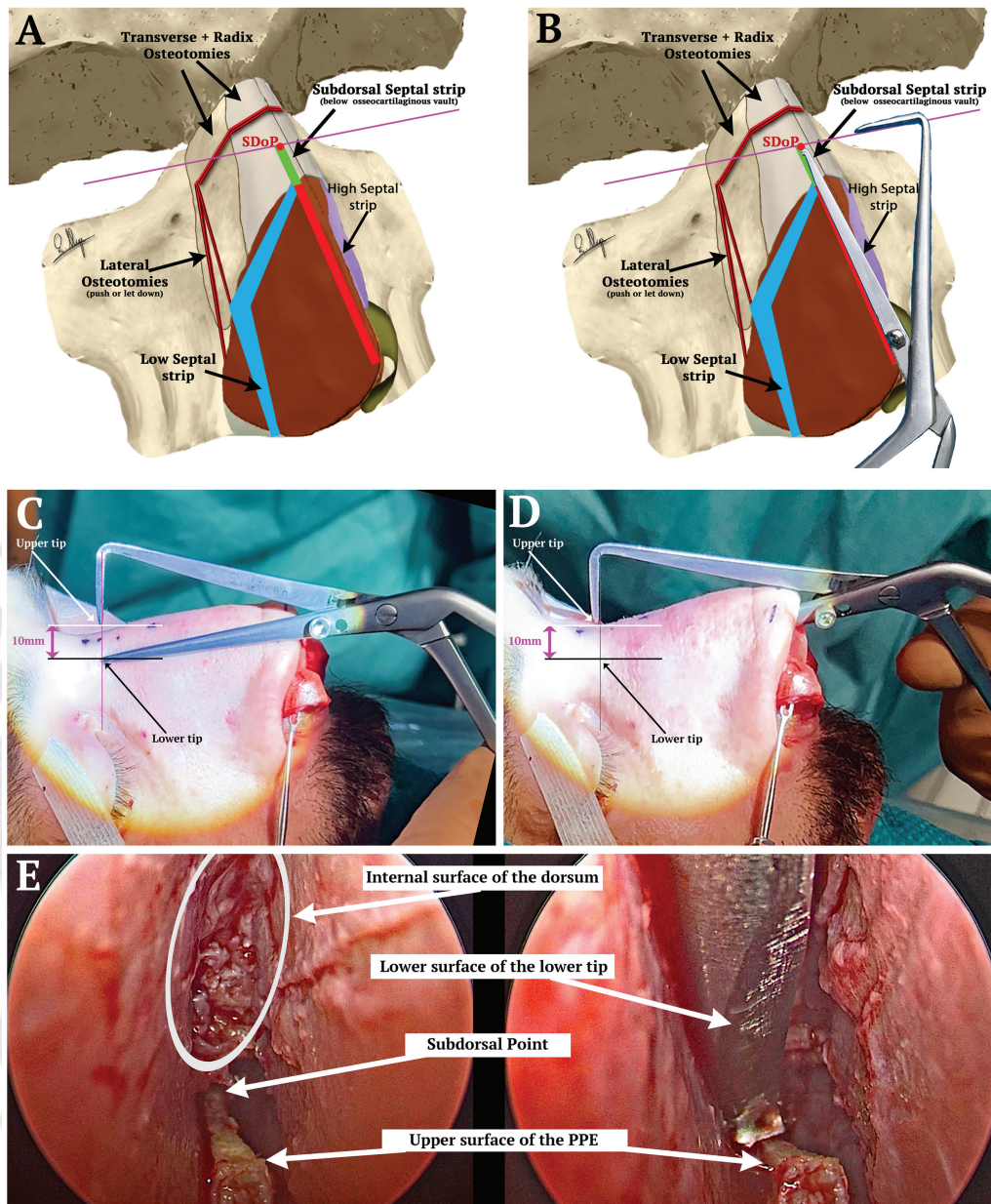
### Method of Use

The Nasal Locator (NL) can be used in various cases to allow surgeons to determine the exact position of a particular point inside or on the surface of the nose.

In the septal phase of a DP procedure, the NL is placed at the exact SDoP, the vertical groove of the lower tip “locks” the septum or the PPE within it, and the tool is completely closed until the fixing mechanism prevents further closure (see ►Fig. 2). With the lower tip placed at the SDoP and the tool closed, we can imagine a straight line that starts at



**Fig. 1** The nasal locator (NL). (A) A fixing mechanism prevents further closure. The distance between the upper (green) and lower (blue) tips is predetermined (10 mm is recommended in most cases). The inner surface of the upper tip delineates a straight line (purple) to the lower tip. (B) The distance between the two tips is fixed (10 mm) when the tool is fully closed, and the fixing mechanism prevents further closure. (C, D) The vertical groove offers better stabilization of the tool to the perpendicular plate of the ethmoid bone (PPE; it “locks” the PPE within it), and the anchoring hinge sets inside the transverse (or other) osteotomy line. PPE, perpendicular plate of the ethmoid bone.

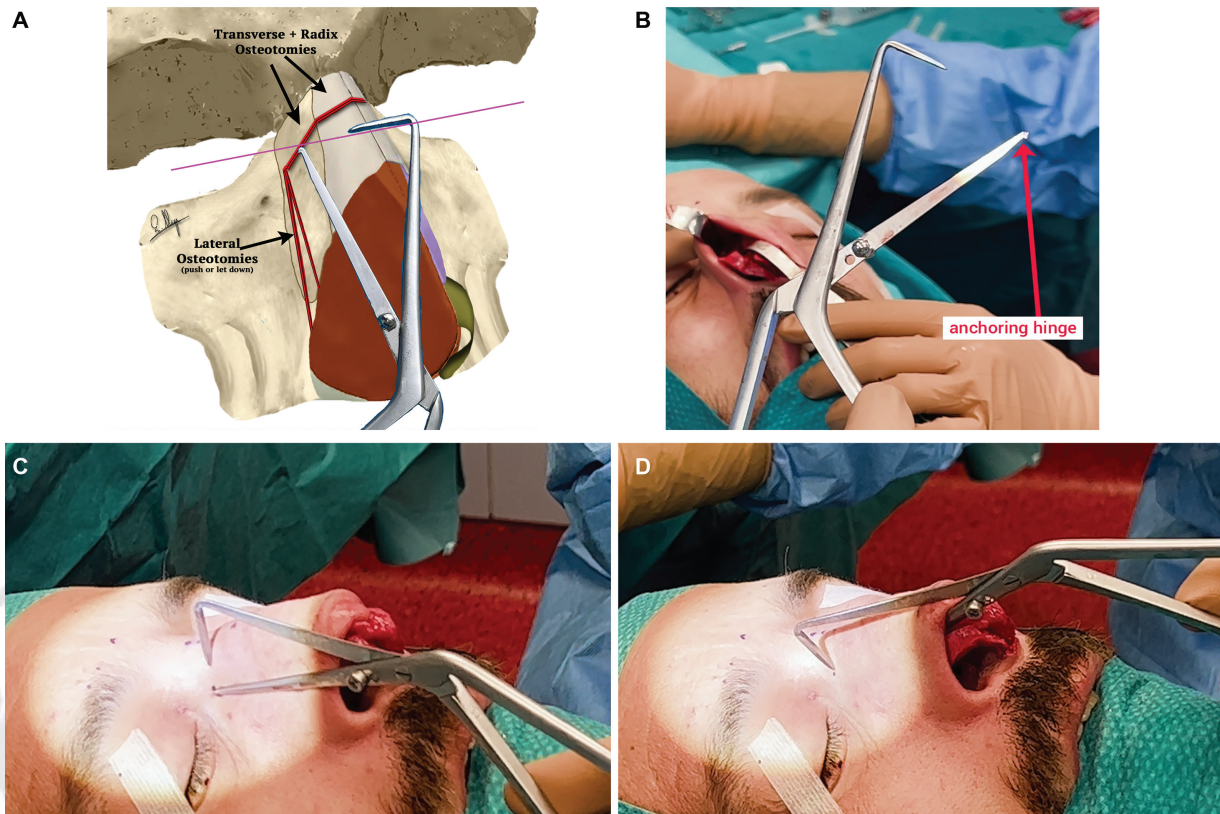


**Fig. 2** The NL in dorsal preservation (DP) rhinoplasty (septal strip excision phase). (A) The drawing shows the high septal strip (red line), low septal strip (blue line), subdorsal septal strip (green line), and subdorsal point (red point; SDoP), which are common in high and low septal strip excision (as well as in midseptal strip). (B) The drawing shows the locator placed subdorsally at the exact point (SDoP) of our excision in high (mid-) or low septal strip excision. The straight purple line directs to the SDoP. (C) The locator is placed outside the nose to better understand its correct position inside the nose. (D) The locator is placed inside the nose at the SDoP. The tool is closed, and the fixing mechanism secures the distance between the upper and lower tips at 10 mm. The straight (purple) line starting from the upper tip precisely defines the SDoP in all three dimensions. (E) Endoscopic view. After removal of the subdorsal septal strip using a piezoelectric instrument, one can see the internal surface of the dorsum (white oval), the upper surface of the cut PPE, and the SDoP, which represents the more cephalic and higher point of our excision. In the right-hand picture, the vertical groove of the NL is used to secure the lower tip at the exact SDoP and facilitate measurement. As expected, the vertical groove is not visible. We can observe only the lower surface of the lower tip. NL, nasal locator; PPE, perpendicular plate of the ethmoid bone.

the inner surface of the upper tip. This line ensures that the SDoP is exactly 10 mm from the end of the upper tip.

While working on the lateral nasal wall, the NL is placed at the transverse osteotomy line (see ▶Fig. 3). The surgeon smoothly moves the instrument until the hinge on the lower

surface of the lower tip gently “slides” inside the osteotomy groove. Then, the NL is closed until the fixing mechanism secures the distance between the two tips. A straight line that starts from the inner surface of the upper tip precisely defines the transverse osteotomy line at 10 mm.



**Fig. 3** Use of the NL to define the transverse osteotomy line. (A) The drawing shows how the NL can be used in classic DP rhinoplasty (lateral wall phase) to define the transverse osteotomy line. (B) The lower surface of the lower tip has an anchoring hinge (red arrow) that sets inside the transverse osteotomy line for better stabilization of the instrument at the exact point we want to define. (C) The NL is placed outside the nose to better understand its correct position inside the nose. (D) The NL is placed inside the nose at the transverse osteotomy line. The surgeon feels the hinge “sliding” inside the osteotomy groove. The tool is closed, and the fixing mechanism secures the distance between the two tips. A straight line starting from the upper tip precisely defines the transverse osteotomy line at 10 mm. DP, dorsal preservation; NL, nasal locator.

## Discussion

In almost all types of DP rhinoplasty, a subdorsal septal strip must be excised to release the osseocartilaginous vault from the septum. This septal strip can be part of the quadrangular septal cartilage, a small piece of PPE, or a combination of both. It can be triangular or quadrangular in shape and the cut or excision can be made using various instruments, such as a long saw piezoelectric instrumentation,<sup>1</sup> a 2- to 4-mm Rongeur,<sup>2</sup> or long scissors.<sup>3</sup> Regardless of the exact technique and instrument used, it is important to be aware of the exact position reached after each additional bone/cartilage cut to avoid any unnecessary extension of the osteotomy that increases the risk of fracture spreading into the cribriform plate and a consequent cerebrospinal fluid leak and to ensure that the subdorsal osteotomy is high enough and can be combined/unified with the planned radix osteotomy.

The anatomy of this area can be visualized using a cone beam computed tomography (CB-CT) scan to better estimate the extent of the osseocartilaginous cut or removal. A CB-CT scan provides valuable information on bone thickness, the caudal point of the frontal sinus, the junction between the cartilaginous and bony septum, and, most importantly, the anterior-most caudal part of the cribriform plate.<sup>4</sup> This

information can help surgeons make the operating plan more secure and effective depending on the needs of each case. Thus, the scan is strongly recommended. Preoperative CB-CT and the use of the NL during surgery make for an excellent combination, helping the surgeon predict and avoid severe complications while managing the septum/PPE area.

In preservation and structural rhinoplasty, a surgeon may have to perform transverse or other osteotomies. In many cases, confirming the position of the osteotomy that has already been performed or determining if an extension is needed is difficult.

While performing a DP rhinoplasty, it is crucial for the surgeon to be sure that the two transverse osteotomy lines lead to a common midline point that represents the position of the future radix osteotomy and to know if the osteotomy has to be extended a little bit more cephalically.

Most surgeons use suction or forceps to roughly estimate the position of the subdorsal osteotomy/osteotomy they have already performed by placing these instruments inside the nose and then trying to hold their fingers at the same point on the outside. A similar method is used by surgeons for transverse osteotomies. However, this type of maneuver undoubtedly has a long range of mistaken measurements, and the risk of severe complications is high, especially in cases of severe nasal axis deviation or revision surgeries or in

cases where the distance between the septum and the cribriform plate is short and every millimeter matters.

Our extensive research of the literature and the market has not revealed any device similar in design and function to the NL.

We have been using the NL in our surgeries for almost 2 years. This tool is of great value to every surgeon. The NL is very easy to use, and the surgeon needs no time to become familiar with it. During the operation, the surgeon spends less than half a minute using the tool without risk. The tool is fully sterilizable and can be used in countless surgeries without the need for replacement.

#### Authors' Contributions

The author (G.M.) has the sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

#### Informed Consent

The patients provided consent for the publication of images.

#### Conflict of Interest

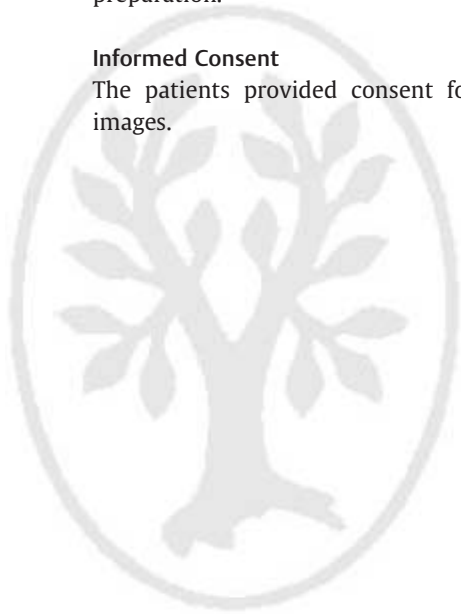
None declared.

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#### References

- 1 Göksel A. Piezo-assisted let down rhinoplasty. In: Daniel R, Palhazi P, Saban Y, Cakir B, eds. *Preservation Rhinoplasty*. 3rd ed. Septum Publishing; 2020:217–241
- 2 Saban Y, Daniel RK, Polselli R, Trapasso M, Palhazi P. Dorsal preservation: the push down technique reassessed. *Aesthet Surg J* 2018;38(02):117–131
- 3 Neves JC, Arancibia D. Segmental preservation rhinoplasty – the Tetris Concept. In: Daniel R, Palhazi P, Saban Y, Cakir B, eds. *Preservation Rhinoplasty*. 3rd ed. Septum Publishing; 2020:365–373
- 4 Robotti E, Daniel RK, Leone F. Cone-beam computed tomography: a user-friendly, practical roadmap to the planning and execution of every rhinoplasty—a 5-year review. *Plast Reconstr Surg* 2021; 147(05):749e–762e



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