

Evaluation of a Modified Dome Holding Technique for Transdomal Suture in Rhinoplasty

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ABSTRACT:

BACKGROUND :

There are multiple techniques for gaining the refinement of tip, increase projection and rotation. This study based on A modified dome holding technique for transdomal Suture in rhinoplasty.

OBJECTIVE:

To evaluate the result of A modified dome holding technique for transdomal suture in rhinoplasty.

PATIENTS AND METHODS:

Between November 2018 and March 2020, 10 patients were subjected to aesthetic rhinoplasty in Alwasity teaching hospital. Their ages between 19-30 years "8 females versus 2 males". Those patients were undergoing rhinoplasty with using innovative technique. Nine out of ten of our patients had thin skin and only one of them had thick skin.

RESULTS:

Average time of operation was one hour and a half (1 hour-2 hour), our results showed that the post-operative appearance had acceptable aesthetic results in all our patients with narrow nasal tip without pinching and with adequate tip projection and rotation.

CONCLUSION:

Dome stabilizing suture using this innovative method is effective way for producing narrow of nasal tip, dome symmetry, and enhancing tip rotation and projection, with good functional results.

KEYWORDS: transdomal suture, Tip plasty, rhinoplasty.

INTRODUCTION:

The nose, because of its central location, is an important element in facial aesthetics. ⁽¹⁾ Nasal tip surgery is an important step in aesthetic rhinoplasty. A distorted nasal tip result in a poor surgical result, even in an otherwise alluring nose. ⁽²⁾ Modern trend depends on the concept that applying suture just not to fix partially excised parts of alar cartilage; but also, to change and secure the shape and direction of various nasal tip components, this period witnessed the eventual evolution of nine sutures to reshape the nasal tip. ⁽³⁾ Applying suture techniques depending on the availability of sufficient size and integrity of cartilages to keep a new directive-desired shape. When cartilage is missing, severely deformed or extraordinary weak, grafting is still necessary. Tip grafts, columellar struts, spreader graft, and lateral crural struts will not lose their significant role in rhinoplasty simply because suture technique are available. ⁽⁴⁾

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Aesthetic analysis:

Proper naso-facial analysis is an important step in determining suitable operative plan on frontal *view*, the nasal dorsum should follow a gentle curve from the medial brow to the ipsilateral tip. The domes of the alar cartilages should ideally protrude slightly above the dorsum, producing two prominent points. ^(5,6)

Tip rotation is defined as the angle between straight line drawn from the subnasale to the nasal tip, and from the subnasale to the vermilion border of the upper lip. In men, the normal naso-labial angle is generally accepted to be 90-100 degrees, where the accepted angle in women is 100 and 110 degrees. ⁽⁷⁾

The transdomal suture: It is a horizontal mattress suture across the domal segment with knot tied medially. With application of this suture, both the lateral and medial crura of the same lower lateral cartilage will bring together, this led to reduction of interdomal distance with an increase in the tip projection and tip narrowing. One of the consequences of transdomal suture is flattening or increase concavity of the lateral crus which sometime needs additional alar rim graft to

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strengthening of external nasal valve and avoidance of retraction of alar rim.⁽⁸⁾

PATIENTS AND METHODS:

Between November 2018 and March 2020, 10 patients were subjected to aesthetic rhinoplasty in Alwasity teaching hospital. Their ages were ranging between 19-30 years (mean 19.5) “8 females versus 2 males”. Those patients were undergoing rhinoplasty with using innovative technique of transdomal holding suture. Nine out of ten of our patients had thin skin and only one of them had thick skin. We excluded those patients who had previous nasal trauma, congenital cleft lip rhinoplasty, and those patients who need secondary rhinoplasty. Patients with high expectation were excluded from this study. Preoperative nasal assessment for the general appearance, asymmetry and any obvious deformity. Then to evaluate the nasal soft tissues by palpation.

The nasal tip support should be assessed to determine tip recoil. The skin thickness estimation is an important, because the type of skin will affect the final result, medium-thick skin is ideal for rhinoplasty.

we look for the nostrils' shape, size and their direction and alignment to other parts of nose . To confirm the presence of valve collapse we put a finger just lateral to the ala on the cheek skin distract the cheek laterally and thereby open the nostril this will alleviate the obstruction. Lifting the nasal tip back to a more upright position may reduce nasal obstruction that contributes to external valvular compromise for the aging nose. All patients were sent for nasal and paranasal CT-scan. Routine laboratory investigations were sent for all our patients. Discussed a suitable option with informed consent was taken preoperatively from our patients, photographs were taken with permission preoperatively.

Operative method:

All operations were done under general anesthesia and using endotracheal intubation. After skin preparation and draping of the surgical site, marking of trans-columellar inverted V-shaped and marginal lines as all cases were operated as an open technique, then 5ml local infiltration of 2% xylocaine with 1:100000 adrenaline for vestibules, aperture, dorsum, lateral walls, tip, columella, distal and septum, after that by using no.15 scalpel, skin incised along the marked lines, and the dissection went ahead below the superficial musculo-aponeurotic system “sub-SMAS” with exposing the lower lateral cartilages. As the osteo-cartilagenous vault reduction, medial and lateral osteotomies have been achieved then we proceeded to nasal tip work. Firstly, cephalic portion of lateral crura was excised and at least 6 mm should be left for support (Figurer 1-A, B). Using Adson-Brown forceps, the tip-defining point was determined on the dome. Both the cephalic and caudal legs of the forceps are kept in vertical position to the dome, with fixation of the outward leg, the inner one rotated in outward superiorly for about a quarter-circle with cartilage, so both of those legs with imaginary lines connect to cephalic tip defining point formed a right angle. Then the dome grasped between caudal and cephalic legs of forceps in sagittal position toward the septum (Figurer 1-B), This will increase the angle between the medial and lateral crura than classical suture (Figure 2. A, B), then horizontal mattress 5/0 PDS suture placed from the medial toward the lateral side of the dome, and the knot then tied on medial side of the dome, the suture was gradually tightened till the desired narrowing of the dome is achieved. We practiced extreme caution to pass the suture along equal points on the dome so keep dome in proper alignment. The suture was not too tight nor loosely tied. (Figure 1-D)

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Figure 1: Steps of applying innovative technique. A, frontal view, after exposure and cephalic rim excision, B. oblique view, C. after grasping of dome with outward rotation, D. Applying of transdomal suture of left lower lateral cartilage, E,F. Applying the suture for right lower lateral cartilage, G. Final results frontal view, H. lateral view.

After finishing of transdomal suture in one side, the procedure repeated in the same step on the other side (Figure 1-E). After that both domes were pulled together in midline using traditional interdome stitch which is placed from the most anterior part of the dome to the contralateral dome using the same 5/0 suture "polydioxanone". No alar rim cartilage graft was used. After finishing of tip work. The incision is closed with using 3/0 vicryl "polyglactine" suture to close the marginal incision and 5/0 prolene to close the transcolumellar incision. Nasal pack then applied with external nasal taping and nasal splint is

applied. The internal nasal packs are removed in the next day and both the nasal splint and external nasal suture removed six days post-operatively. Patients were kept on iv antibiotics with prophylactic single dose one hour pre-operation and analgesics for three days then oral antibiotics for five days postoperatively. patient instructed to use nasal wash with sea water for two weeks. Then to do external massage to her/his nose and using of nasal taping at least two months postoperatively. All patients were kept on regular follow-up every one month for at least 12-months postoperatively.

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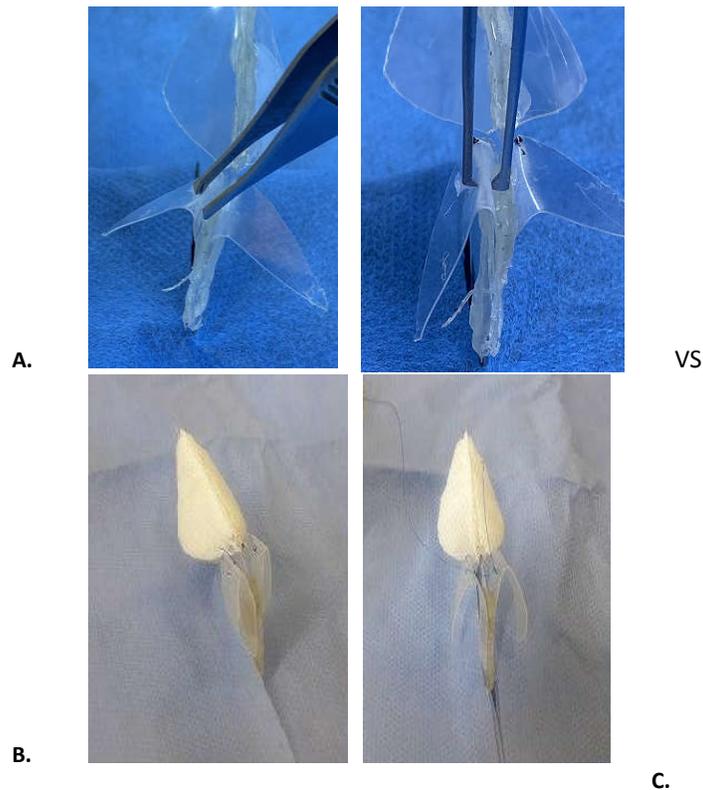


Figure 2: Innovative versus traditional suture. A, innovative transdomal holding suture shows outward direction of the lower lateral cartilage with increase the angle between medial and lateral crus. B, traditional transdomal suture.

RESULTS:

This is prospective study which used to evaluate the effectiveness of innovative transdomal holding suture used in patients with rhinoplasty.

Ten patients subjected to aesthetic septorhinoplasty, their ages were ranging between 19-25 years. Nine out ten of our patients had a thin skin. Assessment of our results was based on our subjective evaluation and third eye plastic surgeon of tip appearance postoperatively regarding its rotation, projection, and its broadness, in comparison with preoperative appearance. Our results showed that the post-operative appearance had acceptable aesthetic results in all our patients with narrow nasal tip without pinching and with adequate tip projection and rotation. They maintained their immediate postoperative results

during follow-up period which was extended up to one year post-operatively and no one of them need revision surgery. Subjective functional evaluation of our results showed that all of our patients had good results regarding their nasal breathing with no stenosis of external nasal valve and no lower alar cartilage collapse during forceful breathing (figure 3). Patients satisfaction was also taken in consideration to evaluate our results, and all our patients were pleased and satisfied with postoperative. Mean visual analogue scale was done for all patients all our patients was 7.5. No complications related to suture like infection, extrusion, foreign body reaction was noticed in all of our patients.

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Figure 3: Pre and post-operative result of innovative transdomal holding suture technique, A- frontal, B-base, C&D profile pre-operative views and E, F, G and H one year post-operative views.

DISCUSSION:

Tip plasty represents one of the most difficult steps of rhinoplasty. The modern application of using suture in tip plasty is not based only on fixation partially excised part of alar cartilage, but also to reposition and reshape the different components of nasal tip. (9, 10, 11).

Although there are many problems that could be associated with using of classical transdomal suture, one of these problems is excessive narrowing of nasal dome which lead to pinched appearance of nasal tip, this might result from excessive tension when the transdomal suture is applied. Another problem with transdomal suture is unintentionally inverted lateral crus which lead to medially turned of alar rim. Dosanjh et al.¹² used a description of a hemi-transdomal suture depending on narrowing just posterior end of cartilage for gaining eversion of cephalic end and decrease incidence of pinching tip. Both Guyuron and Behmand had suggested to place the transdomal suture all the more cephalically so as to avoid such problems. Toriumi warned that transdomal suture can dislodge the caudal margin of lateral crus beneath the cephalic margin which lead to pinched tip. The perfect transdomal suture is act to evert the caudal segment of the lateral crus with straight caudal edge that need no rim graft to correct it.⁽¹³⁾ Innovative technique of transdomal holding suture had being presented. After assurance of cephalic defining point, handle the arch in a way that the

two legs' forceps structure a correct edge to the cephalic point, so press in sagittal plane so the distance between cephalic and caudal edges are decreased, that the dome turned upward-superiorly toward the septum, thus increase the cephalic rotation of the lateral crus which give a nice tip projection together with avoidance of external nasal valve collapse and increase columellar-lobular angle. Being familiar with applying of transdomal suture in this a manner helps to put it in a correct-effective position for gaining more than one task in single suture and lead to avoid using of cartilage graft as this suture lead to eversion of the caudal crus together with straight caudal edge with no need for cartilage graft.⁽¹⁴⁾

We practice extreme caution not to tie tightly "which can lead to pinching of nasal tip" nor tie it loosely "which lead to no correction of the nasal tip". Also, we practiced extreme caution to make both bite of horizontal mattress suture of transdomal stitch to be equal bites of the medial and lateral crus, as bigger bite which taken of lateral crus in comparison with medial crus lead to increase rotation and projection of nasal tip "lateral crus steal".⁽¹⁵⁾

This innovative transdomal holding suture was introduced by Seneldin and Durna,⁽¹⁶⁾ where they used it in 510 males and 612 females whom subjected to aesthetic septorhinoplasty between 2003-2015. Their results had showed to be good

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and satisfactory both in function and form with no alar rim depression occur or external nasal valve stenosis. Our technique is straightforward and predictable method of transdomal suture with good postoperative result and easy to be done with hand of experienced surgeon with short period of operative time about one and a half hour in comparison to average of 2 to 3 hours with using of grafts.

CONCLUSION AND RECOMMENDATION:

Dome stabilizing by using this innovative method seem to be effective way for producing narrowing of tip, dome symmetry, enhancing tip rotation and projection; since the procedure provided adequate eversion of caudal crus, no cartilage graft was used which reduce both the complexity and time of the procedure. We recommend farther study with large numbers of patients and long follow up period.

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