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Improved access in endonasal rhinoplasty: The cross cartilaginous approach[☆]



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KEYWORDS

Rhinoplasty;
Closed rhinoplasty;
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approach;
Outcome

Summary *Background:* The popularity of open rhinoplasty has increased such that it is the first choice of approach for many surgeons undertaking primary rhinoplasty. Despite the benefits of this approach, the drawbacks are often not emphasized. We present a review, with quantitative assessment of 24 rhinoplasty patients using the cross-cartilaginous incision. This new approach optimizes access without an external scar and ligament disruption that ensues after the open approach.

Methods: 24 consecutive patients underwent primary rhinoplasty from March 2009 to April 2011 using the cross-cartilaginous approach. Preoperative measurements of defined anatomical sites of the nose were taken. Independent assessments of the postoperative results were undertaken by a surgical resident and a senior nurse using preoperative and postoperative photographs using the new Independent Rhinoplasty Outcome Score (IROS). Evaluation of patient satisfaction and postoperative patient concerns were carried out.

Results: The range of preoperative measurements (average) were: radix 12–19 mm (15.0), keystone 20–34 mm (24.5), alar base 14–20 mm (17.0), nose length 48–58 mm (50.2), tip width 11–25 mm (15.9), and tip projection 21–37 mm (29.6). Three months after the operation, the patient satisfaction scores were rated 67% good to excellent, 25% were acceptable, and 8% were dissatisfied. After 3 months, 17% of patients reported swelling, 0% bruising, 8% irregularities, 8% asymmetry, and 4% airway issues. Independent assessment of the photographs showed that overall result was: 31% good, 56% average, and 13% had no improvement.

Conclusion: Preoperative anatomical measurement allows reliable assessment of nasal characteristics and comparison with postoperative outcomes. Our simple grading system for outcome assessment in rhinoplasty allows the assessment to be reliable and reproducible (IROS). The cross-cartilaginous approach is suitable for a majority of primary rhinoplasty

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patients, providing good access and visibility, although, open rhinoplasty is required for selected complex revision cases.

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, IV.

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The pervasive nature of the open approach in rhinoplasty has led surgeons to apply this as the default option for undertaking routine surgery of the nose. A survey by Adamson et al. (2005) to determine current approaches carried out by rhinoplasty surgeons found that >50% of respondents used the open approach >50% of the time.¹ This increase in open-approach rhinoplasty has also been reported by Constantian.² Although it has clear advantages in many situations,^{3,4} the drawbacks including diminished tip projection⁵ should also be brought into consideration. The closed rhinoplasty approach is a valuable technique that has unfortunately been gradually forgotten.^{6,7} In experienced hands, both the open approach and the endonasal approach can achieve good results.^{6,7} Current endonasal techniques however have a reputation of providing inadequate exposure and are perceived in some quarters as creating difficulty when applying grafts or precise internal suturing.⁶ This misconception is clearly dependent on training and experience.⁶ We report the evolution of a new endonasal approach to try and redress the balance toward the closed approach for rhinoplasty. We report a series of 24 consecutive primary rhinoplasty patients who were assessed in this retrospective study to investigate the use of a new "cross-cartilaginous" incision during endonasal rhinoplasty.

Patients and methods

Over a period of a year, the surgeon performed a retrospective study of notes. The study included 24 consecutive patients who underwent primary rhinoplasty from March 2010 to April 2011 using the cross-cartilaginous approach. No revision surgery or other more complex rhinoplasties were included in this study in order to isolate the access required for the majority of rhinoplasty cases.

Surveys

Accurate assessments were made by undertaking preoperative measurements of the patients' nose at the radix, keystone area, tip, and alar base in order to quantify the size of their nose in a scientific manner. Measurements were also made of the length of the nose from the radix to the tip as well as projection measured from the alar groove to the tip.

Postoperative assessments were made at 2 weeks and 3 months approximately depending on patient attendance. The factors noted were swelling, bruising, irregularities, asymmetry, and airway issues. Patient satisfaction was also noted at these two time intervals after the surgery by using a scale that rated the result as excellent, good, acceptable,

or dissatisfied as felt by the patient. This is subjective and relates to patients' individual expectations, but is clearly important in documenting their experiences. Independent assessments were made by a surgical resident and a nurse at the public hospital using photographs of the patients preoperatively and postoperatively. The assessment was carried out based on a proforma shown using the Independent Rhinoplasty Outcome Score (IROS) (Figure 1).

Surgery

Patients underwent rhinoplasty under general anesthesia with a hypotensive approach. In the operating room, preoperative markings were made on the face to allow constant assessment of the position and shape of the nose. These standardized markings allowed judgments to be made regarding changes to the nose in real time rather than making estimates of the changes, which was the practice hitherto. The markings included the midline, mid-pupil lines on both sides, and the alar base line. A ruler was used to measure projection or de-projection of the dorsal hump from the nasojugal fold as well as the projection of the tip taken from the alar groove. Other measurements taken at the end of the procedure included the nasocolumellar angle and the degree of columellar shown in millimeters.

The cross-cartilaginous incision was planned to traverse across the trans-cartilaginous and intercartilaginous lines (Figure 2). The term cross-cartilaginous incision does not imply penetrating full thickness through the lower lateral cartilage as is the practice in a standard intercartilaginous

Independent Rhinoplasty Outcome Score (IROS)	
Score: 0 to 4 (0=poor outcome, 1=no improvement, 2=moderate outcome, 3=good outcome, 4=excellent outcome)	
Patient number	
Symmetry	
Dorsal length	
Dorsal width	
Dorsal height	
Tip width	
Tip projection	
Alar width	
Alar shape	
Overall result	

Figure 1 Independent Rhinoplasty Outcome Score (IROS).

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