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# External Rhinoplasty for the Arabian Nose: A Columellar Scar Analysis

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**Abstract.** This study aimed to evaluate columellar scar problems after external rhinoplasty in the Arabian population, and to analyze the technical factors that help prevent such problems and maximize the scar cosmesis. The investigation was conducted in university and private practice settings of the author in Alexandria, Egypt. A total of 600 Arab patients who underwent external rhinoplasty were included in the study. All the patients underwent surgery using the external rhinoplasty approach, in which bilateral alar marginal incisions were connected by an inverted V-shaped transcolumellar incision. At completion of the procedure, a two-layer closure of the columellar incision was performed. At a minimum of 1 year postoperatively, the columellar scar was evaluated subjectively by means of a patient questionnaire, and objectively by clinical examination and comparison of the close-up pre- and postoperative basal view photographs. Objectively, anything less than a barely visible, leveled, thin, linear scar was considered unsatisfactory. Subjectively, 95.5% of the patients rated the scar as unnoticeable, 3% as noticeable but acceptable, and 1.5% as unacceptable. Objectively, the scar was unsatisfactory in 7% of the cases. This was because of scar widening with or without depression (5%), hyperpigmentation (1.5%), and columellar rim notching (0.5%). The use of a deep 6/0 polydioxanon (PDS) suture significantly decreased the incidence of scar widening ($p < 0.005$).The columellar incision can be used safely in the Arab population regardless of their thick, dark, and oily skin. Technical factors that contributed to the favorable outcome of the columellar scar included proper planning of location and design of the incision used, precise execution, meticulous multilayered closure, and good postoperative care.

**Key words:** Rhinoplasty—External incisions—Columella

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Historically, many external skin incisions in rhinoplasty have been described: at the alar-facial groove for alar base narrowing, at the nasofacial groove for transcutaneous osteotomies, and at the glabella for lowering the nasofrontal angle [20,24,26]. In the early 1920s, the columella appealed to surgeons as presenting the best avenue of approach to the nose because its strategic location can provide direct access to any part of the inner nose.

In 1920, Gillies [15] described an elephant trunk incision for degloving the nasal tip, with the columellar incision based inferiorly. In 1934, Rethi [21] used a high columellar incision to expose the nasal tip. Sercer, [22] in 1958, extended the approach to include the nasal pyramid, in a procedure termed "nasal decortication". Later, Goodman [16] described his external approach to rhinoplasty using the butterfly incision, in which two marginal incisions were connected by a transverse columellar incision placed at the midcolumellar point. This columellar incision then was modified by many authors [7,17,19], mainly to allow for better approximation and camouflage of the incision.

Although the external approach provides a wide undistorted exposure to the bony cartilaginous framework of the nose, allowing for accurate evaluation and precise surgical control over the corrective maneuvers used yet it has been widely criticized because of its residual columellar scar [4,5,18,23]. This resentment was more manifest in the Arab world, where the technique has been totally abandoned for decades, mainly because of fear about the unpredictable healing of the columellar incision. This fear was based on a general consensus that Arab patients, who typically have dark, thick, oily skin, are more prone to healing complications than the Caucasian patients. Accordingly, most rhinoplastic surgeons in the Arab world tabooed any mention or use of such a small columellar incision, regardless of its potential benefits.

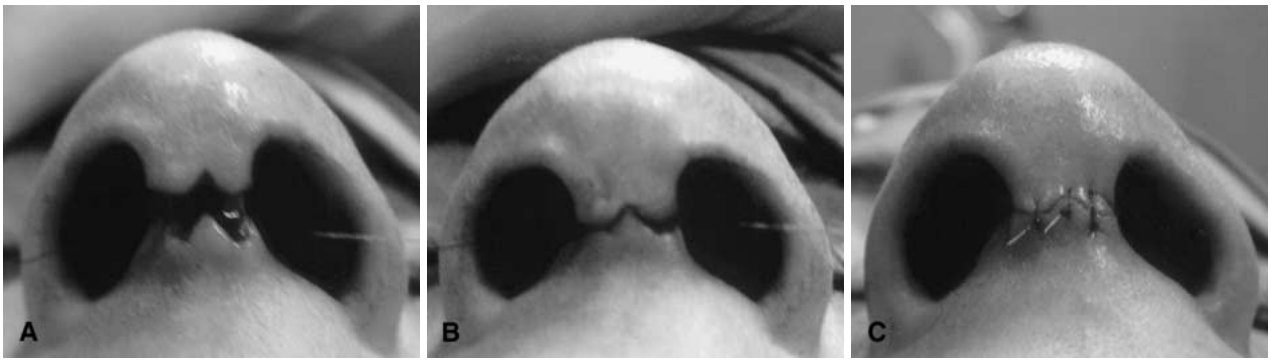


**Fig. 1.** Closure of the columellar incision in two layers. (**A**) the deep 6/0 *please spell* PDS subcutaneous suture. (**B**) tightening of the deep stitch. (**C**) approximation of skin edges by interrupted 6/0 Prolene sutures.

## Patients and Methods

A retrospective study investigated 600 Arab patients (male: female ratio, 1:2; mean age, 24.5 years range, 15.5–52 years) who underwent surgery by the author using the external rhinoplasty approach. Of these 600 patients, 85% were Egyptians and 15% were from other Arab countries including Saudi Arabia, Libya, United Arab Emirates, Lebanon, Jordan, Iraq, Kuwait, and Mauritania.

At a minimum of 1 year postoperatively, the outcome of the columellar scar was evaluated both subjectively using a patient questionnaire and objectively via clinical examination and comparison of the close-up pre- and postoperative basal view photographs. Objectively, anything less than a barely visible, leveled, thin, linear scar was considered unsatisfactory [2].

### *Surgical Technique*

A fine marking pen is used to outline the columellar incision at the junction of the anterior two thirds and the posterior one third of the columella. The transverse incision is broken by an inverted V in its central part. The marginal incisions are performed first at the caudal edge of the lateral crura using fine tenotomy scissors, then proceed toward the dome, with the assistant retracting the lower lateral cartilage using a single hook placed in the adherent underlying vestibular skin. After the dome is reached, the incision is carried down the columella along the caudal border of the medial crus until it reaches the level of the previously marked columellar incision. A Joseph-type scissors then is introduced through the right columellar extension of the marginal incision and made to emerge from the left side, thus developing a pocket between the medial crura and the skin at the site of the planned columellar incision.

With the Joseph scissors in place stretching the columellar skin and protecting the medial crura, a #15 blade is used to incise along the previously marked columellar incision. Care should be taken to keep the belly of the blade at a right angle with the columellar skin at all times to avoid beveling of the columellar incision. A fine bovie needle is used to coagulate the columellar vessels on each side of the central V-shaped flap.

At the end of the procedure, the columellar incision is closed in two layers. A deep 6/0 PDS transverse mattress suture (Fig. 1A and B) helps to alleviate any tension off the skin edges, which then are approximated using a few interrupted 6/0 Prolene sutures (Fig. 1C). The part of the marginal incision on the side of the columella is closed using interrupted 6/0 chromic catgut sutures. The Prolene skin sutures are removed on postoperative day 5.

## Results

In the subjective evaluation of the columellar scar 573 patients (95.5%) rated the scar as unnoticeable, and 18 patients (3%) as noticeable but acceptable. Nine patients (1.5%), however, found the scar unacceptable and wished to have it revised. In the objective assessment, 93% showed a thin, linear, leveled, barely visible scar that was considered satisfactory (Figs. 2 and 3). In the remaining 7%, the scar was considered unsatisfactory. This was mainly attributable to variable degrees of scar widening with or without depression (5%) (Fig. 4), scar hyperpigmentation (1.5%) (Fig. 5), and notching of the columellar rim (0.5%) (Fig. 6).

For the first 150 cases, in which a single layered closure of the columellar incision was performed, the incidence of scar widening was 9.3%. This incidence was lowered to only 3.6%, in the next 450 cases by adding a deep 6/0 PDS subcutaneous suture. This decrease in incidence was found to be statistically significant ($p < 0.005$).

The columellar incision healed favorably with no major complications such as wound infection, dehiscence, or skin necrosis. No cases of keloid formation were encountered, not even in 15 high-risk cases

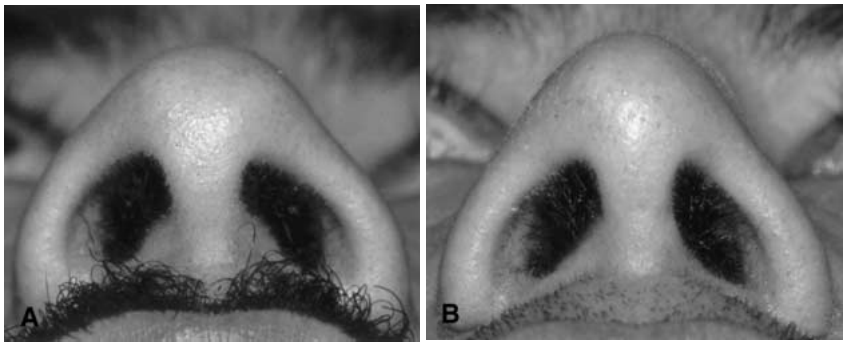


**Fig. 2.** Male patient (**A**) before and (**B**) 1 year after external rhinoplasty.

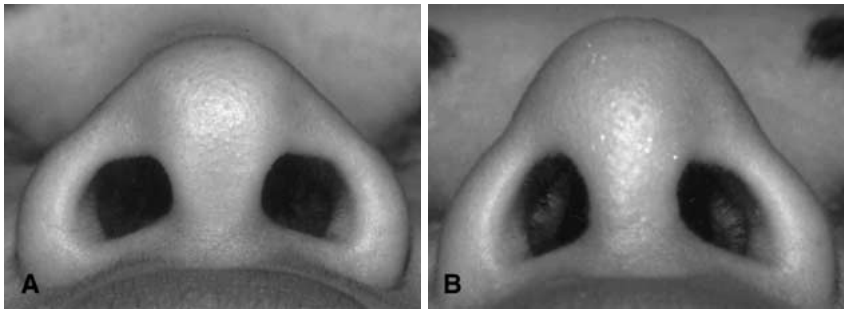


**Fig. 3.** Female patient (**A**) before and (**B**) 2 years after external rhinoplast

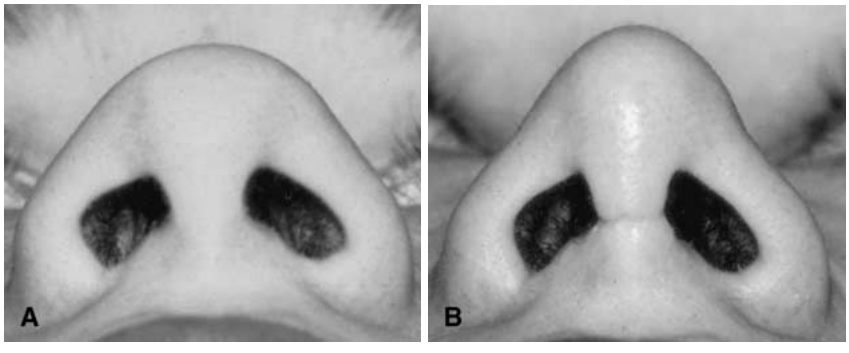


**Fig. 4.** A wide depressed scar. (**A**) preoperatively. (**B**) 1 year postoperatively.

involving a history of keloids elsewhere. However, in 40 cases, local steroid injections were used in the columellar segment anterior to the incision line to correct any excessive and/or prolonged edema of that area.

## Discussion

The numerous advantages of the external approach have been well documented in the literature [1,3,6,8,10–13,16,19,25,27]. However, the most common disadvantage claimed by the opponents of such a technique is the residual columellar scar [4,5,18,23]. The fear of columellar scar complications was more manifest among non-Caucasian populations. In the Arab world, the use of the external approach has been abandoned for decades basically because of fear about the unpredictable healing of its columellar incision: Recently, Bafaqueeh and Al-Qattan [4] reported a 22% rate for unsatisfactory columellar scars among 50 Saudi Arabian patients. This rate is nearly 10 times higher than that reported for Caucasians [2].

The current study evaluated the columellar scar from 600 external rhinoplasties performed on Arab patients, at a minimum of 1 year postoperatively. Subjectively, only 1.5% found the scar unacceptable, whereas objectively, 7% showed some degree of scar widening, notching, or hyperpigmentation. No major wound healing complications were encountered such as wound infection, columellar skin necrosis, or keloid formation. Interestingly, 15 patients with a history of keloids elsewhere (around the ears, chest, and back) underwent external rhinoplasty and were followed up for an average of 3.5 years (range 2–7 years) with no evidence of keloid formation on their colu-


**Fig. 5.** A hyperpigmented scar. (**A**) preoperatively. (**B**) 3 years postoperatively.

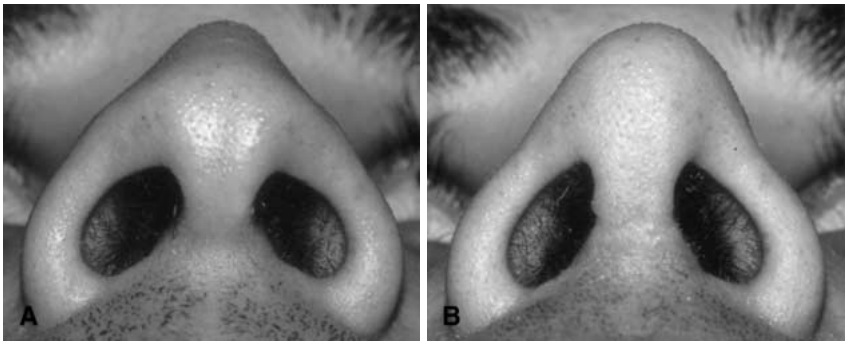


**Fig. 6.** (**A**) preoperative view. (**B**) 1 year postoperatively showing notching of the right columellar rim.

mellar scar. This may suggest that the columella is not a site of high keloid activity, as is the case with the periauricular region, chest, and back. Columellar scar widening, which occurred in 5% of our cases, was significantly reduced by placing a deep 6/0 PDS subcutaneous mattress suture. This helped to decrease the tension on the skin edges and keep them in close apposition long after removal of the skin sutures. Use of the deep subcutaneous stitch also eliminated the need for tight skin sutures, allowed early removal of skin sutures, and helped evert the edges of the columellar incision, thus decreasing the risk of depressed colmellar scars.

In cases that showed excessive and/or prolonged edema anterior to the columellar scar, injection of a local steroid (triamcinolone) helped to flatten and even out that columellar segment, thus resulting in a more leveled columellar scar [10]. In cases with weak buckled medial crura or the thick heavy skin of a nasal lobule, the medial crura were splinted to a strong columellar strut [9,12,14]. Besides increasing support to the nasal tip, this provided a more stable foundation for the healing columellar scar, thus decreasing the possibility of depressed scars or notching of the columellar rim.

Hyperpigmentation of facial scars, a common occurrence among our patient population, occurred in only 1.5% of the columellar scars. This may be partly attributable to the hidden location of the incision, and to the fact that all high-risk patients were instructed to use sunscreen and bleaching creams on their columellar scar during the early postoperative period.

The results of the current study suggests that the columellar incision can be used safely in the Arab population, and that the resulting columellar scar is much more dependent on the surgical technique than on the type of patient. Important technical factors that contribute to a favorable outcome for the columellar incision include proper planning of location and design for the incision used, precise execution of the incision using clean cuts perpendicular to the skin surface, meticulous multilayered closure, and good postoperative care.

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