Interdomal Fat Pad

An Important Anatomical Structure in Rhinoplasty

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Objective: To describe the interdomal fat pad, an important anatomical structure that, to our knowledge, has not been reported in the rhinoplasty literature.

Design: Anatomical observations were made during a consecutive series of external rhinoplasties, and the existence of the interdomal fat pad was documented in patients with noses of varying nasal skin thicknesses.

Setting: Private facial plastic surgery practice.

Patients: One hundred consecutive white patients undergoing external rhinoplasty were analyzed. Thirty-seven patients were undergoing secondary rhinoplasty and were excluded. Sixty-three patients undergoing primary rhinoplasty were enrolled into the study.

Intervention: None.

Main Outcome Measures: The nasal skin type of each patient was subjectively determined preoperatively to be thin, average, or thick. The presence or absence of a distinct fat pad between the domes of the lower lateral cartilages was observed and recorded in each group of patients.

Results: Among the 63 patients studied, 22 had thick skin; 31, average skin; and 10, thin skin. Well-defined interdomal fat pads were noted in 12 patients with thick skin, 13 patients with average skin, and 2 patients with thin skin.

Conclusions: There is a distinct anatomical structure that we refer to as the interdomal fat pad that exists in noses of all skin types. The awareness of this structure should encourage a careful and direct examination of the undersurface of nasal tip skin. An unrecognized, extensive fat pad may interfere with tip narrowing and refinement. It may be the cause of persistent postrhinoplasty supratip fullness and excessive tip width.

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The variation of skin thickness along the nasal dorsum is well-known to rhinoplasty surgeons. In particular, at the lower third of the nose, the thickest skin may be found at the tip and supratip region. This nasal skin thickness has often been attributed to the increased subcutaneous tissue and glandular quality of this area. When the soft tissue of the tip and supratip is not addressed during rhinoplasty, fullness at this area can cause persistent widening of the tip and fullness of the supratip. Indeed, optimal profile contouring requires attention to the undersurface of the tip and supratip skin. Surgical maneuvers to address this area include skin defatting, scoring of the dermis, lowering of the dorsal septum, corticosteroid injection, and aggressive taping during the immediate postoperative period. Despite these methods, supratip fullness and excessive tip width can still occur. This persistent fullness is often attributed to elements such as poor skin draping, suboptimal skin contractility, excessive scarring, edema, or exuberant subcutaneous fat.

This study describes a distinct anatomical structure, which we refer to as the interdomal fat pad. To our knowledge, it has not been previously described. It introduces an additional element to supratip fullness that has not been discussed in the rhinoplasty literature. External rhinoplasty permits an open examination of the nasal tip. Compared with the endonasal approach, external rhinoplasty allows an unparalleled visualization of the undersurface of the nasal skin. Our experience with external rhinoplasty demonstrated a discrete fat pad between the 2 domes, which extends to the supratip area. This interdomal fat pad exists in noses of all skin thicknesses and is distinct from the subcutaneous fat in the area. This fat pad oc-
cupies the interdomal space. It starts at the anterior superior surfaces of the medial crura and ends at a variable distance in the supratip area above the intermediate crura, as shown in Figure 1, left and right.

To confirm our impression of the presence of this anatomical structure, we recorded its presence during tip dissection in external rhinoplasties. We also attempted to analyze a potential association between nasal skin thickness and the presence of this distinct fat pad.

RESULTS

There were 22 patients with thick nasal skin, 31 with average skin, and 10 with thin skin. A discrete fat pad occupying the interdomal space was noted in 13 of the patients with average skin, in 12 with thick skin, and in 2 with thin skin. This anatomical discrete fat pad was observed in skin of all thicknesses.

There are variations in the findings of the undersurface of the nasal tips. The following observations were typical findings during this study. In noses in which the interdomal fat pad was absent, the 2 domes were more tightly approximated together with minimal divergence of the intermediate crura and no significant interdomal space, as seen in Figure 2, left and right. The soft tissue covering the tip and the supratip areas was fairly uniform.

In noses in which the interdomal fat pad was identified, there was significant divergence of the intermediate crura with a well-defined fat pad completely occupying the interdomal space (Figure 1, left). This fat pad can also extend into the supratip area, as shown in Figure 3, left. This interdomal fat pad is more obvious as it is dissected from the undersurface of the nasal tip and supratip areas, as shown in Figure 4, left and right.

In some individuals, this interdomal fat pad can be prominent. It may extend from the nasal tip area to the supratip area and, if not recognized, may be a significant contributing factor in persistent tip and supratip fullness.

In general, there was a relation between the configuration of the medial intermediate crura and the presence or absence of this interdomal fat pad. The presence of a fat pad was associated with a greater separation of the intermediate crura and increased interdomal distance, whereas when there was no fat pad, the crura and the domes were closer together.

COMMENT

The soft tissue covering of the nose has been studied extensively. Variation of skin thickness along the length of the nose exists. While skin is relatively thin at the rhinion, the supratip skin is thicker and less mobile. The supratip area also demonstrates increased subcutaneous adipose deposition and sebaceous glands. The soft tissue components under the dermis include a superficial fatty panniculus, a fibromuscular layer (superficial muscular-aponeurotic system), a deep fatty layer, a longitudinal fibrous sheet between the upper and lower lateral cartilages, and an interdomal aponeurosis. Unlike the superficial fatty layer, the deep fat layer lacks fibrous septate and thus allows surgical dissection in an atraumatic fashion. Although the presence of fibroadipose tissue under the supratip is well-known, a discrete fat pad be-

PATIENTS AND METHODS

One hundred consecutive patients undergoing external rhinoplasty were analyzed. Thirty-seven patients underwent revision rhinoplasty. Although we occasionally observed a discrete fat pad during revision rhinoplasty, postoperative changes often make distinction difficult between fat and scar tissue. These patients were, therefore, excluded from this study. Sixty-three patients undergoing primary rhinoplasty were enrolled into the study.

Preoperatively, the skin type was determined subjectively to be thick, average, or thin by one of us (A.I.G.). All patients were white. The study group was not divided by sex or age. External rhinoplasty was performed on all patients in this study. Consistent anatomical dissection techniques were used, and all procedures were performed by one of us (A.I.G.).
tween the domes, to our knowledge, has not been de-
scribed before.

In this study, about half of the patients with noses
that had thick or average skin had an interdomal fat pad.
The finding of the fat pad in patients with noses that had
thin skin was surprising. Although the sample size of this
latter group was small, the documented existence of the
interdomal fat pad in patients with thin skin was a sig-
significant finding. Because this study was mainly a series of anatomical observations, no rigid statistical conclusion can be made. However, our surgical dissection did confirm the existence of a discrete fat pad in noses of various skin thicknesses.

Also noted but not statistically recorded is the presence of the fat pad in association with divergence of the medial crura as they approach the dome. It seems that the greater the divergence, the larger the fat pad. We would speculate that the fat pad develops to fill the interdomal space. Whether the interdomal fat pad causes the domal divergence is not known. When unrecognized in the broad tip, this fat pad may limit tip refinement. While the interdomal fat pad is a real anatomical structure, it is difficult to account for its effect in the interdomal distance preoperatively.

Postoperative supratip fullness is a common, bothersome problem. Inadequate lowering of the supratip septum remains the most common cause of this deformity. Other important causes include overresection of alar cartilage and bony hump, weak medial crura with thrusting lateral crura, excessive supratip dead space, and ultimately skin thickness.5-7

We believe that an important additional cause of supratip fullness and poor tip definition is the presence of an interdomal fat pad, which has significant surgical implications if unrecognized. This interdomal fat pad may be a common source of postrhinoplasty nasal tip fullness since this structure can affect the contour of the nasal tip in all skin types. An extensive fat pad may interfere with dome medialization during rhinoplasty, preventing adequate tip narrowing. The interdomal fat pad fills the angle of divergence, which is an index of tip definition and a measure of the relative separation between the 2 domes.

Furthermore, an extensive interdomal fat pad may undermine one’s attempts at tip definition. Surgical techniques to narrow the domes may displace a fat padcranially, causing supratip fullness. Indeed, when combined with excessive resection of tip cartilages and the dorsum, an extensive fat pad can certainly exaggerate postoperative supratip fullness.

In this study, this fat pad was excised in all patients to achieve the refined nasal tip definition. Conservative removal of this fat pad, in our experience, did not damage the dermal-subdermal plexus or cause any skin changes in the nasal tip area. This fat pad is relatively small, and we have not had any experience of using it elsewhere in the nose as an augmentation material.

Intraoperative examination of the supratip is, therefore, essential. The interdomal fat pad can be difficult to be appreciated without full exposure of the nasal tip structures. The presence of an unseen fat pad can adversely affect the outcome of nasal tip refinement. In this regard, direct surgical exposure via external rhinoplasty is helpful in detecting and addressing this important anatomical structure. When an interdomal fat pad is found, supratip contouring requires excision or debulking of this structure to facilitate tip refinement. To achieve optimal tip definition, in addition to fat pad removal, standard lobule sculpturing techniques are required.5,7

Persistent postoperative supratip fullness is often treated with regional corticosteroid injection directly into the supratip. This does not always produce correction even when the supratip fullness seems to be of soft tissue origin. Since corticosteroids are known to induce fat atrophy, we speculate that those patients responding to corticosteroid injection may in fact be experiencing corticosteroid-induced atrophy of an undetected interdomal fat pad (N. Pastorek, oral communication, September 1995).

**CONCLUSIONS**

Interdomal fat pads appear to exist in noses of all nasal skin thicknesses. For noses with thick or average skin, the frequent existence of this structure should encourage a careful and direct examination of the supratip undersurface. Although rare in noses with thin skin, this fat pad can be present and may account for unexpected supratip fullness. Indeed, surgeons should recognize the interdomal fat pad as an important anatomical structure and become aware of its potential contribution toward postoperative supratip fullness and ill-defined tip.

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**REFERENCES**