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Case Report

Intermediate osteotomy: the vital pivot, in the wide nose

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ABSTRACT

Deviations and deformities of the bony nasal skeleton are amenable to osteotomies in the longitudinal, transverse and the oblique planes. These interventions undertaken either intranasal or percutaneous, translocate the osteo-cartilaginous nasal segments as a single entity. The intermediate osteotomy is usually resorted to, in three situations, namely; a very broad nose with a good nasal height, a deviated nose with a lateral wall longer than the opposite and where required to straighten an excessively convex nasal bone. A lady with quite a broad nose was subjected to bilateral osteotomies of the 'intermediate' type, to achieve aesthetic social acceptability.

Keywords: Wide/broad nose, Osteotomy, Intermediate, Rhinoplasty

INTRODUCTION

Broad nose especially in a young lady necessitates a timely intervention to achieve a self-acceptable aesthetic appearance, and self-confidence and ultimately a social acceptance. Narrowing the osteo-cartilaginous vault and shifting the nasal configuration from an inverted 'u' to a 'v', can be attained by breaking and remoulding the lateral bony walls of the nose. The procedure involves controlled meticulous osteotomies which were introduced by Joseph Jacques, Father of modern aesthetic surgery. The saw or the osteotome are utilised to undertake these medial, lateral, intermediate, cross-root or the transverse osteotomies.

Osteotomies correct the alignment of the bony nasal vault, cover the open roof consequent to a reduction of the dorsal osteo-catilaginous hump and moreover bring the lateral nasal walls closer to achieve ultimately a narrow dorsum.[1] We discussed an interesting patient of broad nose managed by intermediate osteotomies in addition to the lateral and the medial to achieve a chiselled profile.

CASE REPORT

A young 21 year old lady presented with a broad nose and a wide intercanthal distance (Figure 1). There was nasal obstruction on either side though her septum was in the centre. CT imaging showed bilateral inferior turbinate hypertrophy with antral polypi.

Lateral profile revealed loss of the hollow at the naso-frontal region but a smooth slope of the nose. Inferior profile too showed symmetrical appearance. She was taken up for bilateral endoscopic turbinoplasty and middle meatus antrostomy. The nasal dorsum was then taken for internal approach rhinoplasty after marking likely site of osteotomies on the skin (Figure 2). Under saline adrenaline infiltration and bilateral inter cartilaginous incision a subcutaneous envelope was raised. Infiltration was given

intranasally beneath the mucoperiosteaum of the nasal bones on either side.

A 2 mm osteotome was wedged beneath the nasal bone on either side of the septum and a para median osteotomy was completed on either side.

The upper end was directly slightly laterally to tentatively meet the lateral osteotomy cut. An incision was given in the naso facial groove and a percutaneous low to high osteotomy was completed.

This constituted the intermediate cut. Another osteotomy which was at a lower level was made, which proceeded in a low to low level and constituted the lateral osteotomy (Figure 3).

These double lateral osteotomies took care of the marked convexity of the nasal dorsum and we could attain a narrow nasal dorsum on table. (Figure 4).

Figure 1: Pre-op wide nose (lateral nasal wall more than 2.5 cm.

Figure 2: Intra-op markings in the wide nose.

Figure 3: Intra-op osteotomies undertaken, medial, intermediate, lateral and transverse.

Figure 4: Narrow nasal dorsum achieved on table.

Plaster of paris splint was applied to immobilize the site of osteotomies in the new position, comparison between pre and 2 week post-operative frontal photographs showed a satisfactory nasal dorsum so achieved by intermediate osteotomy (Figure 5).

Figure 5: Comparison between (a) pre-op; (b) post-op; and (c) narrow nasal dorsum so achieved by intermediate osteotomy.

DISCUSSION

Osteotomy of the nasal framework is initiated at the pyriform aperture at the upper junction of the upper lateral cartilages with the bony maxillonasal process inferioro-laterally and the nasal bones superiorly. The osteotomy maintaining a low and a straight trajectory throughout and begun from the inferior part of the pyriform aperture extending into the nasal process of the frontal bone is termed as the 'low to low' type. This was the earliest and pioneered by Joseph Jacques. The saw with a rasping movement, was utilized initially.[2-6] The improved aesthetics so achieved were often accompanied by a narrowed nasal valve due to a medialized head of inferior turbinate and the lateral nasal walls.[7] To avoid the consequent nasal obstruction a modified technique was suggested by Webster in 1970s.[5]

The Webster osteotomy had a curved trajectory and was initiated slightly at a higher point of the pyriform aperture. It proceeded in a high to low to high direction. The small triangle so preserved was aptly popularized as the 'triangle of Webster'. The latter thus maintained the cross-section of the nasal airway.

Mediatisation of the inferior turbinate head and the lateral walls was thereby avoided here.[7] Moreover, the lateral attachments of the alar suspensory ligaments were preserved and the soft tissue attachments were retained, further stabilizing the nasal airways.[2,3,6] The acceptable lateral osteotomy is one which is meticulous, reproducible, and safe, with near ideal aesthetic as well as functional outcome and moreover should result in minimal postoperative edema, ecchymosis, and an unstable nasal bone. Under digital palpation the lateral osteotomies are manoeuvred through the thick bone of the ascending process of the maxilla rather than the lateral aspect of the thin nasal bones.

Basic techniques for performing lateral osteotomies are the continuous and the perforating postage stamp method. The continuous internal lateral osteotomy is conventionally performed endonasally and creates a single fracture along the lateral portion of the ascending process of the maxilla and nasal bones.

Extreme degree of concavity or convexity of the nasal bones consequent to sustained extraneous nasal trauma are not amenable to the medial and lateral osteotomies. Thus the 'intermediate' osteotomies were introduced. Moreover they can even tackle the deviated nose when bone is wider than the opposite one.[3] Retaining an intact periosteum laterally and undertaken mostly by the continuous osteotomy mode this begins at the inferior most aspect of the nasal bones from the site that is likely to bisect the concavity or convexity. This osteotomy traverses in a straight line. Since the periosteum is intact the overlying soft tissue envelope and its ligamentous attachments too remain intact and thereby supplement the support.[2] Osteotomies are performed from the medial to lateral sides, so that a support is retained to counter the force of the instrument Figure 6-8 give a schematic view of the osteotomies, the lateral medial, intermediate and the transverse.

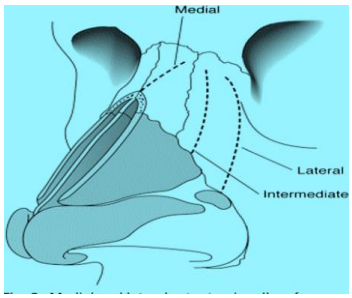

Figure 6: Osteotomies lateral view (schematic) medial, intermediate and the lateral.

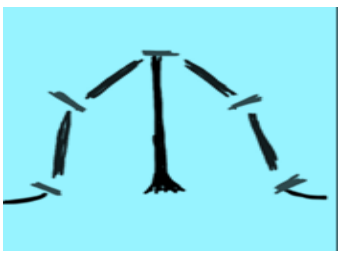

Figure 7: Osteotomies coronal view (schematic). medial, intermediate and the transverse.

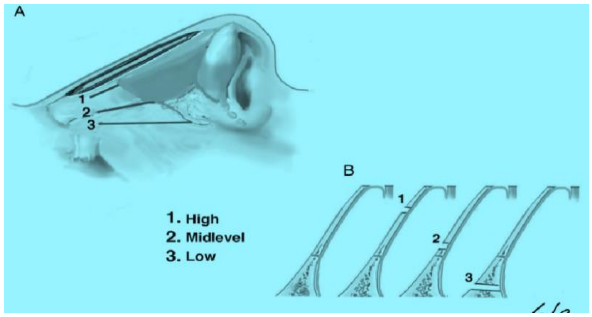

Figure 8: Osteotomies lateral and coronal view (schematic). High, midlevel and low.

Parkes et al introduced the concept of a perforating 'double lateral osteotomy', which was further improved upon Westerich and Lawson and then later modified using a perforating technique by Westreich and Lawson.[8,9] In this method bilateral medial and low to high lateral osteotomies with a unilateral double osteotomy on the elongated nasal bone side are carried out. Communition of the maxillary process markedly decreases the force required for nasal bone in- fracture and thereby avoids excess narrowing of the nasal skeleton. Double lateral osteotomy cuts can be administered proximally at any site on the ascending process of the maxilla; usually done so where there is a marked convex bone to lower the curvature of the nasal bones. Cadaveric analysis too suggests that the ideal position of the double lateral osteotomy for adequate narrowing is located approximately at the suture line between the maxilla and the nasal bone.[8]

Larrabee et al and Parkes et al summarised triple indications for the the intermediate osteotomy, namely narrowing the extremely wide nose with a good height (bilateral osteotomy), rectifying the deviated nose a sidewall longer than the other; and to straighten a markedly convex nasal bone.[8,10] In fact the intermediate osteotomy lies parallel to the lateral osteotomy at the mid- portion of the nasal sidewall with a variation in the exact site that depends on the subject's nasal characteristics. If the lateral nasal wall is convex or concave and/or lateral nasal wall measuring more than 2.5 cm, then there is a need for intermediate osteotomy.

The intercartilaginous incision in internal and the percutaneous one in the external approach, with a 3 mm osteotome are conventionally followed for the intermediate osteotomy, too. Pereira Nunes et al advocated 'intermediate osteotomies', to be utilized routinely 'in individuals with cosmetically unpleasant changes in eyebrow-tip line features, permitting the acquisition of a natural, aesthetically agreeable and harmonious dorsum contour, while preserving nasal function'.[11] The average thickness along the lateral osteotomy was measured to be 2.47 mm in males and 2.29 mm in females with statistically age-related decrease in bony thickness for male patients without a corresponding observation in females.[12]

Citardi et al computerized tomography study documented nasal bone thickness at lateral osteotomy level to be 2.39±0.68 (mean±SD) mm, and at intermediate osteotomy 1.18±0.30 mm.[13,14] On vis a vis the main indications for intermediate osteotomies, are to narrow an extremely wide nose that has a good nasal height (bilateral osteotomies), to correct a deviated nose with one sidewall much longer than the other, and to straighten a markedly convex nasal bone.[10,11,15,16]

In our patient a young lady with quite a broad nose and with a lateral nasal wall width of more than 2.5 cm, bilateral osteotomies of the 'intermediate', type were undertaken in addition to the median and the lateral to achieve a narrow nose.

CONCLUSION

Intermediate osteotomy in selected individuals makes it possible to remould the nasal skeleton; straighten and narrow it thus achieve acceptable cosmesis.

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