

## Case Report

# Severe iatrogenic nostril stenosis

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## ABSTRACT

Nostril stenosis (narrowing of the nasal inlet) is an uncommon deformity which results in aesthetic and breathing discomfort in patients. The literature review shows that trauma, infection, iatrogenic insults and congenital lesions are major causes of stenosis. Nowadays, rhinoplasty is one of most popular aesthetic surgeries which may have complications such as bleeding, swelling, bruising, asymmetry, obstruction of nasal airways. We present a 30-year-old female patient, who complained about breathing and aesthetic difficulties due to external nasal valve obstruction and nasal deformity. Past medical history showed that the patient had undergone three unsuccessful rhinoplasty surgeries with aesthetic goals.

## KEY WORDS

Disease; iatrogenic; rhinoplasty; stenosis

## INTRODUCTION

Nasal stenosis is a rare phenomenon that can occur secondary to a variety of etiologic factors. In classical classification, these factors are divided by their congenital or acquired basis. The causes of acquired nasal stenosis are mainly infections; trauma or iatrogenic while congenital causes are rare.<sup>[1]</sup>

Iatrogenic trauma includes injury from intubation, nasal examination traumas and traumas from the management of epistaxis, or various nasal surgeries.<sup>[1]</sup>

The treatment of stenosis can be challenging. Pre-operative analysis and meticulous surgical planning are necessary for success.

Stenosis of the nasal vestibule can be a vexing deformity for the facial reconstructive surgeon to successfully repair. Like other human body orifices (e.g., lacrimal ducts, urethra and ear canals), the damaged vestibule has a tendency to contract despite seemingly well-designed surgical manoeuvres to excise the offending cicatrix and create a new vestibular lining.<sup>[2]</sup> From a patho-physiologic standpoint, stenosis of the anterior nares can be caused by direct injury to the delicate lobule-ala-columella complex, loss of healthy vestibular lining or both.<sup>[3]</sup> We present a case of nasal stenosis caused by consecutive failed aesthetic surgeries.

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## CASE REPORT

A 27-year-old female patient was referred to a plastic surgeon, complaining about nasal obstruction and severe nasal deformity.

Past medical history showed three rhinoplasty operations when the patient was 18, 20 and 25-year-old. In the clinical examination, bilateral vestibular stenosis was obvious. There was a significant notch in right ala that made the reconstruction more complicated. There was no shortening of columella and its projection was sufficient [Figure 1].

In order to reconstruct the nostrils, composite grafts were harvested from each ear lobe bilaterally (size: 10 mm × 5 mm × 4 mm) and its central fat was removed partially. A 25 mm × 3 mm × 1 mm graft from ear concha was harvested with post auricular incision as an alar strut graft to reconstruct the right alar notching

[Figure 2]. After harvesting grafts, bilateral alar base incisions were done and adhesions released and the obstructing cicatrix was excised, then a tunnel was created under the remaining alar cartilage for insertion of 2.5 cm long alar strut cartilage graft in order to correct the right alar notching. Alar strut grafts were sandwiched through this tunnel and continued to piriform aperture in the alar base. Ear lobe composite grafts were sutured to alar base defects bilaterally.

It should be noticed that we did not use a columellar incision (the common approach) because of severe fibrosis and adhesion and weak blood supply in collumela due to previous operations [Diagram 1].

A prefabricated nostril retainer was applied to preserve the anatomy of reconstructed areas and prevent post-operative contraction. The retainer was used for 3 months. The follow-up visits showed no complication. Photographs was taken 6 months post operation with good nasal valve and no difficulty in breathing [Figure 3].

## DISCUSSION

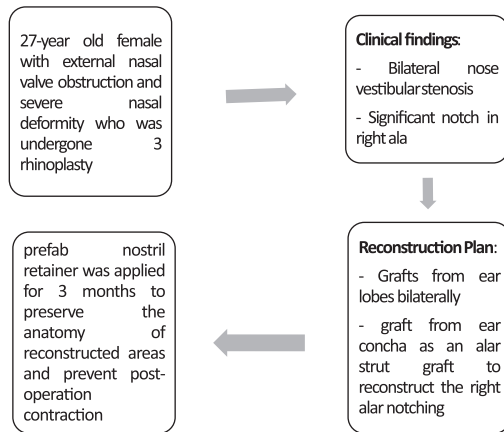
Different strategies have been described in the literature to manage vestibular stenosis. Partial stenosis with limited tissue loss can be reconstructed with vestibular Z- or W-plasties,<sup>[4]</sup> split and full thickness skin grafts,<sup>[5]</sup> a composite chondro cutaneous graft.<sup>[6]</sup> For example, Mavili and Akyürek reported a unilateral nostril stenosis that was repaired with the use of an upper lip flap.<sup>[7]</sup>



**Figure 1:** Patient's pre-operation photograph: (a) Basal view, (b) Frontal view, (c and d) Left and right oblique view, (e and f) Left and right lateral view



**Figure 2:** Schematic presentation of strut graft 25 × 3 mm (black dots on nose) harvested from ear concha with post-auricular incision. Earlobe composite graft (red triangle) was harvested from the ear. By an alar base incision in cheek-alar junction (red line on nose), the adhesions were released, then strut graft and ear lobe composite graft were transferred and fixed



**Diagram 1:** In this diagram the steps of diagnosis and management of a female with severe iatrogenic nostril stenosis due to multiple previous rhinoplasty has shown

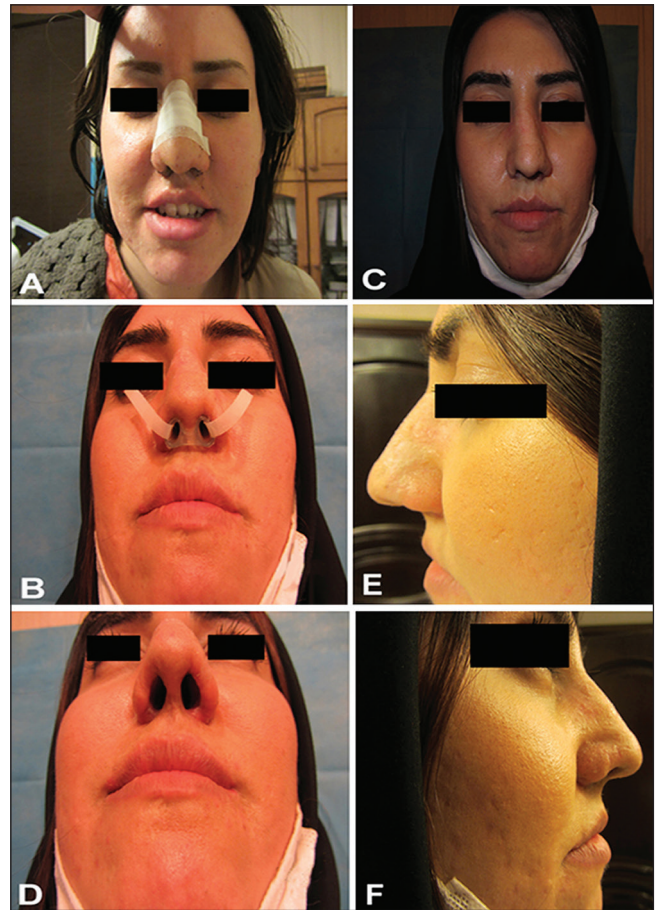
However, these interventions may not be effective, if a severe stenosis is present.

The common approach is excising the obstructing cicatrix; replace the damaged tissue with a new lining, and using a stent device postoperatively to prevent re-stenosis. Cartilage grafts have been recommended by several specialists to prevent re-stenosis. This method is useful for isolated stenosis within the vestibule owing to scar tissue, but they do not compensate the alar collapse. Copcu<sup>[8]</sup> reports using a gingiva buccal mucosal flap in addition to a cartilage graft to strengthen the ala. Blandini *et al.*<sup>[9]</sup> describe the theoretical use of cartilage grafts in conjunction with other techniques for relining the injured vestibule, but they did not use cartilage grafts in their series.

The simplest approach for this reconstruction is to excise the stenotic and replace the lining with a split-thickness skin graft. This approach ignores the need to restore intrinsic support to the collapsed ala.

The next reconstructive choice is intra-vestibular Z- or W-plasty. This process involves excision of scar tissue from within the nostril to create multiple flaps; the integration of these flaps makes an efficient cover. The use of acrylic stents for 5 months post-operatively is advocated after W-plasty to prevent re-stenosis. Naasan and Page,<sup>[10]</sup> suggest the double-cross plasty which involves making meticulous superficial and deep incisions in the damaged tissue in the shape of a cross, excising the scar tissue, then interdigitating the resulting flaps, leading to a W-plasty that encircles the nostril.

We recommended earlobe composite graft for severe nostril stenosis combined with an alar strut graft



**Figure 3:** Post-operation photography: (a) 1 week after surgery, (b) 1 month after surgery, (c) Frontal view 6 months after surgery, (d) Basal view 6 months after surgery, (e and f) Left and right lateral view 6 months after surgery

from ear concha for the stability of external valve. Nostril retainer is very important and patients must begin 1 week post-operation with smaller sizes and gradually change it to larger sizes for at least 3 months post operation. Local flap rearrangement is not useful in thick skin patients with severe nostril stenosis.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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