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The Nose is Asymmetric

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Abstract

Background: Since 1991, more than 2000 nasal surgeries have been performed by the author. During the early period of our practice, we realized the nasal and nasomaxillary structures are asymmetric in most patients. The asymmetry mostly affects all structures instead of an isolated part, except in trauma cases. Our surgical procedures have been planned according to marking the asymmetric structures for more than 20 years.

Methods: We examined the nose, turbinates, and maxillary structures of 100 rhinoplasty patients.

Results: The results were not surprising to us. Mostly, patients have shown complex asymmetries including all of the nasal and paranasal structures. The nasal bones, alar cartilages, nasal septum, turbinates, periturbinate bones, alar base position, nasal spine, and apertural bony structures were asymmetric at a rate of 67% to 82%. However, we did not anticipate to find asymmetric alar cartilages on the base and the tip.

Conclusions: Alar cartilage asymmetry may contribute to the decision of an open or closed approach to rhinoplasty. These results will also help plan nasal surgeries. For these reasons, our approach to aesthetic nasal surgery and nasal airway surgery is quite different from the classical approaches.

Introduction

It is very interesting that all of the drawings and illustrations in publications about the nasal anatomy show symmetric nasal anatomy. This is a very uninformed and blind approach to the normal nasal anatomy. Significant publications on nasal anatomy symmetry are lacking.

Since the author's ENT surgery residency, it has been known that usually the nasal septal deviation is shifted to the left side according to the published knowledge. After 23 years of experience with aesthetic nose and nasal airway surgery, the nasal anatomy has been determined as a complex asymmetric structure, including surrounding structures such as the turbinates and maxilla. Our nasal surgery procedures have been adapted to the asymmetric nasomaxillary and conchal anatomy for more than 20 years. Surprisingly, there is no published material on the asymmetry of the nose and related structures.

When we started to examine the nasal and paranasal structures, the asymmetry was more extended than previously supposed. The nasal bones, alar cartilages, nasal septum, turbinates, periturbinate bones, alar base position, nasal spine, and apertural bony structures are not symmetric in most cases.

After realizing the complex asymmetry of the nasal and paranasalstructures, we began marking the asymmetric anatomic structures before nasal surgeries. We also think many undesired nasal airway and aesthetic nasal surgery results come from these undetermined asymmetries before performing the surgeries.

The asymmetry of the nasomaxillary complex is compensatory and is related to nasal air flow from childhood because in patients who have no septal deviation, the remaining nasomaxillary complex is symmetric.

Materials and Methods

We have acquired knowledge about the asymmetry of nasal and paranasal structures clinically through more than 20 years' experience of more than 2000 patients. However, after this study, we have understood the asymmetry of the alar cartilages, apertural bones, and anterior extension of turbinate bones. One hundred candidates for rhinoplasty have been evaluated clinically and radiographically to determine the symmetry of the nasal and paranasal structures [Figure 1]. All the patients were candidate for primary rhinoplasty without trauma history or craniofacial deformity. The measurments were done on CT scans for evaluation of apertural bones, turbinates, nasal bones, septum, and nasal spine. CT scans were evaluated for the type of asymmetry by specialist radiologist. The nasal tip cartilages evaluated by clinical examination [Figure 2, 3, 4]. Patients were selected around our rhinoplasty candidates while 83 female and 17 male. Ages of patients were ranging from 17 to 46.

Results

1. **Nasal bones**
   At the maxillary junction, the right nasal bone is closer to the nasal septum when compared to the left nasal bone. The left nasal bone is shifted toward the left maxilla.

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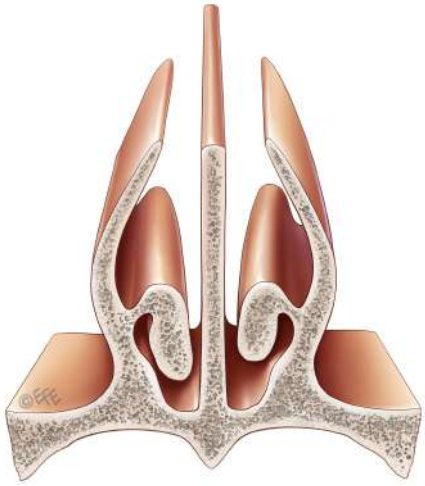
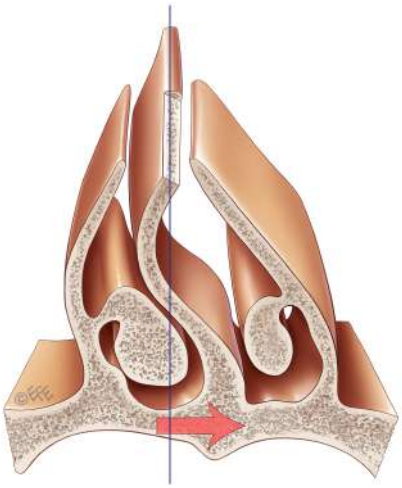
Figure 1: (1) Right alar base is positioned downward, right alar cartilage is shorter than on the left side. (2) Right nasal bone is positioned extending to the left side.



(2a)

(2b)

Fugure: 2 a, b The illustration of nasal anatomy believed to be true.



3(a)

3(b)

Figure: 3 a, b The nasal anatomy according to my findings.

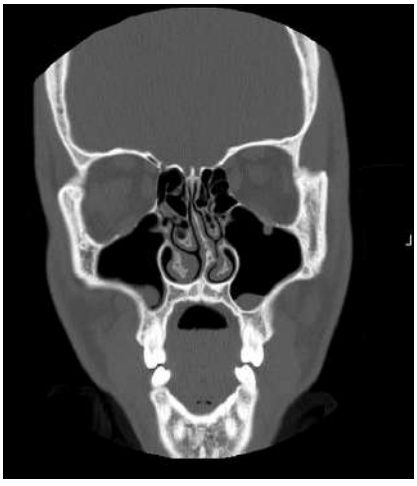


Figure 4: Most common nasal septum deviation and turbinates.

2. **Nasal septum.**
   The nasal septum is deviated to the left side starting from an ante-rior part, as well on the bony part moving to the left side of the midline of the palatal bone. The deviated septum has a kinking part on the right side at the bony-cartilaginous junction (high deviation). This kinked part obstructs the passage of the right ethmoid sinuses.
3. **Nasal spine**
   The nasal spine is located on the left side.
4. **Turbinates**
   The right turbinate is hypertrophic in most patients.
5. **Tip cartilages**
6. The right alar cartilage is lower than the left one at the bottom and the tip
7. **Conchal bone extension**
   The right conchal bone is shifted to the midline and extends anteriorly, obstructing the right nose.
8. **Apertural bones**
   The right apertural bone is shifted toward the midline. The left apertural bone is lying towards the left maxilla.

Table 1: summarizes the statistical analysis of the data.

Table 1. Statistical analysis		
Nasal bone shifting from midline	right 0 mm	left 78 mm
Septal deviation	right 7 mm	left 80 mm
Spine shifting from midline	right 4 mm	left 67 mm
Tip projection	right 2 mm	left 75 mm
Alar base depression	right 72 mm	left 3 mm
Conchal bone hypertrophy	right 76 mm	left 0 mm

Discussion

In the past, many studies have been published on the facial symmetry and relationship of the effecting factors [1, 2, 3, 4, 5]. Nasal asymmetries are challenging problems for aesthetic and functional nose surgeries.

The most common septum deviation is toward the left side. The reason for shifting to the left side is unknown and explanations such as the intrauterine position, sleeping position of the newborn, and other theories have been proposed. Moreover, there is a relationship of nasal airway problems with midfacial growth.

It has been reported that facial asymmetric growth is related to nasal septal deviation [6, 7, 8]. When all published material about the nasal anatomy and surgery is reviewed, the nasal anatomy is supposed to be symmetric. On the other hand, according to our personal experience over 20 years, the nasal anatomy and related structures are not symmetric. We also think all of the asymmetries of the nose and related structures are secondary to the septum deviation and nasal air flow forces [9]. In cases without nasal septum deviation, the nasal anatomy will be symmetric except in trauma cases. According to our experience and statistical analysis of 100 patients, in the presence of septal deviation to the left side, the left nasal bone lies to the left side, the right nasal bone shifts medial, the right turbinates are hypertrophic, and the nasal spine shifts to the left. In the presence of right septal deviation (which is rare) all of the asymmetries are going to be reversed.

These anatomic considerations should be helpful for nasal aesthetic surgery and nasal airway surgery [9]. With this knowledge, we are experiencing very high satisfaction with all nasal surgical procedures.As conclusion the nasal asymmetry is almost standard as mentioned above. The rhinoplasty approach (open or closed), nasal airway surgery, arranging the spine position and lateral osteotomies must be planned according to detailed clinical and radiologic examination with the knowledge of our findings. As an experienced surgeon on rhinoplasty, the nose is mostly asymmetric. The nasal asymmetry is very complex and a kind of developmental deformity with relationship of nasomaxillary structures.

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