

Septum Deviation and its Effect on Lateral Nasal Wall

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Abstract: ***Background:** We aimed to investigate the Paranasal sinus tomographies relation between septum deviation and lateral nasal wall retrospectively in this study. **Material and Methods:** Paranasal sinus images of 50 patients with lateral nasal wall and septum were examined. Clinically and radiologically, the septum was divided into three groups as anterior, posterior and anteroposterior. Radiological examination of the anatomical variations in the paranasal sinus and the deviation of the septum were investigated. **Results:** In our study, concha bullosa was found in 36%. In our study, 38% of Agger Nazi cells were found. In our study, Haller cell was found in 18% of the cases. In our study, Onodi cells were observed with a rate of 16%. In our study, septum deviation was divided into 3 as anterior, posterior and anteroposterior. In 27 (54%) of the cases, septum deviation was observed, 7 (14%) of them were seen in anterior, 8 (16%) were in posterior anterior and 12 (24%) in anteroposterior direction. **Conclusion:** There was no statistically significant association between septum deviation and anatomical variations.patients who are planned to be operated due to septum deviation should be examined by tomography preoperatively and lateral nasal wall / septum deviation / anatomical variations should be examined.*

Keywords: nasal septum deviation, lateral nasal wall

1. Introduction

Nasal obstruction is one of the most common complaints to ENT clinics. There are multiple pathologies that cause nasal obstruction.

Nasal septum deviation (NSD) is one of the common causes of nasal obstruction in Ear Nose Throat clinics (1). Symptomatic NSD is treated surgically. Patients are examined by computed tomography to evaluate the possible pathologies before surgery (2). Lateral nasal wall complex structure and important neighborhoods are available. During NSD surgery, significant complications may develop due to neighborhood relationships (3). Anatomical anomalies and variations play a role in the etiology of chronic sinusitis.

In this study, we aimed to investigate the relationship between septum deviation and lateral nasal wall relationship, as well as septum deviation and anatomic anomalies.

2. Material and Method

Paranasal Sinus Computed Tomography was performed retrospectively in patients admitted to our hospital with nasal obstruction and chronic runny nose, headache complaints. CT was performed in 3-mm increments of paranasal sinus CT sections. The shots were made in the prone position and head hyperextension. Coronal sections of CTs were used in the study.

In our study, deviation & lateral nasal deviation relations which may cause complications during surgery were considered. Patients with comorbid diseases such as allergic rhinitis and chronic sinusitis were excluded from the study. Paranasal sinus images of 50 patients with lateral nasal wall and septum were examined. Clinically and radiologically, the septum was divided into three groups as anterior, posterior and anteroposterior. Radiological examination of the anatomical variations in the paranasal sinus and the deviation of the septum were investigated. Anatomical variations were reported and the table was prepared.

3. Results

Paranasal sinus tomographies of 50 cases were evaluated retrospectively. The anatomical variations observed as a result of tomography are shown in Table 1.

In our study, concha bullosa was found in 36%. In our study, 38% of Agger Nazi cells were found. In our study, Haller cell was found in 18% of the cases. In our study, Onodi cells were observed with a rate of 16%. In our study, septum deviation was divided into 3 as anterior, posterior and anteroposterior. In 27 (54%) of the cases, septum deviation was observed, 7 (14%) of them were seen in anterior, 8 (16%) were in posterior anterior and 12 (24%) in anteroposterior direction

In our patient who showed the relationship between septum deviation of the patients and lateral nasal wall, a deviation was observed in the left middle turbinate contacting the joint and pushing the cone towards the lateral nasal wall (Figure 1). In the left lateral nasal wall, a strong contact with the lower concha was observed (Figure 2). In the third case, a deviation was observed that touched the left middle turbinate and pushed medially (Figure 3). In the fourth case, the right side contact with the middle turbinate was observed (Figure 4). In the 5th case, there was deviation in the lateral nasal wall, which narrowed the middle meatal drainage path in the anterior part of the middle concha (Figure 5).

4. Discussion

Nasal septum surgery is one of the most frequently performed operations in ENT practice. Post-septoplasty bleeding, synechia development, CSF leakage, septal hematoma, septal abscess, septum perforation, pneumocephalus, intracranial hemorrhage, blindness, odor disorders, skull base damage and encephalocele, paralysis, can cause complications such as severe mortality and morbidity can develop (4).

The lateral nasal wall has a complex anatomical structure. There are lower concha, middle turbinate, upper turbinates, sphenoid sinus ostium, lower and middle cone, skull base, and medial wall of orbit (5). If the nasal cavity is deeper in the nasal cavity or more lateral / superior is applied in traditional applied septoplasty methods, complications may occur due to these neighboring relationships.

It may develop during or after septoplasty. Septum deviation, especially in the lateral nasal wall of the lower concha in case of contact with the posterior to reach the amount of bleeding may cause bleeding (6).

Complications that may cause morbidity and mortality such as CSF leak complication, pneumocephaly, skull base damage and intracranial hemorrhage, stroke and death may develop after mid-concha adhesion site and adjacent to the skull base and septoplasty operation (7,8,9,10)

Visual-related complications may develop due to the relationship between the medial obstruction wall and the orbital neighborhood (11). The complication of blindness may occur due to the proximity of the medial orbital wall and the sphenoid sinus (9).

Bleeding and adhesions that may develop after surgery may develop more if there is contact and / or adhesion of the septum deviation to the lateral nasal wall (12).

Pneumatized middle turbinate or concha Bulloza is a common anomaly of middle turbinate. The frequency in the literature varies between 8% and 55% (13). In our study, concha bullosa was found in 36% and no relation was found between septum deviation.

The presence of agger nasi cells has been reported in the literature with a frequency ranging from 10% to 55% (14). Agger nasi cells can frontally reduce the frontal recess and provide a basis for the development of chronic sinusitis. In our study, 38% of Agger nasi cells were found.

Haller cell may cause drainage of maxillary sinusitis by disturbing drainage of maxillary sinus. In the literature, the frequency of 4-45% has been reported (15). In our study, Haller cell was found in 18% of the cases.

Onodi cells have been reported in the literature with varying rates of 5-65% (16). Onodi cells observed in posterior ethmoid cells are especially important in terms of causing complications during endoscopic surgery. In our study, Onodi cells were observed with a rate of 16%.

In our study, anatomical variations which may cause chronic sinusitis were classified but related to septum deviation. It is obvious that the risk of surgical complications during traumatic surgery will increase especially in the deviations that come into contact with the concha bullosa.

In our study, septum deviation was divided into 3 as anterior, posterior and anteroposterior. In 27 (54%) of the cases, septum deviation was observed, 7 (14%) of them were seen in anterior, 8 (16%) in posterior and 12 (24%) in anteroposterior direction. There was no statistically

significant association between septum deviation and anatomical variations. However, the subjects who touched the middle turbinate and those who did press were presented with figures. Theoretically, it is obvious that in cases where the septum is overly deviated to the middle spine, it may cause the development of chronic sinusitis. In this study, the cases in which the deviation was pressed and contacted with the lateral nasal wall were presented with sections. The cases presenting with pressure may cause headache symptoms, operational trauma in the surgery and sinusitis. In this respect, patients who are planned to be operated due to septum deviation should be examined by tomography preoperatively and lateral nasal wall / septum deviation / anatomical variations should be examined.

In our study, the comparison of the symptoms and tomographic examination of the patients were not planned as a retrospective study. This is a missing aspect of our work. A prospective study will compare the patient's symptoms and tomographic findings.

5. Declaration

The paper has not been presented; nor is it under evaluation by any other journal.

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Figure 1: The paranasal sinus CT of the patient shows a deviation in the left middle turbinate that touches the adhesion site and pushes the turbinate towards the lateral nasal wall.

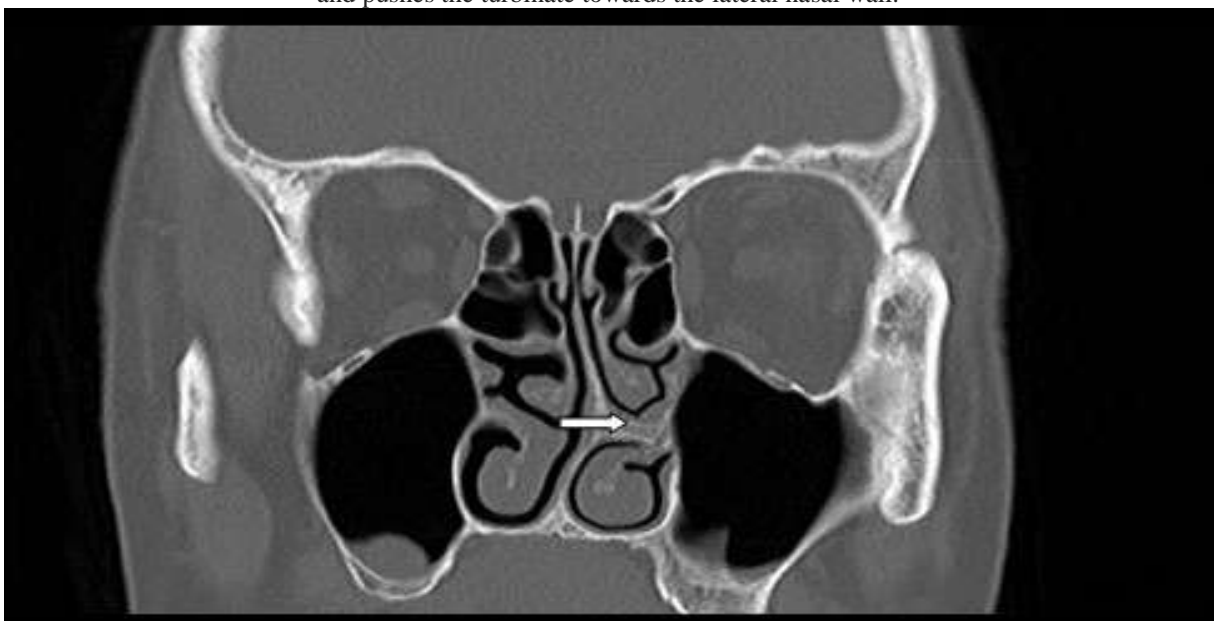


Figure 2: The paranasal sinus CT of the patient shows a strong contact with the left lateral nasal wall instead of the lower concha



Figure 3: The paranasal sinus CT of the patient shows a deviation in the medial to the middle middle concha.

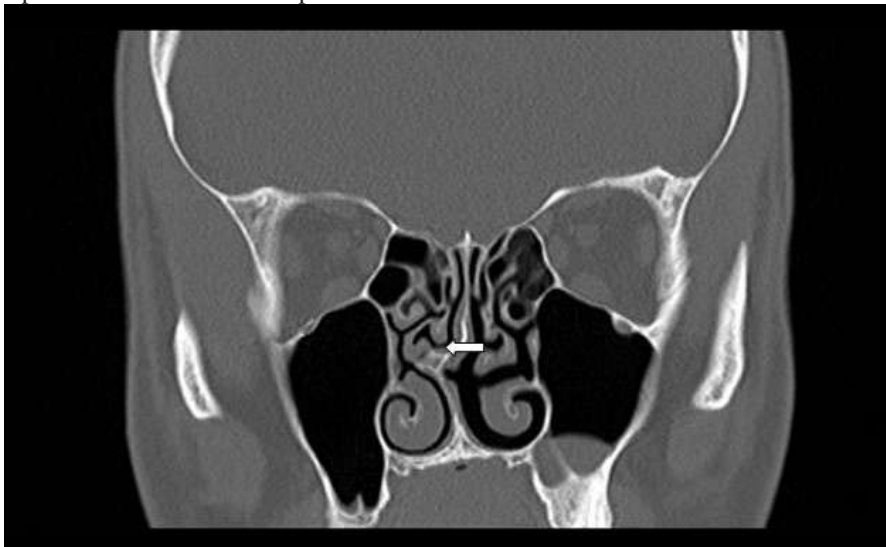


Figure 4: Paranasal sinus CT on the right side of the patient is observed to contact the middle turbinate deviation.



Figure 5: The paranasal sinus CT of the patient shows a deviation that narrows the middle meatus drainage pathway in the middle concha anterior part of the left lateral lateral nasal wall.

Table 1: The anatomical variations observed as a result of tomography are shown in Table 1

	Unilateral	Bilateral	Total
Agger Nasi	12(%24)	7(%14)	19(%38)
Concha Bullosa	9(%18)	9(%18)	18(%36)
Haller cell	5(%10)	4(%8)	9(%18)
Onodi cell	4(%8)	4(%8)	8(%16)
Septum Deviation(Anterior)			7(%14)
Septum Deviation(Posterior)			8(%16)
Septum Deviation(Anteposterior)			12(%24)