

(CASE REPORT)



Nasal septum deviation with severe obstruction

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GSC Advanced Research and Reviews, 2023, 16(03), 125–132

Publication history: Received on 17 July 2023; revised on 13 September 2023; accepted on 15 September 2023

Article DOI: <https://doi.org/10.30574/gscarr.2023.16.3.0349>

Abstract

The nasal septum is a nasal structure that is anatomically and physiologically has a very important role. Various degrees of nasal septal deformity are present at birth and are thought to increase with age. The diagnosis of septal deviation is established based on clinical symptoms, physical examination and supporting examinations. Investigations such as nasoendoscopy, paranasal sinus X-ray, computer tomography, Peak Nasal Inspiratory Flow (PNIF), Rhinomanometry and Acoustic Rhinometry can be performed to assess the anatomical structure of the nose, nasal obstruction caused, as well as complications from septal deviation.

An 18-year-old man came to the ENT clinic at Sanglah Hospital Denpasar with complaints of an aquiline nose since two years ago. Complaints are accompanied by complaints of nasal congestion and headaches. Two years ago, the patient was hit on the nose by his friend. Assess complaints of nasal obstruction using the Nasal Obstruction Symptom Evaluation (NOSE) score to get a score of 60. In this case, the open septoplasty technique was chosen because the patient had a severe degree of nasal obstruction, often had headaches, and the patient also complained of cosmetic problems because the deviation to the contralateral side was evident on the outside of the nose.

Keywords: Septal Deviation; Nasal Obstruction; Open Septorhinoplasty

1. Introduction

Nasal congestion is the most common nasal complaint that makes people seek treatment, where deviation of the nasal septum is the most common cause. The nasal septum is a nasal structure that is anatomically and physiologically has a very important role. Anatomically the nasal septum is a supporting structure of the nose which is located in a straight position in the middle of the nasal cavity and with these anatomical conditions it allows the physiological mechanisms of air exchange, humidification, and protection of respiratory air to occur optimally. In general, the nasal septum in adults is not perfectly straight in the middle or is deviated. Septal abnormalities in the form of deviation of the nasal septum has a significant value because it is quite influential in most rhinological problems.¹⁻³

The incidence of a septum that is completely straight in the middle is rare, where generally there is minimal curvature or there are spines on the nasal septum. It is estimated that 75% - 85% of the entire world's population experience nasal anatomical deformities and the most commonly found is septal deviation. A study in Pakistan in 2011, of patients with septal deviation obtained an incidence rate of 88% in men and 12% in women. From this study it was also found that 76% of cases were caused by trauma and 24% of cases were caused by trauma at birth.¹⁻³⁻⁵

Various degrees of nasal septal deformity are present at birth and are thought to increase with age. This can be caused by trauma during forced birth or expulsion of the fetus in a narrow birth canal or accidental trauma.³⁻⁵

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The diagnosis of septal deviation is established based on clinical symptoms, physical examination and supporting examinations. Investigations such as nasoendoscopy, paranasal sinus X-ray, computer tomography, Peak Nasal Inspiratory Flow (PNIF), Rhinomanometry and Acoustic Rhinometry can be performed to assess the anatomical structure of the nose, nasal obstruction caused, as well as complications from septal deviation.⁶

Septal deviation that does not cause subjective complaints, or an objective decrease in nasal breathing function is categorized as a physiological deviation. Conversely, pathological septal deviation can cause subjective complaints as well as objective reduction of nasal breathing function. The management of septal deviation is very dependent on the complaints and complications it causes and in some cases an operative procedure is needed to correct the septal deviation which aims to improve nasal function and for aesthetic purposes.^{3,6,7}

2. Case report

An 18-year-old man with the initials PWC came to the ENT clinic at Sanglah Hospital Denpasar on September 3rd 2018 with complaints of an aquiline nose since two years ago. Complaints are accompanied by complaints of nasal congestion and headaches. There is no cough and runny nose, no discharge from the nose. No tightness. Two years ago, the patient was hit on the nose by his friend. After that the patient's nose was said to be broken, but the patient did not want to undergo surgery. Assess complaints of nasal obstruction using the Nasal Obstruction Symptom Evaluation (NOSE) score to get a score of 60.

On physical examination of the nose, from inspection it appears that the nose is asymmetrical and crooked to the left. There was no crepitation on palpation. On anterior rhinoscopy, it was found that the right nasal cavity was narrow, the inferior turbinate was decongested, could not be evaluated medially, there was no secretion, the mucosa was pink, there was no mass, and a septal deviation appeared to the right. Narrow left nasal cavity, decongested inferior and medial turbinates, no secretions, pink mucosa, no masses and septal deviation was seen. On physical examination, no abnormalities were found in the ears and throat.



Figure 1 Photo 9 Position Patient Before Operation

On nasoendoscopy it was found that the right nasal cavity could not be evaluated because it was narrow. The left nasal cavity is narrow, the inferior and medial turbinates are decongested, no secretions, pink mucosa, no masses, septal deviation and nasopharynx appear smooth.

PNIF examination was carried out with a result of 40 in the right nasal cavity and 80 in the left nasal cavity. A Water's Photo examination was performed on the patient with the impression of deviation of the nasal septum to the right and no visible obstruction of the right and left paranasal sinuses.

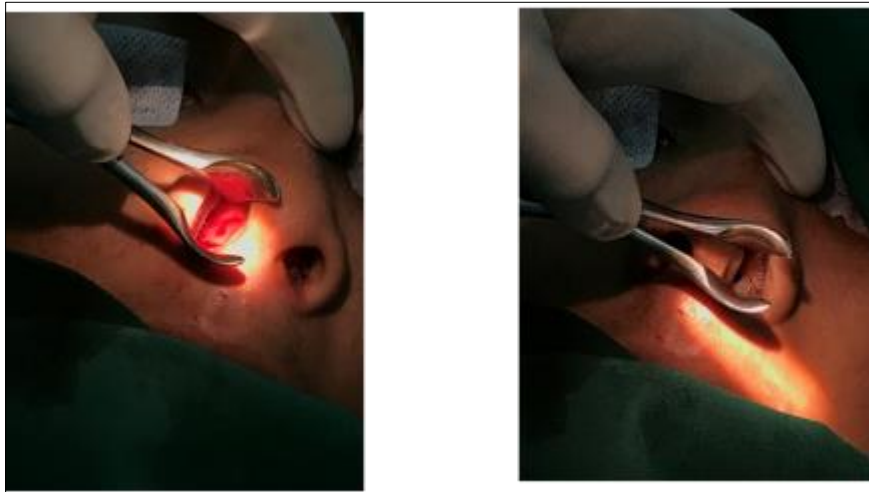


Figure 2 Patient Anterior Rhinoscopy

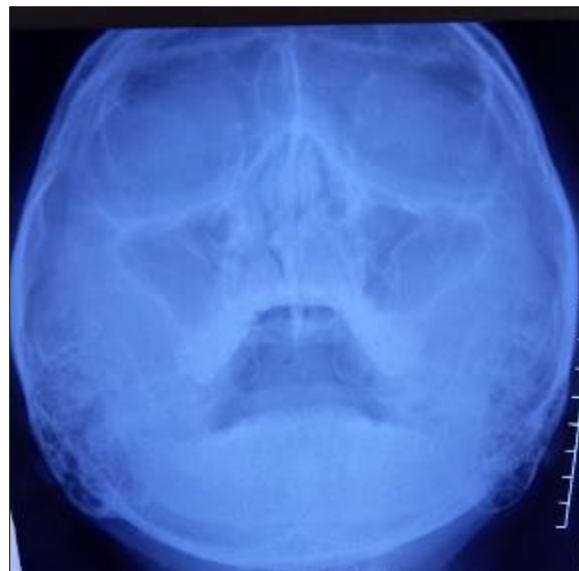


Figure 3 Water's Photo Picture of the Patient

In this patient, a septal correction was planned using an open septoplasty technique. To prepare for surgery, complete blood laboratory examination, chest X-ray, electrocardiographic examination and consultation to the internal medicine department are carried out for action tolerance. Laboratory examination results obtained Hb 14.56 g/dL, leukocytes 10.190/mm³, Ht 45.26%, platelets 188.100/mm³, PT 13.1', APTT 33.8', INR 13.19. Random blood sugar 92 mg/dL, urea 8.60 mg/dL, creatinine 1.02 mg/dL, sodium 140 mmol/L, potassium 3.86 mmol/L, SGOT 14.5 U/L, and SGPT 8, 90 U/L. Laboratory results are within normal limits.

On September 24th 2018, a septal correction was performed using an open septoplasty approach. The patient lies supine on the operating table under general anesthesia. Perform aseptic and antiseptic procedures around the operating field and place sterile drapes. Infiltrate the subperichondrial area with 1:200,000 epinephrine. Then proceed with Killian's

incision in the posterior columella in the form of an inverted V which is continued laterally following the ala nasi line. Then elevation of the mucoperichondrial and mucoperiosteal layers was carried out outwards until the cartilage structure and nasal bones were visible and towards the inside of the right and left nasal cavities until a deviated septal cartilage was seen. Evaluation of the deviated nasal septum was carried out, the deviated septal cartilage was cut and removed using a Ballinger wifel knife, the bony prominences were chiselled. Then a graft was placed from the septal cartilage that had been cut before. The graft is placed on the rice tip to support the bent rice tip. Then evaluate whether there is still a deviation of the septum in the nose and evaluate the external section of the nose. After that, suturing was carried out along the ala nasi and columella lines which were incised previously and continued with the installation of anterior splints and tampons on both sides of the nose.

Postoperatively the patient was given intraoral cefixime 2 x 200 mg, fentanyl drip and paracetamol 4 x 500 mg intraoral. Anterior tampons are retained to control bleeding.

On the second postoperative day the anterior tampons in both nasal cavities were released, there was no active bleeding, complaints of nasal congestion were reduced. The patient was sent home with cefixime therapy 2 x 200 mg intraorally and paracetamol 4 x 500 mg intraorally.

On October 2, 2018 the control patient went to the ENT clinic for the first time. Complaints of nasal congestion have decreased, complaints of pain in the nose are minimal. On anterior rhinoscopy, the right and left nasal cavities were found wide, inferior and medial turbinates were decongested, no secretions, pink mucosa, no blood, no septal deviation and still visible suture threads that had not been removed. The left nasal cavity is wide, the inferior and medial turbinates are decongested, there is no secretion, the mucosa is pink, there is no blood, there is no septal deviation and there are still threads that have not been released. The therapy given is still the same as the previous therapy.

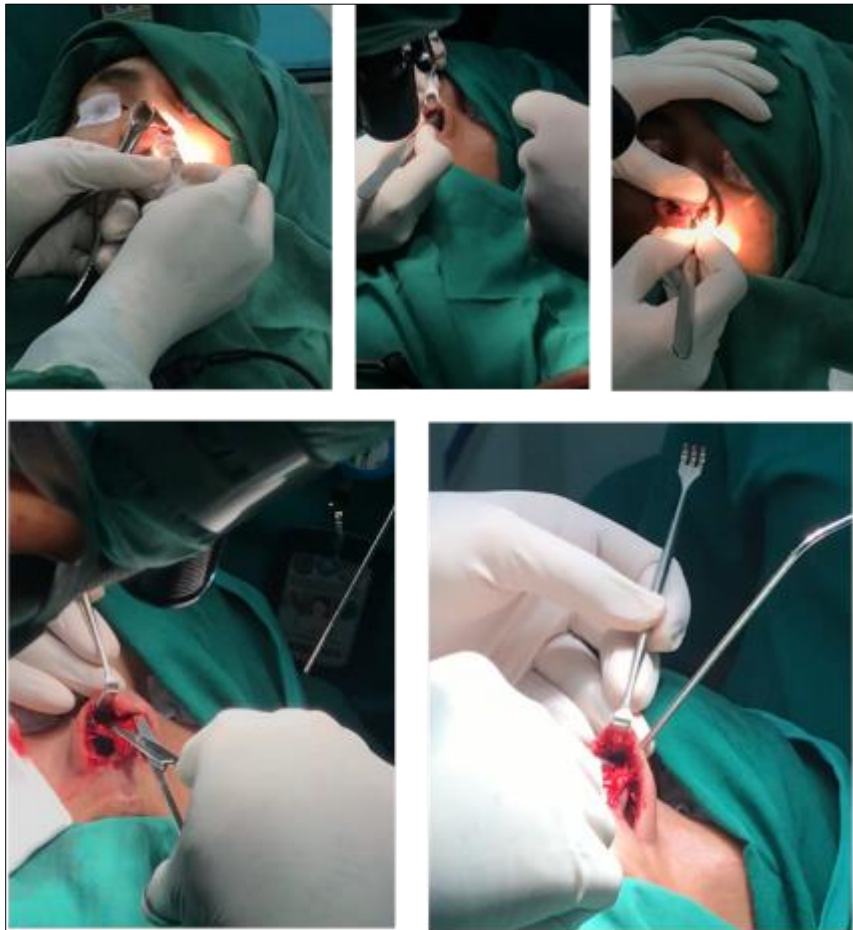


Figure 4 Open Septoplasty Steps

On October 8 2018 (14 days postoperatively) the control patient returned to the ENT-KL polyclinic. There are no complaints of nasal congestion, no complaints of pain in the nose, no headaches. Evaluation with Nasal Obstruction Symptom Evaluation (NOSE) obtained a score of 0. On anterior rhinoscopy examination found the right and left wide nasal cavities, decongested inferior and medial turbinates, no secretions, pink mucosa, no blood and no septal deviation was seen. Left nasal cavity is wide, inferior and medial turbinates are decongested, no secretions, pink mucosa, no blood, no septal deviation is seen and the incision wound is completely closed.



Figure 5 Photo 9 Position Patient 14 days postoperatively

3. Discussion

It has been reported a case of left septal deviation with severe obstruction in an 18 year old male who underwent septal correction using open septoplasty technique. This incident is in accordance with research by Janardhan, et al that there were more cases of septal deviation in males with a ratio of 69: 31. This was supported by Ansu, et al in a prospective study which found that the ratio of males and females with septal deviation was 7: 1.

In patients who had a history of previous trauma about 2 years ago, Tiagarajan, et al stated that the most common etiology of nasal septum deviation was nasal or midfacial trauma which was the initial source of changes in nasal anatomy.^{3,8}

The diagnosis of severe septal deviation is enforced by history, physical examination and supporting examinations (nasoendoscopy, PNIF and Water's Photo). From the anamnesis, there were complaints of nasal congestion and headaches. In a study of 100 patients with septal deviation, 66% of patients were found with clinical complaints and 34% without clinical complaints. Research by Janardal, et al states that complaints of nasal congestion are the most common complaints in patients with septal deviation, followed by complaints of nasal secretions and headaches. This was also stated by Codrut Salafoleanu, et al., who stated that patients with septal deviation came with 85% of them with complaints of nasal congestion, 50% of headaches, 28% of post nasal drip and 22% of sore throats.^{9,10,12,13}

Symptoms of nasal obstruction in septal deviation can not only be examined by physical examination such as anterior rhinoscopy, but can also be evaluated by nasoendoscopy and peak nasal inspiratory flow-meter (PNIF). PNIF has the advantage of cheaper inspection prices, short time and easy processing. A study by Sedaghat AR, et al in 2013 stated that physical examination in the form of anterior rhinoscopy and nasoendoscopy were the most accurate examinations in diagnosing septal deviation. However, this examination does not provide an objective value of living obstruction and

may cause discomfort to the patient when inserting adrenaline tampons to decongest the turbinates prior to the examination.

Based on Mladina's classification, the type of deviation in this patient is type 6. The study conducted by Subric and Mladina using the Mladina classification showed the prevalence of deviation in the anterior septum (artillago types: types 1, 2, and 6) and the posterior (bone type): type 3, 4, and 5) which is 83.7% compared to 15.7%. Meanwhile, based on Jang's classification, the type of deviation in this patient is type 1. Where in Jang's study, et al found that type 1 was the most common case, with type 5 being the rarest.^{4,19,20,12,21}

In this patient, septal deviation was managed using open septoplasty technique. This method is an action that is rarely performed in the management of septal deviation at Sanglah General Hospital. In this case, the open septoplasty technique was chosen because the patient had a severe degree of nasal obstruction, often had headaches, and the patient also complained of cosmetic problems because the deviation to the contralateral side was evident on the outside of the nose. In this case, other techniques, such as the submucosal resection technique (SMR) and closed septoplasty, could not evaluate the presence of a large deviation in the patient. This action was also chosen because the endonasal approach is inadequate in achieving the deformity, such as in cases of very severe septal deviation, the location of the deviation is in the caudal and dorsal areas of the nose and also if the patient wants to improve physiological function as well as for aesthetic purposes. Through this technique the patient's nose will be opened through an incision in the columella so that all nasal passages from the dorsal and caudal parts will be visible. So the operator will be easier to work.

The submucosal resection technique (SMR) is often performed because with this technique the operator can reach the deformity of the septum so that the physiological function of the nose can be optimized and also from a cosmetic point of view because in this technique the incision wound is not visible, so this technique is often the choice of surgery in cases of septal deviation in the ENT-KL Section of Sanglah Hospital compared to open septoplasty techniques. According to Hosseini SM, et al who compared closed and open septal deviation surgery techniques found that mild and moderate degrees of septal deviation were better for endonasal approaches, whereas in cases of moderate to severe septal deviation an open septoplasty was performed. In terms of complaints of postoperative nasal congestion, patients experienced satisfactory improvement with these two techniques but the open septoplasty approach was better than the group that underwent closed septoplasty, this is likely to occur because through the open approach the deformity can be clearly identified and treated. According to Sheikh MS, et al, in terms of the duration of the procedure, the closed technique is shorter than the open technique, but postoperative complications, namely the possibility of septal perforation, septal hematoma and crust formation are higher in closed than open procedures.^{22,23}

The results of a study from the American Academy of Otolaryngology-Head and Neck Surgery in 59 patients after a septoplasty procedure found that only 6% of these patients expressed dissatisfaction with the results of the operation after 3 and 6 months after the procedure and the remaining 94% of patients reported improvement in complaints of nasal congestion 6 postoperative month. This is also supported by the study by Gandomi et al of 86 patients after septoplasty with the same method, which reported that 89.5% reported improvement in complaints of postoperative nasal congestion. The study of Konstantinidis, et al stated a significant association between the location of septal deviation and postoperative clinical improvement. This study states that patients with deviation in the anterior experience better clinical improvement than those with deviation in the posterior.^{19,24}

4. Conclusion

Septal deviation is a curvature or indentation of the nasal septum which is generally caused by congenital abnormalities, malignancies, trauma, infections and genetic disorders. To diagnose a septal deviation can be enforced based on clinical symptoms, physical examination and supporting examinations. Investigations such as nasoendoscopy, PNIF and water's photos can be performed to assess the anatomical structure of the nose and complications from septal deviation, while rhinomanometry and acoustic rhinometry provide an objective picture of nasal obstruction.^{1,6,15,16,17}

There are several indications in carrying out operative measures to correct septal deviation such as septal deviation with partial or total obstruction of the nasal passages, obstruction by septal deviation that precludes FESS, epistaxis that is continuous or intermittent and to increase the effectiveness of therapy in patients with OSAS. Operative measures on the nasal septum can be performed with various approaches by considering several conditions such as the degree of deviation, the location of the deviation, the need for grafting, and aesthetic needs. Open septoplasty is an operation for septal deviation which is quite rare, but is a better choice of action to treat cases with severe septal deviation with the need for aesthetic nose repair.^{3,9,11,14}

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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