

Septorhinoplasty in an Asian-Caucasian pediatric patient with neglected nasal deviation from previous traumatic injury: a case report



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ABSTRACT

Background: Numerous studies present evidence of the association between nasal-septal deviation and impaired breathing that led to a multisystem disorder, nasal-midface growth alteration, and gets worse with facial growth. However, the extent of the traumatic septal injury is often neglected. Here, we summarized the clinical experience in treating a pediatric patient with those problems.

Case Presentation: A case of a 10-year-old girl with type C-IIB nasal deviation and type IVb septal deviation with left obstructive nasal breathing and snoring is presented. A nasal injury history at the age of four was reported. She had divergent dorsal lines, hump irregularity, lower lateral cartilage (LLC), columella/septum deviation, drooping-indented-boarded tip, asymmetrical nostrils, and internal valve incompetence. We conducted corrections on nasal bones by bilateral osteotomies, c-shaped anteroposterior caudal septum by scorings, mattress suture techniques and batten grafts, upper lateral cartilage by dorsal septal manipulation, tip/columella by LLC manipulation, dorsal long spreader graft, columellar strut grafts, and septum repositions. A crushed cartilage was placed on the hump. Improvements, complications, and patient satisfaction were documented. No complications were reported after the surgery. The patient was satisfied with the final result. Snoring and left nostril breathing obstructions no longer existed. Corrections on dorsal, columella and septal deviation, hump, nasal tip shape and projection, and asymmetrical nostril were observed.

Conclusion: Septorhinoplasty's philosophy on pediatric patients highlighted the importance of weighing its risks. Findings suggest studies of the pediatric anatomy and surgical technique to minimize the risks. Thorough observation is also advised until the cessation of facial growth.

Keywords: Deviated Nose, Nasal Obstruction, Pediatric Septoplasty, Septorhinoplasty.

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INTRODUCTION

Deviated nose occurs when the nasal septum is displaced to one side, away from the face line center. It is also generally termed a crooked nose. Despite its impact on the aesthetical appearance, the deviated nose would lead to functional issues, including nasal obstruction. Deviated nose correction is a challenging area in the field of rhinoplasty.¹ Moreover, nasal obstructions in crooked nose cases are endorsed by the deviation in the septum. Other causes may include hypertrophied turbinate, collapsed internal and external valves. A deviation in the anterior and postero-caudal would significantly impact the nasal airflow more than the

posterocephalic or bony septum deviation. Sometimes, a deviated septum could be accompanied by snoring, headache, rhinorrhea, sneezing, hyposmia, and epistaxis.

Microtrauma during childbirth is widely demonstrated as a major cause of septal deviation. To a severe degree, it is frequently attributed to trauma.² However, the extent of septal damage after the trauma is often ignored, and a non-corrected pediatric septal deviation worsens with the growth.^{3,4} Fibrosis and scar contracture development also worsen the degree of deviation, especially among patients with a history of nasoseptal growth center trauma at an early age.¹ These shreds of

evidence explain that the prevalence and symptoms of septal deviation mostly likely increase with advancing age.⁵

Septal deviation is associated with "malocclusion, asymmetric facial growth, rhinosinusitis, snoring, sleep apnea, and mouth breathing." Mouth breathing is the leading cause of excessive vertical and retrusive facial growth, and it has been associated with multisystem disorders that are attributed to the deviation, such as "temporomandibular joint disorders, dyslalia, sleep apnea, body posture alterations, poor academic performance, and facial esthetic impairments".⁴⁻¹³

Septoplasty has recognized as a famous surgical correction for nose septal

deviation. Unfortunately, controversies linger around the technique's effects on pediatric patients and its influence on nose growth centers.¹⁴ Latham and Scott's theory stated that the protrusion of the nasal septum on the facial skeleton from the cranial base could occur during the pediatric's growth.¹⁵ Shreds of evidence confirmed the detrimental consequence of the deviation, justifying the need for a septoplasty procedure among pediatric patients. Further, the lingering doubts about the effects of septoplasty on facial growth have been a dilemma in performing the surgery.

Here, we summarized the clinical experience in treating a pediatric patient with those problems. This study aimed to report the septorhinoplasty procedure in an Asian-caucasian pediatric patient with neglected nasal deviation from a previous traumatic injury.

CASE REPORTS

Presentation and Medical History

A case of a 10-year-old girl with unknown medical conditions is presented throughout this report. She came to the senior author's private practice with her parents, complaining about the nasal deformities attributed to her nasal injuries at the age of four. A swing hit her nose when she was playing. The main complaint was a nasal deviation and left nasal obstruction. The patient and her parents expected a normal ideal nose and the absence of nasal obstruction.

We discovered a thick nasal skin envelope, a typical Asian-Caucasian nose. On the "nasal frontal-basal profile," we identified a broad, divergent dorsal line, hump irregularity, lower lateral cartilage (LLC) deviation, drooping, indented, and boarded tip, and internal nasal valve incompetence. The ULC cephalic portion was displaced to the same side of the nasal bone deviation, while the caudal portion was occurring on its opposite side. We also documented a slight dorsal hump with a downward projecting tip on the lateral profile examination. Further, asymmetry, columella deviation, and caudal septal cartilage dislocation from the basal view were also discovered. A nasal speculum examined the internal nose. We discovered septal deviation without septal

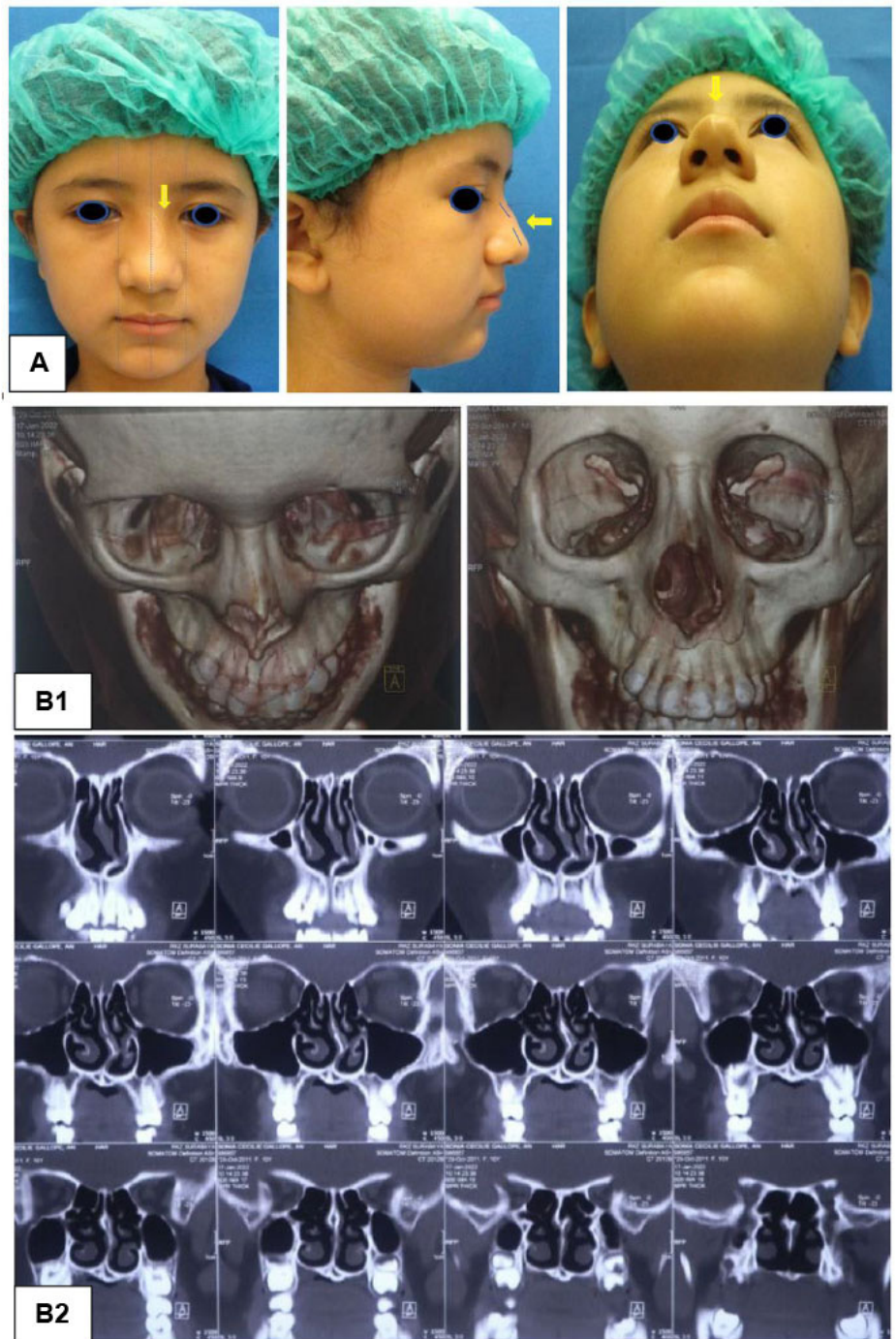


Figure 1. Preoperative frontal, lateral left, and basal view (A) as well as Head CT-Scan (B1 and B2).

spur, turbinate hypertrophy, and mass inside the nose from the examination. The septum was also evaluated, and no sign of perforation or synechiae was noticed. We also found incompetency of the internal and normal external nasal valve by performing the Cottle test or modified Cottle test. The nasal evaluation and coronal view of the head CT scan showed three turbinates attached to the lateral wall

of the nasal cavity along the path of nasal airflow with normal size. There was no sign of compensatory hypertrophy inferior turbinate at the opposite nasal cavity. No concha bullosa and septa bullosa were observed. The patient showed no signs/symptoms of facial palsy and no history of allergic rhinitis (Figure 1).

She was diagnosed with type C-IIb nasal deviation and type IVb septal

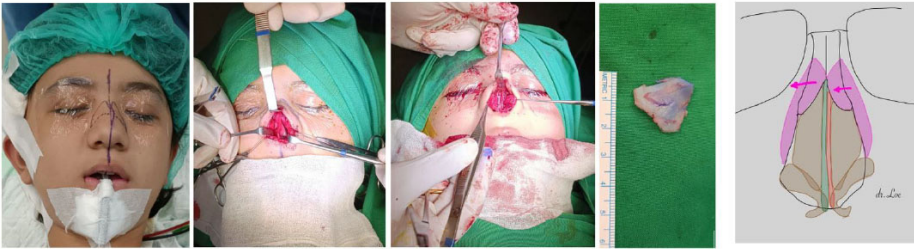


Figure 2. Durante procedure.

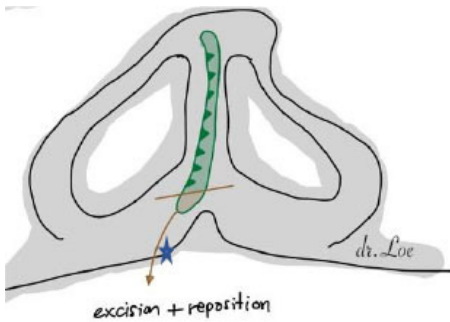


Figure 3. Base view of the deviated cartilaginous nasal septum. The portion of cartilage prepared for resection, preserving the majority of the septal cartilage (asterisk). The resected cartilage portion allows the midline repositioning of the septum (asterisk).

deviation, left obstructive nasal breathing, and snoring is also presented. A septorhinoplasty was planned to correct the nasal deformities.

Presurgical Consultation

We planned to perform correction procedures on the nasal bones by bilateral osteotomies, c-shaped anteroposterior caudal septum by scorings, mattress suture techniques and batten grafts, upper lateral cartilage by dorsal septal manipulation, tip/columella by LLC manipulation, dorsal long spreader graft, columellar strut grafts, and septum repositions on the anterior nasal spine. Crushed cartilage would be placed on the hump. Improvements, complications, and patient satisfaction were documented.

The revision surgery complexity was reviewed before the procedure. The dilemma between the risk of performing or not performing the surgery was intensively discussed. Certain controversies were lingering about the effect of this technique on pediatric patients and its effect on

nasal growth. Responding to the mutual agreement with the patient and their approval for an open septorhinoplasty, the patient was taken for the procedure, as mentioned earlier, under general anesthesia.

Surgical Procedure

The operation was performed under general anesthesia and additional local anesthesia. One percent of 1 xylocaine (lidocaine hydrochloride) with 1:200,000 epinephrine as the local anesthesia agent was administered to block the infraorbital nerves. This anesthetic agent was injected into the mucoperichondrium, the dorsum and the septum. Subsequently, we administered a 15-20 ml solution to create a hyperinflated nose condition. This patient received 250mg of cefazolin intravenously shortly after general anesthesia induction.

We performed an open rhinoplasty approach. Heading along the rim of the LLC at its caudal aspect, a mid-columellar V-shaped incision was constructed. Elevation of the columella and dorsal skin flap to the level of the perichondrium of the LLC-ULC (underneath the superficial muscular aponeurotic system (SMAS)) and periosteum of the nasal bone with angled iris scissors (stevens scissors) were conducted. We observed that the LLC was under normal conditions. It was not very small or thin, unlike the typical Asian nose characteristics. A two-pronged skin hook is applied to prevent dragging the fat from the dermis during the skin flap elevation procedure. A scissor was applied to release the ULC from its attachment to the dorsal septum. The right and left LLC were separated and the nasal septum was exposed. Subsequently, the flap was elevated beyond the bony deviation. We maintained the periosteal elevation in the minimum area, allowing the mobilization of the osteotomy fragments.

The nasal septal mucoperichondrium was elevated bilaterally to expose the septum. We moved the flap of the concave side before the convex side dissection for elevation purposes, minimizing the risk of mucoperichondrial tearing. The mucoperichondrial elevation is initiated in the caudal portion of the septum and advances in the cephalic direction for each side.

We discovered the caudal septum deviation and mild scarring around the bones. The submucosa resection (SMR) was conducted by resecting the deviated septal cartilage and bone, leaving the dorsal and caudal L-strut intact. It was also leaving behind a 10 mm L-strut. The resected cartilage was used for tip-plasty or spreader graft; the dissection was extended to the anterior nasal spine (ANS).

After ULC detachment from the dorsal septum, SMR, and septum straightening, we performed the lateral and medial osteotomies. Then nasal bone and upper lateral cartilage positions were altered. The right nasal bone was pushed to a more lateral side and the left was plunged to the medial side. The concave side of the deviated nose was osteotomized. After lateralizing the concave bony segment and assuring the midline components were straightened up in a line, we put a spreader graft between the L-strut and pushed the right nasal bone (Figure 2).

We resected the redundant length in the strut. Subsequently, the shortened caudal L-strut was fixed to the periosteum of the ANS. The figure-of-eight suture with 5-0 PDS was employed to conduct the fixation process (Figure 2 and Figure 3). A scoring (convex) and mattress suture technique were subsequently performed for stabilization purposes, correcting the c-shaped anteroposterior deviation. Scoring incisions are positioned within the concave side, followed by splinting batten graft or double-mattress suture. A batten graft was placed on the opposite side from the scoring incisions (Figure 4). Using the septal forceps or bone rongeurs, the deviated part of the bony septum at the ethmoid bone was removed in smaller sections after the cartilage resection.

The columellar strut was sutured, while the rest of the cartilage was crushed and put on the dome of LLC (supra tip

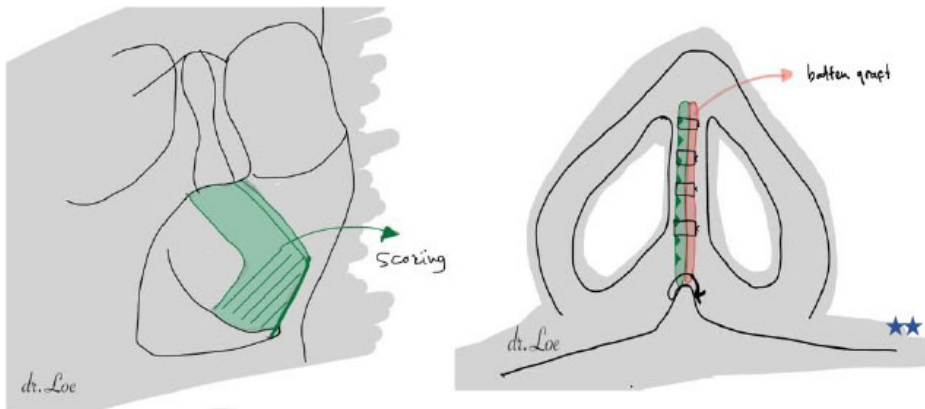


Figure 4. Scoring and batten graft for the septal deviation. Absorbable suture secured the caudal septum to the anterior nasal spine (double asterisk).



Figure 5. Postoperative frontal view left lateral view, and basal view (yellow arrow).

area). The nasal layer was connected by an absorbable braided suture (5-0 Vicryl [polyglactin 910]) located in the deep tissue layer to alleviate the pressure on the edges of the incision. The 6-0 Prolene sutures were then applied to the cutaneous layer.

We provided a Paper tape (SteriStrips™) and dorsal splint to stabilize the osteotomy and deliver proper pressure for the swelling and hematoma prevention. The splint was cleared three weeks after the surgery. Intranasal tampons were kept in place for the next five days.

Follow-Up

We evaluated the complications after the surgery. No complications were observed, such as “mucosal synechiae, septal hematoma, septal infection, septal perforation, and saddle nose.” The patient and her relative stated their satisfaction with the final result. Snoring and left nostril breathing obstructions no longer existed. Improvements from the pre-operative stage to two months after

surgery were also noted: corrections on the dorsal, columella, and septal deviation, hump, nasal tip shape and projection, and asymmetrical nostril (Figure 5).

DISCUSSION

Nasal trauma due to traumatic mechanisms rarely occurs among children; because of that reason, septal injuries are frequently neglected in this population.^{16,17} Subacute or mild trauma may cause septum deviation, generating an area for hematoma development. Untreated trauma of the septal injury may develop into localized septal necrosis and/or growth center disruption, which could eventually lead to a more serious deformity.¹⁸ Untreated or unknown blunt nasal trauma would appear together with the healthy nasal tissues, skeletal instability, significant scarring, circulatory deficiencies, or missing tissues, and in most cases, its prognosis is generally better.¹⁹ The nasal bone fractures characterize by their appearance in the distal area. It also seems

broader and thinner.²⁰ Post-traumatic nasal deformities demand rhinoplasty or septorhinoplasty procedures. It has been accounting for 50 percent of the cases.²¹⁻²⁴

There are several classifications of deviated noses. It is divided into Type I: Linear deviation, Type II: C-type deviation, a concave dorsal deformity, Type III: S-type deviation, and Type IV: cartilage deviation only. Further, the C-type deviation could be categorized into several groups according to the ULC deviation: Type IIa: the displacement of the ULC occurs to the contrary side of nasal bone deviation, and Type IIb: The ULC's cephalic portion displacement is observed to the same side as the nasal bone deviation, while the caudal portion deviates to the opposite side. The direction/shape of nasal bony deviation does not always overlap with that of the septal deviation. However, the direction of deviation is always the same for the upper lateral cartilage and dorsal septum. Columellar deviation coincides with caudal septal deviation, which defines the nostril's asymmetry. Septal deviation also can be classified in a more simplified manner. Type I characterizes by the presence of cartilage or bony spur without curvature. A local protrusion also demarcates this type in the cartilage or bony septum, which is the major cause of nasal obstruction.

Type II marks by a linear septal deviation without curvature. The septum is dislocated from the maxillary crest. Type III is also known as a mid-septal deviation. Type IV is the Caudal septal deviation (type IVa). Caudal septal deviation without dislocation can be assumed as a C- or S-shape and type IVb. Caudal septal deviation with dislocation from ANS. Type V could be recognized by dorsal septal deviation with or without curvature “anteroposterior C- or S-shaped, cephalocaudal C- or S-shaped.” High septal deviation and upper lateral cartilage destruction can contribute to diminished internal valve angle and nasal obstruction.¹

The patient was diagnosed with type C-IIb nasal deviation and type IVb septal deviation. According to the ULC deviation, this deformity is marked by the cephalic portion of the ULC that is displaced to the same side of the nasal bone deviation. In contrast, the caudal portion

is displaced to the opposite side and caudal septal deviation with dislocation from ANS. Septal deviation correction is essential for restoring the external nose's symmetrical shape and improving the nose's function. Nasal obstruction is a typical symptom in nasal deviation cases, occurring due to the change in the airflow dynamics. Several cases also recognized an inferior turbinate hypertrophic at the opposite nasal cavity, generally known as compensatory hypertrophy. Deviated nose and septal deviation with inferior turbinate hypertrophy would highly contribute to nasal obstruction. Deviated septum correction will require simultaneous hypertrophied turbinate reduction.¹ Fortunately, we didn't identify any hypertrophic turbinate occurrence in the recent case.

Pediatric septoplasty would be suggested for several medical conditions. Congenital or nose-acquired malposition of the nose should be highly recommended to fix nasal functions.²⁵ A previous study by Yilmaz et al. mentioned that the occurrence of nasal obstruction is only a relative indicator for surgery.²⁶ With obstructive sleep apnea syndrome, nasal obstruction was revealed as a decisive factor. In their study, a very conservative approach to septoplasty was used. Surgery was only performed on advanced nasal septal deviation cases in children.²⁶ A previous study by Adil et al., also stated post-traumatic deformities and severe airway obstructions as typical indications for septal surgery among pediatric patients.²⁷ However, they highlighted that the nasal correction procedure was safe for children with nasal obstruction and deformity before adolescence. Several absolute indications for septoplasty have been established: septal hematoma, septal abscess, severe deformity secondary to cleft lip, nasal fracture, and subsequent traumatic nasal deformity and nasal dermoid cysts.²⁸ A growing body of knowledge provided evidence of high psychological traumas and bullying incidence among teenagers with significant cosmetic nasal deformities.²⁹ Here, we discovered the nasal fracture with subsequent traumatic nasal deformity as the absolute indication for the septoplasty procedure.

The major objectives of the deviated nose and deviated septum correction are an aesthetic and functional improvement. To improve the aesthetic appearance, all deviated structures "(nasal bone, upper lateral cartilages, and lower lateral cartilages)" should be moved from the asymmetric deviated position and positioned in a straight symmetric orientation. Subsequently, the internal asymmetry nose should be corrected (septal deviation and hypertrophied turbinate) to improve nasal function. Deviated nose correction is not simply a matter of the osteotomy procedure to relocate the nasal bone. Instead, the deviation correction procedure should involve a proper technique to straighten the upper lateral cartilage and the septum for the best result. Further, nasal deformities, especially tip/columella deviation and nostril asymmetry, are also associated with caudal septal deviation. Hence, the septal deviation correction procedure becomes an essential element of deviated nose correction. In addition, nasal obstruction is caused by deviated nasal bone and upper lower lateral cartilage. The association between these internal and external elements heavily indicated that aesthetic and functional corrections could not be alienated.¹ Deviated nose correction consists of major correction and manipulation procedures in five parts: bony deviation by osteotomy, septal deviation, upper lateral cartilage deviation by dorsal septal manipulation, tip and columella deviation by manipulation of lower lateral cartilages, as well as dorsal and caudal septum and manipulation of the inferior turbinate.¹ However, the manipulation of the inferior turbinate procedure was omitted in our case.

Septal cartilage is the midfacial growth epicenter. Dorsal septal cartilages are the main nasal supporting structure. Two essential periods of growth spurts would anchor the time to perform the surgery: the first two years of postnatal and puberty. During these periods, the nose swiftly grows faster than during other periods of life. Consequently, a surgical procedure between the growth spurts can conceal a possible surgically induced growth disturbance until the final growth spurt. Further, nasal growth

is estimated to be ended at the age of 15-18 for boys and 12-16 for girls.³⁰⁻³² But the wound healing process remains a major problem after cartilaginous skeleton surgery. Instead of cartilaginous healing, there is always a fibrous layer between the surgically induced distortion and or deviations of the cartilaginous.³³ The surgeon should be mindful of late postsurgical distortion. Even after the final growth spurt, there is potential for further growth of the septum up to 25, which may induce late postsurgical distortion. Conventionally, septorhinoplasty in the children population has been delayed until after adolescence unless it would induce a severe impairment of the nasal airway or a severe external deformity with a clear psychological impact on the younger patient.

Septal surgery among the children population was a controversial topic. But a growing body of knowledge presents scientific evidence of its effect on dental, palatal, and facial abnormalities.³⁴⁻³⁵ Septal deviation led to increased incidences of snoring, viral upper respiratory tract infections, bronchitis, and sinusitis in children.³⁶ By executing a sufficient technique, systemic complications of chronic partial airway obstruction (i.e., pulmonary hypertension or cor pulmonale) could be avoided.³⁷

The right timing of septoplasty in children remains a dilemma. It has been widely reported that surgery is successful in children. Nevertheless, this surgery should be characterized by its conservative and minimal practice and restriction to the pathologic area.³⁸ Several studies declared that septal surgery correction could be safely conducted among children as early as five to six years old.³⁹⁻⁴¹ Other studies also supported this finding. Septal surgery performed in the past for trans-septal skull base surgery has demonstrated safety in children above four years of age.⁴²⁻⁴³ The effect of the uncorrected nasal septum was confirmed by long-term research by Pentz et al.⁶ They revealed that 13 of 14 children with this situation had experienced significant malocclusions. Parents and patients should be educated that the final results cannot be forecasted. The possibilities and risks of the revision surgery also need to be well discussed

with the parents.⁴⁴ A growing amount of data has reported no adverse effects of septoplasty on nasal and facial growth among pediatric patients.⁴⁵⁻⁴⁸ A study has demonstrated a significant improvement in nasal obstruction among pediatric patients. This study enrolled a validated quality of life assessment tool, a NOSE scale, commonly applied in the adult population.²⁶ However, we identified several limitations in this study. They employed a retrospective case series that signify no involvement of a control group. The absence of the control group may indicate a less accurate finding. Further, we also highlighted the sequence of their surgical procedure. The surgical procedures were not performed according to the established standard format. The graft placement and inferior turbinate reduction procedure were only performed in some patients. Lastly, patients were only observed for a short period of time. Most studies conducted follow-up sessions only up to the 30th day after the procedure.⁴⁹

Therefore, an extensive pre-operative visit is demanded to discuss the “desire, goal, risks, expected postoperative course, limitations, and procedure complication”. Suppose the patient and her relative could not accept the risks and benefits of the procedure. In that case, we were planning to encourage applying the “wait and see” principle, allowing additional bone maturity. However, according to the consenting process, our patient and family accepted the risk of the procedure and were willing to do the procedure due to the worsening nose obstruction.

Several studies examined the application of the external approach to severe septal deformity cases in the children population.⁵⁰⁻⁵² The advantages included adequate access to the nasal septum and excise, refashion, and reimplanting the quadrilateral cartilage (the decortication approach). A previous study found that children did not show clinically significant retardation of growth after the conduction of the external approach of septoplasty.⁵³ However, they recognized a tendency for the operated noses to be shortened.⁵³ In younger children access to the septum via the endonasal approach is relatively difficult due to their smaller nares.⁵² This evidence

provided a foundation for the external approach to avoid incomplete correction and poor results. The external approach may be particularly advantageous for a severe septal deformity that requires the procedure of excision, remodeling, and reimplantation (decortication).

The periosteal elevation should be maintained to the absolute minimal area during the osteotomy, allowing the osteotomy fragments to mobilize while preserving the bony segment’s stability after the procedure. A lateral and medial osteotomy was then conducted after the detachment of upper lateral cartilage from the dorsal septum and SMR (submucosal resection of the septum). The altered position of the nasal bone and upper lateral cartilage could generate worse dorsal septal deviation. This situation highlights the need for dorsal and caudal septal deviation management after the osteotomy. The concave side of the deviated nose should initially be osteotomized due to the space needed for the medialization of the bony segment from the convex deformity. Concave depressed bone is accompanied by the medial transposition of upper lateral cartilage, which can be associated with internal valve collapse. To perform a lateral mobilization on the concave nasal bone, the lateral osteotomy would be primarily conducted, followed by the medial osteotomy. The purpose of this lateral osteotomy is merely to divide the bone into segments.¹

Further, this lateralization of the bony segment would leave a bony gap. This space should be occupied with a long-extended spreader graft to prevent the lateralized bone from returning to its original position. All of the maneuvers to mobilize and stabilize the concave bone in a lateral position will place enough lateral traction on the upper lateral cartilage, which could improve internal valve function. The spreader graft would occupy the bone gap, spread the concave ULC, and improve internal valve insufficiency.

Maurice Cottle’s once stated, “As the septum goes, so goes the nose.” The septal deviation must be adequately corrected to present complete external nose correction. After the septum is released from the upper lateral cartilages and the mucoperichondrium, the accurate extent

of the curvature in the septum could be well recognized (i.e., an intrinsic component of septal deviation”). The deviation can be found in any area of the septum: “the mid-septum, dorsal septum, and caudal septum. A submucosal resection (SMR), correction of caudal septal deviation, and correction of dorsal septal deviation are known as the basic principles of a septal correction procedure. A caudal septum correction is an essential part of a septal correction procedure. A septal deviation in the caudal part would contribute to a smaller internal and external valve that may end in nasal obstruction symptoms.

Further, the presence of caudal deviation also majorly affects the occurrence of columellar deviation, nostril, and tip asymmetry. Our finding also suggested scoring and suturing as ineffective techniques during isolation. Moreover, the efficacy of these techniques can only be confirmed after the batten grafts stabilization. The redundant length in the strut was resected segmentally in an exact amount, and the shortened caudal L-strut was fixed to the periosteum of the ANS. To get a precise amount of resection, a growing body of literature has mentioned the requirement of a conservative approach of small bits of cartilage removal at a time. Excessive resection that causes a gap between caudal septal cartilage and ANS can delay the appearance of saddle nose.¹

Our current understanding of the surgery and trauma effect on midfacial growth may characterize by its subjective perspective, result from an experimental-clinical observation, and accomplished based on analysis of two-dimensional measurements due to the absence of the internationally standardized method of facial growth study.⁵⁴⁻⁶¹ Several essential things guide the septoplasty procedure among pediatric patients.

Thorough observation is also advised until the cessation of facial growth. Considering the probability of the extreme effect of the procedure, we suggested performing pediatric septoplasty under very careful consideration. Thus, further studies are required to evaluate the procedure’s outcome periodically, at least several years after puberty, as the growth period would be completed at the age of

16 to 18 years among girls and 18 to 20 years among boys. Midfacial growth and other outcomes during those follow-ups also required to be reported to explore and design an adequate approach for septorhinoplasty procedures among the pediatric population.

CONCLUSION

Pediatric septorhinoplasty procedure has been confronting controversial perspectives among plastic surgeons. Commonly nasal septum surgeries should have been avoided to prevent facial growth alteration in the pediatric population. To perform septorhinoplasty, facial growth and nasal breathing must be highly prioritized. Thorough observation is also advised until the cessation of facial growth. Considering the probability of the extreme effect of the procedure, we suggested performing pediatric septoplasty under very careful consideration. It may deliver an advantageous impact or induce deteriorating outcomes for the patients.

CONFLICT OF INTEREST

The author reports no conflicts of interest in this work.

ETHICS CONSIDERATION

Informed consent was provided before the study being conducted, following COPE and ICMJE guidelines regarding publication ethics.

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AUTHOR CONTRIBUTIONS

All authors equally contribute to the study from the conceptual framework, data acquisition, and data analysis until reporting the case study results through publication.

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