



Treatment outcomes of pediatric rhinoplasty: The Asan Medical Center experience



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ABSTRACT

Objective: Performing rhinoplasty in children has been an issue of some debate due to concerns about potential harmful effects on nasoseptal growth. However, there is a paucity of evidence describing the outcomes of pediatric rhinoplasty. This study presents our experience of performing this procedure in children of 17 years of age and younger.

Methods: The study population consisted of 64 Korean children between 4 and 17 years of age who underwent rhinoplasty between May 2003 and August 2011. Forty-six of the patients were boys and 18 were girls with a mean follow-up period of 59 months. The diagnosis of the patients, the extent of the surgical maneuver performed, and the surgical outcomes were reviewed. Subjective satisfaction of the patients was investigated by telephone interview. Surgical outcomes, which were judged by two independent ENT surgeons, were evaluated by comparing preoperative and postoperative photographs. Satisfaction scores were graded using a visual analog scale (from 1 = satisfied, to 4 = dissatisfied). Anthropometric measurements of nasal parameters were performed preoperatively and postoperatively.

Results: Rhinoplasty was performed in our patient cohort due to a deviated nose (32.8%), nasal bone fracture (18.8%), flat nose (6.3%), nasal mass (4.7%), hump nose (3.1%), nasal dermoid sinus cyst (1.6%), and additional cosmetic rhinoplasty for planned septoplasty (32.8%). The median patient satisfaction score was 2.09 compared with a median doctor satisfaction score of 1.81. Anthropometric measurements showed statistically significant improvements in nasal tip projection, nasal length, dorsal height, and radix height after rhinoplasty. Seventeen patients (26.6%) experienced esthetic dissatisfaction such as deviation, tip depression, bulbous tip, short nose, and nostril asymmetry. Eight patients (12.5%) experienced postoperative difficulty in nasal breathing, and two patients (3.1%) complained of transient nasal pain after rhinoplasty. Six patients (9.4%) underwent revision surgery, and four patients (6.3%) were seriously considering a revision operation.

Conclusions: The outcome analysis in our series reveals that rhinoplasty in children is complicated by a high rate of revision and esthetic dissatisfaction. The results of this study may indicate that surgeons should have a conservative attitude and apply strict indication in selecting pediatric rhinoplasty candidates.

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1. Introduction

Freer and Killian first reported septorhinoplasty in children in 1902 and 1905, respectively [1,2]. Since these first reports, there has been some debate regarding the optimal timing and the extent of a rhinoplasty surgical intervention in children. Compared with an adult nose, the newborn's nose has a lower frontal projection, a shorter dorsum, a shorter columella, a larger nasolabial angle, and rounder nares [1]. Also, the neonatal nasal septum is completely

cartilaginous [3,4]. With increasing age, the profile of the nose and the upper and lower jaw becomes more prominent and a cartilaginous nasoseptal framework becomes ossified. During the growing period, even minor injuries to the nose can cause a progressive malformation via growth disturbances.

Traditionally, most surgeons believed that postponing rhinoplasty until after the pubertal growth spurt is preferable. Several experimental studies with rabbits have shown significant effects of nasal septal trauma on nasal growth [5,6]. Some clinical studies of the results of septoplasty in pediatric patients have also shown growth inhibition of the nose and maxilla after the puberty growth spurt, which supported a “wait and see” policy for surgical intervention [1,5–13]. Based on these studies,

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the fact that septorhinoplasty could suppress nasoseptal growth was widely acknowledged and many experts warned against the procedure. However, rhinoplasty still needed to be considered for children with certain indications such as acute inflammation, severe nasal airway obstruction, or severe external nose deformity, etc. [14,15]. Recently, several researchers have demonstrated that rhinoplasty in the underdeveloped nose had no significant influence on nasal growth, and that using conservative techniques this procedure may cause no harm in pediatric patients [14–20].

In addition, there is a paucity of literature describing the clinical outcomes of rhinoplasty in pediatric age groups from both points of view. In general, many reports refer to a small number of patients with a short follow-up duration or a wide range of age limits. It is our understanding that there have been few case series reviewing rhinoplasty in limited younger age groups of Asian patients. This study presents our experience with rhinoplasty in Asian children of 17 years of age and younger. The clinical status and surgical indication for these patients, the extent of the surgical maneuver performed, and the surgical outcomes are described.

2. Materials and methods

2.1. Study subjects

We reviewed 64 patients aged 17 years and older who underwent rhinoplasty by one senior surgeon and author of this study (Y.J.J.) between May 2003 and August 2011 at the Asan Medical Center in Seoul, South Korea. All procedures were carried out with informed consent and the approval of the University of Ulsan Ethics Committee in accordance with the guidelines of the National Health and Medical Research Institute. The upper age of our study population was extended to 17 years, just beyond the

nasal growth spurt. There were 46 boys and 18 girls in this cohort. The mean follow-up period was 59 months.

2.2. Assessment of surgical outcomes

Surgical outcomes were assessed by two otolaryngologists who were not involved in the operations. Assessment of improvement was based on measurements using the earliest preoperative photograph and the postoperative photograph taken at the final follow-up. In addition, patient satisfaction was determined separately by telephone interview. Outcomes were classified as excellent, good, fair, or no change/poor. Satisfaction scores were graded using a visual analog scale from 1 (excellent) to 4 (poor). Postoperative records were reviewed to assess complications, including postoperative deformity, recurrence of deviation or saddle nose, and loss of tip support or projection.

2.3. Anthropometric measurements

Standard digital right profile 5-inch \times 7-inch photographs were taken of all subjects (Canon EOS 350D; Canon, Tokyo, Japan). A lateral view of preoperative and one year postoperative facial photographs were analyzed by one of the authors of this study (J.S.B). Nasal length, radix height, dorsal height, nasal tip projection, nasolabial angle, and nasofrontal angle were also evaluated (Fig. 1). Nasal length was calculated by measuring the distance between a nasion along the dorsum to a point of intersection with a line from the nasolabial angle. Radix height was defined as a length between the nasion and the medial canthus. Dorsal height was calculated by measuring the distance from the rhinion to the point of intersection with a line from the medial canthus to the alar crease and perpendicular with the nasal dorsum. Nasal tip projection was defined as a length of the nasolabial angle until the point of intersection with a line from the



Fig. 1. Anthropometric measurement of profile view. (a) Linear parameters in the lateral view of preoperative facial photographs; NL, nasal length; RH, radix height; DH, dorsal height; NTP, nasal tip projection. (b) Angular parameters in the profile view of postoperative facial photographs; NFA, nasofrontal angle; NLA, nasolabial angle.

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