NASOALVEOLAR MOLDING (NAM) TREATMENT AND 5-YEAR FOLLOW-UP OF A PATIENT WITH LEFT UNILATERAL CLEFT LIP AND PALATE ANOMALY

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ABSTRACT

The nasoalveolar molding (NAM) is a method which is used to correct the nasal and alveolar deformities before the primary surgical repair in cleft lip and palate patients. A 5-day-old female newborn with complete unilateral cleft lip and palate anomaly was treated with the presurgical NAM technique. In order to mold the nasoalveolar complex, weekly adjustments were performed on the NAM appliance, alveolar cleft distance was gradually reduced and the distorted left nostril was reshaped. Primary surgical repair of the nose and upper lip was performed at the age of 4 months and palatal closure surgery was performed at the age of 10 months. The patient was followed up regularly at 6-month intervals for the next 5 years.

Keywords: Cleft lip and palate, nasoalveolar molding

INTRODUCTION

Cleft lip and palate deformity is seen almost once in every 700 births1, and its treatment starts instantly after the birth. In these patients, nasopharyngeal airway cannot be separated from the oral cavity due to nasomaxillary cleft and airway obstruction is a risk during feeding2. A feeding plate generally assists in feeding by disconnecting nasal and oral cavities3. Nasoalveolar molding4-5 is a method which is used to correct the nasal and alveolar deformities before the primary surgical repair, and it consists of a removable acrylic molding plate which is fabricated from the dental cast of the infant's maxilla. Selective removal of acrylic and addition of soft denture liner on the acrylic plate is performed weekly or biweekly to approximate alveolar segments and to reduce the distance of the cleft space. After initial alveolar molding a nasal stent is embedded into the anterior portion of the molding plate which is used in order to reshape the nose and to upright the columella. Than surgical repairs of the upper lip, nose and palate are
performed. This case report presents the NAM treatment procedure and 5 year follow-up of a patient with left unilateral complete cleft lip and palate anomaly.

CASE REPORT

Diagnosis and Treatment Objectives:

A 5-day-old female newborn with left complete unilateral cleft lip and palate anomaly was referred to the department of orthodontics in Marmara University by plastic surgeon for the presurgical preparation. Initial intraoral and extraoral examination showed that cleft gap was 14 mm and there was arch form asymmetry, columella was short and deficient, lip was widely separated, and the nasal projection was not sufficient (Figure 1). Nasal tip was deviated towards the right side. Treatment objectives were to approximate the disconnected alveolar segments, to obtain symmetric alveolar ridges, reduce the distance between the cleft lip segments, to mold the nose and to lift the columella.

Figure 1. Pretreatment extraoral and intraoral photographs, NAM plate and its initial application.

Treatment Progress:

The stone model of the maxillary arch was obtained and acrylic molding plate was fabricated (Figure 1). For intraoral retention of the plate, tapes extending from the cheeks to the acrylic button which was attached on the plate were used, these tapes’ additional function was to approximate the lip segments. The acrylic plate was modified every week by adding soft tissue denture liner and removing the acrylic to mold the alveolar segments. In the ninth week of treatment a nasal stent which was covered with soft denture liner was attached to the plate for nasal molding and to lift the columella (Figure 2). At the end of NAM procedure patient was referred to the surgery for lip and nose repair at the age of 4 months (Figure 3, A-B). The secondary surgery for palatal closure was performed at the age of 10 months (Figure 3, C). For future alveolar grafting and orthodontic treatment the patient was followed up at 6-month intervals (Figure 3, D).
Nasoalveolar molding treatment and follow-up


Results:

Maxillary segments were approximated, alveolar ridge symmetry and continuity was obtained, the distance between the cleft lip segments were reduced which led to a
tensionless suture and surgery, columella was uprighted and nasal projection was enhanced. After the primary and secondary surgical repairs an overall symmetrical face and a correct nasal form were achieved and during 5-year follow-up these improvements were seen to be stable.

**DISCUSSION**

Babies are born with increased levels of circulating maternal estrogen in their bloodstream which is transferred from their mothers, and this maternal estrogen elevates the plasticity of infant cartilage. Following 3 to 4 months of delivery, estrogen level decreases and the plasticity of the cartilage fades over and ultimately sets in, at that time the form of nasal cartilage is maintained. Due to this reason, in our patient NAM treatment was initiated when the baby was 5 days old and the primary surgery was performed within 4 months. The claimed benefits of NAM treatment are: surgery can be performed more easily and presurgical NAM leads to reduced scar formation, more symmetric nasal cartilage shape is achieved relative to others treated with surgery alone, it reduces the overall cost by reducing the number of secondary nasal revisions and it gives psychosocial support to the infant's family.

**CONCLUSION**

The NAM treatment successfully aided in the correction of the left unilateral complete cleft lip and palate anomaly and satisfactory results were maintained during the 5-year follow-up period.

**COMPETING INTERESTS**

Not declared.

**REFERENCES**