

Benefits of Early Treatment Using Nasoalveolar Molding in an Infant with Unilateral Complete Cleft Lip and Palate: A Case Report



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This is a case of a 1-day-old Filipino boy with a right unilateral complete cleft lip and palate. Patient was brought to Pediatric Dentistry Center Philippines by his mother at 1-day-old and impression taking was done. On the same appointment the child immediately received nasoalveolar molding (NAM) appliance with lip taping treatment. Weekly follow up to adjust the appliance and to assess the progress of the approximation of the cleft lip & lateral segments of the palate were done. Patient underwent cheiloplasty surgery at 14 weeks of age after receiving the NAM appliance with lip taping for 14 weeks. Documentation until age 2 to assess the benefits of treatment. Two years post nasoalveolar molding, the following benefits were observed: better symmetry of the nose, no surgical scar, better nasal projection and better nasal columella height.

Nasoalveolar Molding (NAM) Appliance is a pre-surgical treatment used to improve the surgical results of patients with cleft lip and palate. The goal of the NAM appliance is to mold the nasal cartilages and alveolar ridges into normal form and position and to improve the symmetry prior to the surgery.

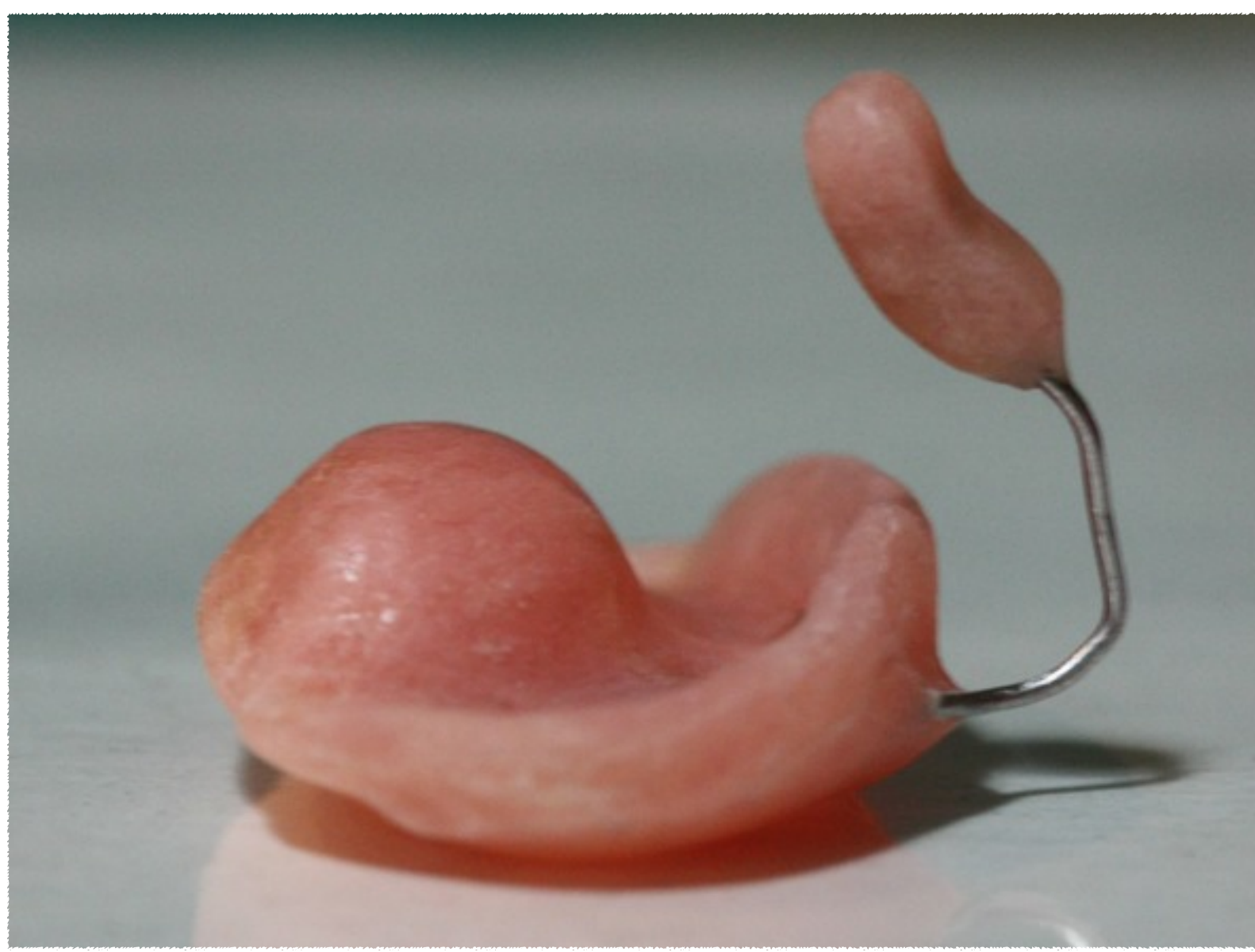


Figure 1. Nasoalveolar Molding Appliance A. Nasal stents or bulb B. 0.030 Stainless Steel Wire C. Acrylic Plate (Alveolar Molding Plate)



Figure 2. Lip Taping is an integral part of NAM treatment. The lip taping simulates the effects of surgical lip adhesion & helps in aligning the alveolar segments.

EXAMINATION & DIAGNOSIS



Figure 3. Child with right unilateral complete cleft lip and palate. A. Affected nasal cartilage is displaced laterally and inferiorly resulting in a depressed dome. B. Child exhibits oblique and short columella and wide nostril base and separated lip segments. Presence of a wide gap between alveolar segments.

Early molding of the deformed nasal cartilage during neonatal period is important because these cartilage have **higher amount of hyaluronic acid** which will gradually diminish at 0 to 2 months.¹

Hyaluronic acid changes the elasticity of the cartilage, ligaments and connective tissue by breaking the intercellular matrix.²

NASOALVEOLAR MOLDING APPLIANCE



Figure 4. Impression Taking. A. Impression taking using an acrylic individual tray and Polyvinyl Siloxane putty type impression material.



Figure 5. Fabrication of NAM A. Block off cleft areas with wax and construct acrylic plate with 0.030 SS wire. B. Check proper position of acrylic stent bulb. Should not cause blanching of the whole cleft nostril.

Installation of Appliance:

1. Cut 2 pieces of medical tape (1 cm width) about 3-4 inches long.
2. Squeeze the baby's cheeks, place the tape from non cleft side to the cleft side. Place 2nd tape over.
3. Place denture adhesive cream on acrylic plate and insert the NAM inside the mouth the nostril.
4. Give home care instructions. Recall after 1 week.

Home Care Instructions:

1. Wear the appliance 24 hours a day.
2. Clean the baby's mouth and appliance twice a day after feeding.
3. Use a clean moist gauze to clean baby's mouth. Clean appliance with soap & water.
4. medical tape changed every 2-3 days.



Figure 6. Periodic Recall. A. Adjust the nasal stent bulb by adding small amount of acrylic about 1-2mm on the superior portion of the bulb to increase the height of the columella. B. Bulb should be medially located and wire at 45 degrees.

PROGRESS OF CASE

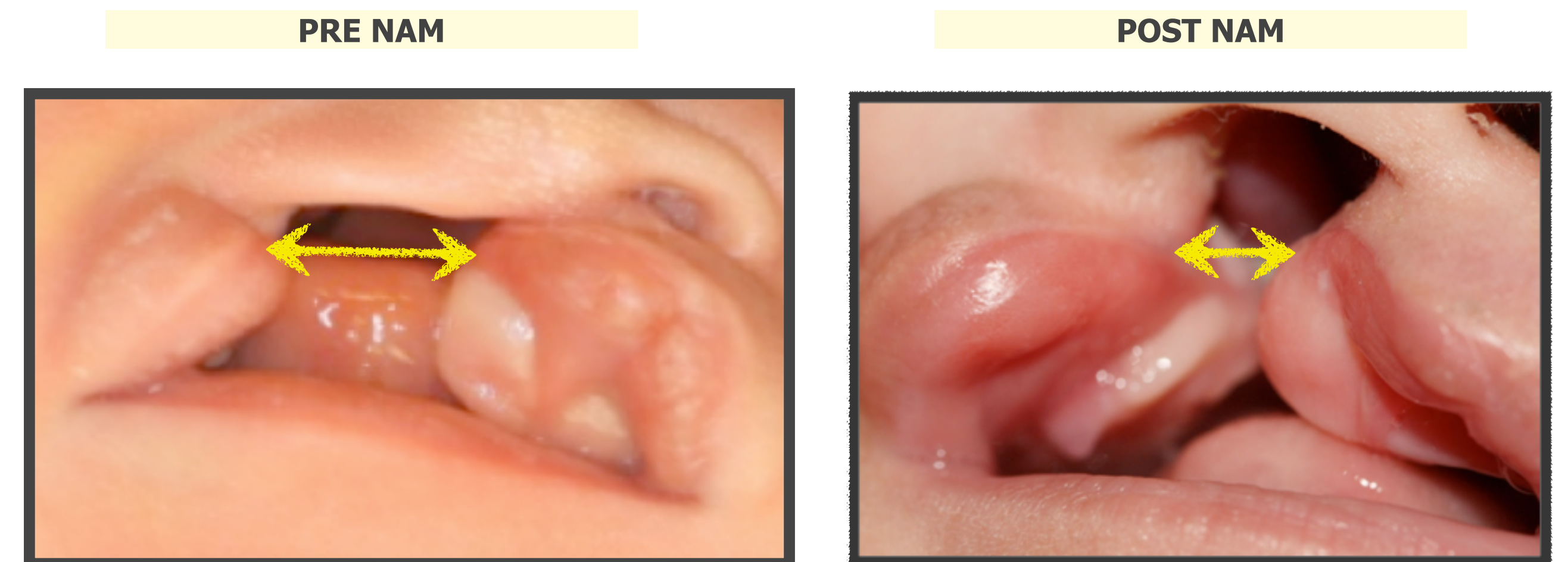


Figure 10. Lip & Alveolar Segments Pre & Post Nam.

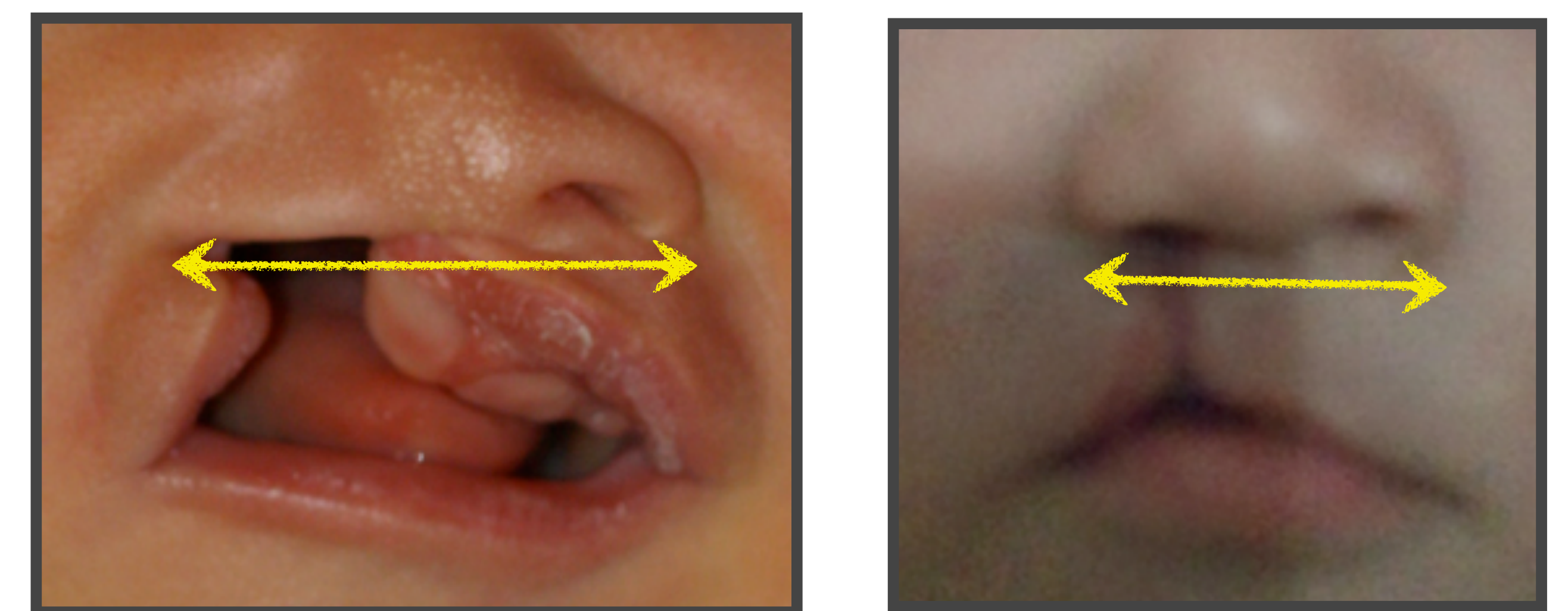


Figure 11. Nasal Base, Columella and Alar Cartilage.

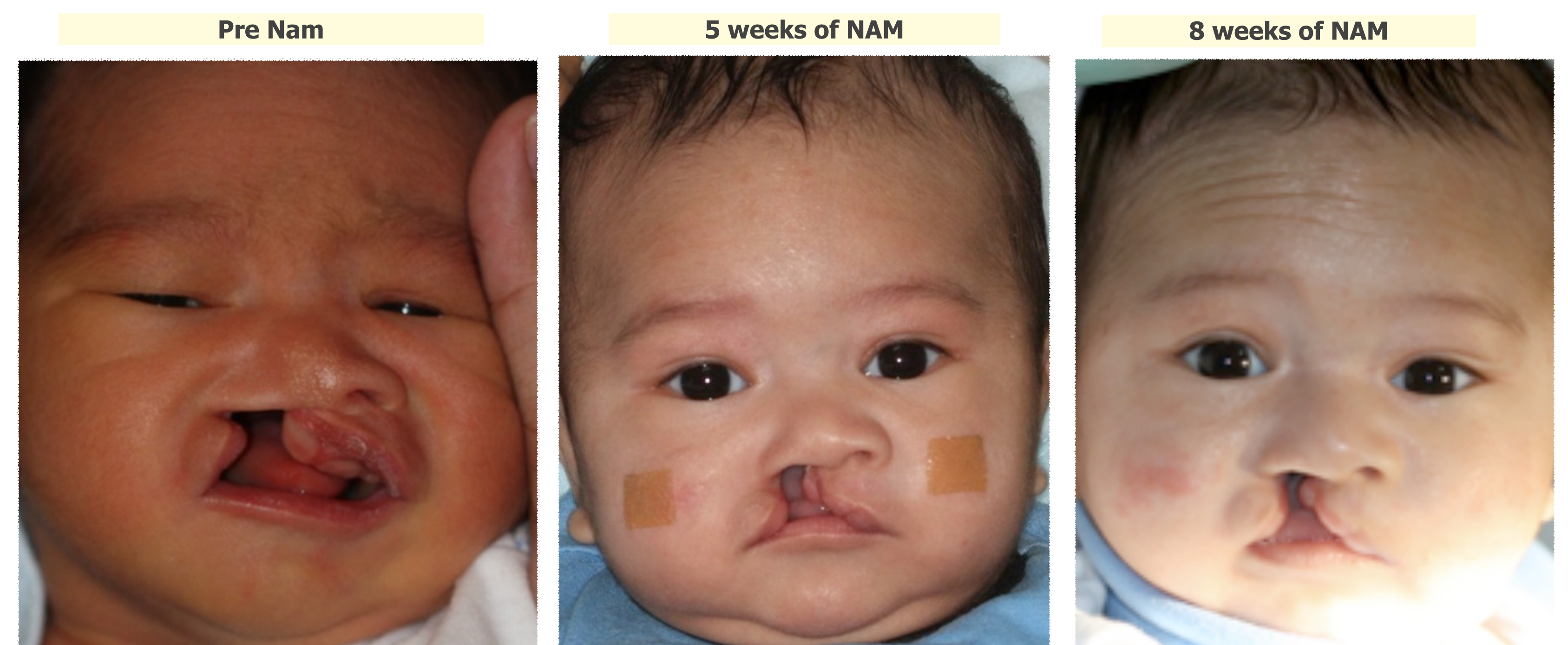


Figure 6. Pre Nam Presence of wide nostril base. Wide gap between upper lip segments and collapsed alar cartilage. The nasal columella is short and deviated towards non cleft side.

Figure 7. A. 5 weeks of NAM B. 8 weeks of NAM There is evidence of narrowing of the nostril base and minimal closure of the gap between upper lip segments. Rounded alar cartilage and increase height of nasal columella was noted. Deviation of the columella is diminishing.



Figure 8. 13 Weeks of NAM The nostril base presents a fairly normal width. Close approximation between upper lip segments are noted. Better symmetry and height of both the alar cartilage and nasal columella.

Figure 9 1 year old and 2 years old (Post Cheiloplasty) Better symmetry of the nose, no surgical scar, better nasal projection and better columella height.

RECOMMENDATION

Proper timing is very crucial in managing cleft lip and palate patients. Better symmetry, no surgical scar, good nasal projection and acceptable columella height are the benefits of Nasoalveolar Molding that can be achieved if management is initiated at an early age specifically at 0-3 months.

Acknowledgements

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