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Nonsurgical ear molding improves many anomalies with few complications

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Congenital ear anomalies occur in 5%-15% of the population, and only 30% of these anomalies self-correct without treatment (Byrd HS, et al. *Plast Reconstruct Surg.* 2010;126:1191-1200). If a malformed ear does self-correct, it usually occurs within the first week of life.

Therefore, it is recommended that infants beyond a week of age be referred for molding therapy within the first three weeks of life. If left uncorrected, ear anomalies may lead to teasing and social difficulties in school.

Traditionally, ear molding has been difficult to employ well unless one was facile in dental materials and could see the patient within the first few weeks of life. Patients who were not treated early had to wait until they were surgical candidates (7-8 years of age), and this delay frequently resulted in patient and/or parental anxiety. Additionally, surgery can be challenging, and the best surgical results may fall short of patient expectations.

Advances in ear molding now make it possible to treat patients nonsurgically and painlessly. Improvements in the design of prefabricated systems allow plastic surgeons to improve or correct many infant ear anomalies, including protruding ears, helical rim anomalies, Stahl's ear, lop ear and even cryptotia. This early nonsurgical intervention frequently eliminates the need for surgical correction, which may not be covered by insurance.

Several commercial ear molding systems are available facilitating application of ear molding and increasing the number of providers facile in this technique.



Plastic surgeons can improve many ear anomalies in infants by molding. Images at left show before ear molding; at right, after molding. Photos courtesy of Stephen B. Baker, M.D., D.D.S., FACS, FAAP

Timing of molding

Ideally, infants should be referred for molding within the first 2-3 weeks of life to achieve the best results. It is



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possible to institute treatment up to 6-8 weeks of age, but outcomes may be compromised and treatment duration will be longer.

Ear molding can permanently reshape the ear during the narrow window when circulating maternal estrogen remains at a high level in the child (Matsuo K, Hirose T. *Ann Acad Med Singapore*. 1988;17:358-365; Matsuo K, et al. *Plast Reconstr Surg*. 1989;83:25-31; Matsuo K, Hirose T. *Br J Plast Surg*. 1991;44:5-11).

Studies have demonstrated that the newborn's cartilage is soft and lacks elasticity. It is believed that the high level of estrogen at birth correlates with increased hyaluronic acid, which inhibits the linking of the cartilage intercellular matrix. If the cartilage is molded while maternal estrogen circulates within the newborn, it tends to retain its new shape as the maternal estrogen is metabolized.

In most cases, nonsurgical molding treatment eliminates the need for surgery. Even if a child needs surgery when he or she is older, the surgery likely will be less complicated than if molding had not been initiated. Additionally, the ear will look better until surgical correction is an option at 7-8 years of age, reducing psychosocial problems.

Risks, complications

It is important that parents have realistic expectations to avoid post-treatment disappointment. They are informed that molding will not result in a perfect ear but likely will improve the shape and form to approximate a more normal ear shape.

Risks and complications of ear molding include skin breakdown under a positioning retractor, skin irritation from the adhesive or failure to meet the parents' aesthetic goals. Skin sensitivity is rare, and any skin breakdown that may occur under a retractor heals well by repositioning the retractor to a healthy area of skin.

Patients are seen one week after application to identify and treat any skin breakdown or irritation. After the initial week of molding, pressure points under retractors usually subside.

Nonsurgical molding has been demonstrated to correct or improve many ear anomalies that previously would have been corrected surgically with few associated complications. Most insurance plans cover the procedure, reducing out-of-pocket expenses for parents.

Dr. Baker is chair of the AAP Section on Plastic Surgery Executive Committee, and Dr. Kumar is a member of the section's executive committee.