



A PEDIATRIC *Perspective*

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Advances in craniofacial surgery improve outcomes

by Robert J. Wood, M.D.

When a child is born with a facial or cranial defect, families are looking for immediate assurances that their child will be O.K. Can this condition be surgically corrected? What are the long-term ramifications for my child? Will this affect other areas of my child's development? These questions are among a parent's first concerns.

For this reason, it is important that families have an opportunity to learn about their child's condition and available treatment options soon after the child's birth (perhaps even in the hospital before they take their baby home). Although surgery may be weeks or months away, presurgical planning not only helps to reassure the family, but may result in better long-term outcomes.

Certainly, advances in technology and surgical techniques over the last 10 years have led to marked improvements in craniofacial treatment — from intra-oral bone lengthening devices to laser therapy and endoscopic facial surgery. This article will discuss several of these advances and how they are making a difference in the care of children with anomalies of the facial and cranial skeleton.

Presurgical orthopaedics for cleft lip and palate

For decades, the standard of care for the child with a cleft lip or palate has been to surgically repair the cleft without any presurgical manipulation of the site. Today, however, presurgical orthopaedic devices offer the opportunity to narrow the cleft and mold the lip and nose prior to surgery. This is believed to improve surgical outcomes and may lessen the number of procedures that a child will need in the future.

An impression is taken of the child's cleft using orthodontic-type putty, and a plastic mold is created. The device is then placed inside the mouth and slowly, over several months, narrows the cleft prior to repair. It can also mold and shape the child's lip and nose, leading to a more natural postsurgical appearance.

In addition to improving surgical outcomes, presurgical devices may also enhance feeding in some infants. There are children with cleft defects who are able to feed sufficiently, particularly when the cleft is present in the lip only. In such cases, a parent might simply cover the cleft opening with their finger (or soft cloth) to improve the child's ability to grasp the nipple and suck. In children with cleft palate, however, feeding difficulty is more common. Often, the child is unable to generate negative pressure through sucking. This may lead to unfinished feedings, fatigue and even failure to thrive. Presurgical orthopaedics may improve such a child's ability to feed by covering the cleft opening and allowing for more normal sucking patterns. The device also decreases the incidence of liquids entering the child's nasal passages during feeding.

Gingivoperiosteoplasty

As with any child who requires surgery, combining procedures, whenever possible, is desirable to avoid the need for multiple anesthetizations and hospitalizations. In children who have a cleft in the alveolus (tooth sockets) as well as the lip, a gingivoperiosteoplasty can be done at the time of lip repair. The surgeon creates a periosteal tunnel across the gap to achieve an acceptable contour of the gums. This may eliminate the need for future anesthesia and bone grafting in this area.

Intra-oral bone distraction

Distraction osteogenesis, or bone lengthening, is one of the newest approaches to treating children with abnormal facial growth. Long recognized as an effective technique for limb lengthening, distraction osteogenesis enables the surgeon to reconstruct the face using the patient's own bone tissue.

Until recent years, the only method for distracting the lower jaw was to attach a lengthening device to the mandible by means of external pins, leaving facial scars. The development of a multidirectional intra-oral device has since eliminated this external scarring. The device is attached to the lower jaw inside the mouth allowing for gradual lengthening of the bone, as well as soft tissue expansion.

An internal distractor can be especially beneficial in infants with Pierre Robin syndrome. Born with a small lower jaw, these children often have trouble with their tongue being recessed in the mouth and closing off their airway. Subsequently, many children with the syndrome require a tracheostomy. Over a period of only several weeks, an internal distractor can expand the jaw, bringing the tongue forward and helping to clear the airway.

Endoscopic facial surgery eliminates some facial scarring

Advances in endoscopic surgery have now made it possible to remove benign facial masses that would typically require surgical intervention, without leaving facial scars. Examples of these include dermoid cysts and vascular malformations.

The surgeon first makes an incision in a remote area such as the scalp. Then, using finely calibrated instruments and fiber optic technology, the mass is removed from underneath the skin and facial muscles. Because no cuts are made on the surface of the face there are no cosmetic traces of surgery.

Is it deformation of the skull or positional molding?

More and more, parents are bringing their children to the pediatrician worried about the shape of their child's head. In the majority of cases, when the changes in their child's skull have occurred in the months after birth, the cause is more likely to be positional molding than a cranial defect.

In the last decade, the American Academy of Pediatrics has made strong recommendations that parents lay their babies down to sleep on their backs, as a means of preventing SIDS (Sudden Infant Death Syndrome). However, this practice can lead to a flattening of the back or side of the head, depending on how the baby holds their head during sleep. The result can be an asymmetric head shape and the changes, in some cases, can be quite profound. A good percentage of these children will also have torticollis, which can get worse.

While changes in the shape of a child's head can cause parents great concern, the good news is that there are simple methods of correcting the problem. A craniofacial specialist can determine whether the child has a cranial defect or changes due to positional molding. Various treatment options are available for the latter, from physical therapy to teaching the parents new ways to position the child to molding helmets.