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JUNE 2004

A photograph of two men in professional attire standing outdoors in front of a modern building with large windows and a paved walkway. The man on the left is wearing a dark suit, white shirt, and patterned tie. The man on the right is wearing a dark suit, white shirt, and a patterned bow tie. They are both smiling slightly.

SAVING FACES

An orthodontist and a plastic surgeon join forces
to give babies a chance to smile

Keys to Practice Valuation

3-D Imaging Choices

Making a Small Office Feel Bigger

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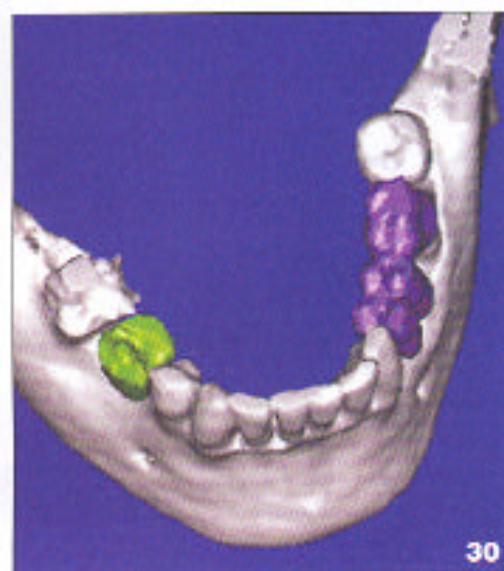
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On the Cover: Cutting (left) and Grayson (right)

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By
Rich Smith

SAVING FACES

AN ORTHODONTIST AND A PLASTIC SURGEON JOIN FORCES
TO GIVE BABIES A CHANCE TO SMILE

Not so many years ago, it wasn't until a baby was born that its parents learned whether the stork had brought a boy or a girl. And only then did they discover whether their son or daughter was properly formed or had a congenital facial malformation, such as a cleft lip or palate.

But along came ultrasound, and with it the ability for doctors to discover a baby's malformation before he or she emerges from the womb. Now, armed with that technological edge, New York University associate professor of clinical surgery (orthodontics) Barry H. Grayson, DDS, and his academic practice partner, fellow NYU associate professor Court B. Cutting, MD, can begin preparing for intake of cleft palate kids during the final trimester of pregnancy. As a result, actual treat-

ment can commence as soon as 1 week after birth.

"In the first few months after a newborn arrives, we have a golden opportunity to orthodontically treat the child and set the stage for later corrective plastic surgery that will deliver results unlike any that would otherwise be possible," says Grayson.

What makes those initial postnatal months so crucial is the extreme plasticity of a baby's face, even one with a malformation. With the right amounts of pressure applied to the oral cavity and nasal cartilages, the shape of the nose and upper jaw can be altered in ways that drastically reduce unilateral and bilateral cleft deformity.

Says plastic surgeon Cutting, "By the time the baby is delivered to the operating room for the plastic sur-

gery procedure, that cleft—even if it started out extremely wide—will be minor. Everything will be lined up: the alveolus is lined up, the nose is largely corrected.

"One thing I've learned about these cases: you can't get good results with surgery alone. It requires orthodontic input."

Cutting's Edge

Grayson and Cutting work at NYU's Institute of Reconstructive Plastic Surgery, where doctors in multiple disciplines bring their collective expertise to bear on the problems of pediatric craniofacial malformations. Grayson conducts his efforts as part of the institute's dental service. This service operates from a two-chair office that, in addition to Grayson, employs a maxillofacial prosthodontist, a hygienist, two orthodontic assistants, a receptionist and an administrator.

Cutting thinks it not entirely correct to describe Grayson as an orthodontist, all things considered.

"Dr Grayson, he's really gone way beyond orthodontics," says Cutting. "He's a molder of kids' faces."

Cutting has been paired with Grayson since 1983, the year Cutting was an NYU craniofacial fellow under the tutelage of Joseph McCarthy, MD, currently NYU's plastic surgery chairman. Grayson already had been on the NYU faculty for several years by that point.

"During my time in the fellowship program, Dr Grayson and I did a lot

Court B. Cutting, MD (left), and Barry H. Grayson, DDS (right)



Grayson examines the oral cavity of an infant exhibiting complete, unilateral cleft lip, alveolus, and palate. The baby has recently been fitted with a nasal-water molding plate.

of research together," says Cutting. "We became good friends in the process."

Afterward, in academic practice with the university, Cutting came to specialize in cleft lip and palate, the most common of the craniofacial malformations.

"Because I found orthodontic intervention beneficial for kids with cleft lip and palate, I made sure Dr Grayson and I continued working together," he says.

Cutting ascertained early on the reason surgery alone could never deliver good results for cleft-palate children.

Through much research and experimentation, Grayson and Cutting developed a system of treatment that delivers good results in most instances. Grayson's contribution to this system was a treatment innovation that he called nasopalveolar molding.

"The idea behind nasopalveolar molding came to us during an informal conversation about tissue expansion as it pertained to the scalp," Grayson recalls. "Why, we reasoned, couldn't the same principles involved there likewise apply to expansion of the columella? If the columella could be expanded, we

would then have a source from which to draw for the tissue needed to perform a successful primary surgery of the lip and nose."

Baby Steps

Nasopalveolar molding begins when the baby is between 1 and 4 weeks old. The first order of busi-

ness is the taking of a heavy-body silicon impression of the newborn's upper jaw.

"We have impression trays custom-made specifically for infants, and specifically for unilateral cleft palates and bilateral cleft palates," says Grayson. "An impression also is made of the nose."

Significantly, no anesthesia is used during this process.

"When we take our impressions, we want the baby wide awake," says Grayson. "The only way to get a proper impression is with the baby's reflexes fully operative, and that means he can't be anesthetized."

The material used for taking impressions is considered quite safe for babies. However, Cutting remembers a previously used brand of impression material posing the risk of airway problems: its composition was such that it could, given the right circumstances, flow into the baby's larynx. The new material is far less prone to that sort of thing, but, as an extra precaution, Grayson positions the baby upside down on the procedure table. Thus, gravity ensures that the impression material goes nowhere other than where Grayson wants it.

During the taking of impressions, the mother is not present, not even within earshot.

"The potential for an airway problem is remote, but if one should occur we need to address it coolly and efficiently—that's hard to do with a parent alongside who's experiencing panic and hysteria," Grayson says.

From the impressions, an intraoral maxillary cast is made for the fabrication of a denture-like molding plate consisting of two components. The first is an oral piece, custom-fitted to the baby's upper jaw deformity and bordered by a soft liner for comfort. The second is a nasal stent that attaches to the molding plate's labial flange and causes the tip of the nose to lift.

"In a baby with either a unilateral or bilateral cleft, the nasal tip is usually depressed, while the base of the nose is broadly spread," Grayson

"Because I found orthodontic intervention beneficial for kids with cleft lip and palate, I made sure Dr Grayson and I continued working together," Cutting says.

"It's due to the absence of certain tissues of the nose, chiefly the columella," he explains. "That deficit prevents postsurgical scar tissue from growing in tandem with the growth of the child. In turn, this causes the tip of the nose to be pulled downward as the face enlarges."

would then have a source from which to draw for the tissue needed to perform a successful primary surgery of the lip and nose."



Cutting and Grayson meet with patients during a session of the cleft palate team. Present but not seen are a geneticist, speech therapist, ENT specialist, ophthalmologist, social worker, maxillofacial prosthodontist, team coordinator, nurse practitioner, pedodontist, and orthodontic residents.



As Cutting looks on, Joseph Bernstein, MD, the cleft palate team's ENT specialist, examines the ear canal of a girl with a cleft.

explains. "The cartilages that create the shape of the lowest third of the nose are deformed, such that where those cartilages should ordinarily be convex, they're concave on the sides where the cleft occurs."

The amount of force required to be exerted by this appliance in order to affect the shape of the baby's face is startlingly small. "It really is amazing," Cutting marvels, while finding it somehow apt that one of Grayson's hobbies is bonsai gardening.

symmetrical and normal anatomical configuration.

"Each time we see the baby in our offices, we make an adjustment of 1 mm or less on the molding plate's flanges, such that we're pushing the protrusive alveolar ridge inward toward the palate, or pushing outward the alveolar ridge that's already too far in," says Grayson. "We do this by grinding away the denture in areas where we want the alveolar ridges to move toward and

"We have a number of kids for whom it has been 15 to 20 years since they underwent the neonatal procedure, and now they have come back to us for their phase I and phase II orthodontics," says Grayson.

The configuration of the molding plate is completed with a front end extension that exits the oral cavity and engages a system of elastics and tapes applied to the baby's cheeks. This serves to actively hold the molding plate against the roof of the mouth.

With the appliance in place, the shape of the baby's face can be gradually changed toward a more

adding material on the side of the alveolar ridge where we're trying to apply pressure and gently push."

A baby fitted with the molding plate is seen in the office once a week for a period of about 3 months if the baby has unilateral cleft palate; the treatment time is 4 or 5 months in cases of bilateral cleft palate.

By the end of that process, realignment of the palate should be

far enough along for Cutting to step in and perform plastic surgery to complete mending of the cleft.

"Some parents think I don't have much to do as a result of the heavy lifting done by Dr. Grayson, and I don't at all mind them thinking that," Cutting chuckles. "In fact, I joke with Dr. Grayson that if he could ever figure out a way to get tissues to heal together orthodontically, I'd be out of business."

Compliance, Thy Name is Mom

Although the patients are newborns and infants, the chair used in Grayson's office is nonetheless a standard unit meant to seat teens and adults.

"What we do is have the mother of the baby recline in the chair, then the baby is placed with its back resting on her chest; it's the mother's job to keep the baby secure in her enfolding arms," says Grayson. "We find this makes the perfect chair configuration—the mother functions like a car seat and the baby is in a place he or she finds comforting and safe.

"Sometimes as an alternative we use a cushioned, operating room table for an examination of the baby. But we prefer having the baby against the mother in the dental chair because there, surrounding it, we have all the customary support systems: light, air, water, suction."

As with everyday orthodontics, compliance is crucial to the success of treatment. However, because of who these patients are, responsibility for compliance falls entirely on the shoulders of the parents.

"You can't deliver nasopalveolar molding without the participation of really dedicated, really involved parents," says Cutting.

For parents, a primary task is appliance hygiene, which includes frequent removal, cleaning, and reinstallation. Parents also must continually engage in surveillance of the baby to make sure the appliance hasn't slipped its moorings.

"The tape that secures the appliance at the cheeks can become wet and lose its adhesiveness," says Grayson. "Parents have to watch for

that and, if it occurs, they have to replace the tapes right away."

Fortunately, the parents Grayson and Cutting encounter tend to be exceptionally vigilant. The reasons for this vary, but Cutting suggests that being aggressive in maintaining the appliances helps many parents overcome the sense of impotence and guilt often suffered when a baby is born with deformities. Making sure that they offer complete compliance to the doctors' prescribed plan gives parents the feeling that they're back in control and are empowered to make things right for their child.

"Parents often find this whole process rather life affirming," says Cutting.

Because there is an intensity of passion undergirding all of this, many of the parents form lasting bonds with Grayson, Cutting and others in the institute. Which explains why so many of these families return to Grayson's office years later for conventional orthodontic services, like braces.

"We have," says Grayson, "a number of kids for whom it's now 15 to 20 years since they underwent the neonatal procedure, and they have come back for phase 1 and phase 2 orthodontics."

Ad-Free Zone

Grayson and Cutting have no

need to advertise for cases, because they enjoy a steady stream of new patients strictly by dint of parents networking with other parents.

"The best advertising is having the consumer do it for you. That's what's happening for us," says Cutting.

Parents often become aware of Grayson and Cutting while surfing the Internet in search of information about treating cleft lip or palate.

"In the course of those searches, they come across literature we've published that's been posted by support groups on their own Web sites and chat rooms," says Grayson. "These support groups are started by parents of patients who share information. What they're all talking about is nasolabial molding, and they're telling parents where they can find clinicians skilled enough to deliver this treatment."

Adds Cutting, "Some of the families put their kids' before-and-after pictures up on the Web. That pretty much results in nasolabial molding selling itself."

Grayson and Cutting would be willing to post photos on their own Web site if only they had one. Actually, they did, once upon a time. It vanished during university construction of a network firewall to protect the institution's computers against hackers and viruses.

"We just never got around to getting our Web site back up," Cutting demurs. "We didn't have the motivation. We were getting all the new patients we could want without it, so it seemed pointless to invest the time in relaunching the site."

Speaking of investments, treating cleft palate is expensive, costing far more than most families can afford. So the university absorbs much of the tab. Happily, the not-for-profit National Foundation of Facial Reconstruction helps lighten NYU's load by donating generously each year to the work of the institute.

Owing to the costs and time involved, "a conventional orthodontic private practice may not find treatment of cleft-palate kids the way we do it here to be financially viable," Grayson cautions.

However, economics aside, NYU's service to these children is priceless in terms of happiness delivered. Accordingly, Grayson says he and Cutting plan to continue working side by side in the years ahead. The relationship is too rewarding to allow for anything less, he insists. No doubt the parents of the cleft palate babies helped by the pair would concur. ■

Rich Smith is a contributing writer for Orthodontic Products.