Clefts are the most common type of craniofacial anomaly; approximately 25% of children with clefts have both the lip and palate. Clefts are more prevalent in children of Asian, Latino or Native American descent.

This article will discuss treating clefts in children who are 18 months or older. It will highlight some of the problems — beyond cosmetic abnormalities — that clefts might cause, particularly when treatment is delayed. Such problems include feeding issues, ear infections, hearing loss, speech and language delays, and dental issues.

Planning Treatment for Children With Clefts

Clefts are a critical craniofacial team's concern newly adopted children who have clefts — even if the children have received treatment in their countries of birth. At Gillette's Specialty Healthcare, a craniofacial team often includes craniofacial surgeons, plastic surgeons, oral maxillofacial surgeons, orthodontists, dentists, and speech and language pathologists who work together to provide comprehensive care.

This team of experts can help determine the best course of treatment for each child. They will work closely with the child's family to develop a treatment plan that meets their needs and goals.

Collaboratively, the team can develop a comprehensive treatment plan and address the potential problems that accompany clefts. More than 150 syndromes include cleft lip or palate in their differential diagnoses. Although clefts generally are isolated abnormalities, nearly 15 percent of all patients with cleft lip or palate present clinically with multiple concerns. Being aware of the potential problems associated with clefts can help primary-care providers and pediatricians assess growth and development (giving consideration to the cleft) and plan additional care.

Presurgical Treatment

Presurgical treatments for children who begin cleft repairs shortly after birth are less invasive than are procedures for children who begin repairs when they are older. Older children who have undergone surgery for their clefts often develop a profusion of the cleft and additional abnormalities (often called ‘syndromes').

Before repairing the lip, a surgeon must pull the child's alveolus into alignment as much as possible. When clefts are treated immediately after birth, use of the GilletteCleftClret Retainer®, a presurgical orthopaedic device, can align the alveolus.

Pituitary-Reduction Treatment

After children reach 3 to 4 months of age, however, the hard and soft tissue loses malleability, and the retainer does not create adequate force to move the alveolus.
Four to six weeks after palate-repair surgery, children undergo speech evaluations and begin speech therapy, which continues as needed. After the initial surgeries, the surgical schedule relaxes, giving children time to progress through surgery schedules and language development. Future procedures might include conducting nasometry and identifying dental problems. When children develop hypernasality (excessive nasal resonance), treating the lip or nose separately, or even omitting the step altogether. Speech or palatal surgery, or both, might be needed.

Speech and Language Development
In many cases, the child chooses to adopt their ears (even those without clefts) from outside the U.S. report that language development of the adopted child is their primary concern. One study followed a child adopted from China at 6 to 25 months of age and found that 95.5 percent of the study population had a specific language disorder. The study also reported that English-speaking children with or without clefts scored significantly higher on tests of English language skills. Some studies show that for surgery. In the same study, children who underwent surgery had a significant improvement in speech and language skills. An important finding was that children who received both operations had the best outcomes.

When evaluating language development in children whose cleft surgery was delayed, it is important to keep in mind that all factors related to palatal repair, including possible velopharyngeal concerns. A speech evaluation four to six weeks after palate repair can help families assess and encourage their child's speech and language skills.

Children who have clefts only in the lip generally develop without significant speech or nasal airflow problems. After cleft palate repair, many children have speech therapy and eventually develop normal speech.

Some children with cleft palates, however, speech more slowly and/or less accurately than other children. When a child's speech is behind normal or nasal airflow is excessive, the problem may be identified as hypernasality. This can make it difficult or impossible to separate the oral and nasal cavities during speech. Such an increase in oral nasal airflow can cause excessive amounts of air to escape through the oral cavity during speech production, resulting in the perception of hypernasality and/or nasal emissions. About 20 to 30 percent of children who have cleft palates will have velopharyngeal incompetence or hypernasal speech after surgery and might require a pharyngoplasty procedure at age 4-5. This procedure involves raising a flap of tissue from the posterior pharynx and inserting it into the soft palate.

In addition to velopharyngeal dysfunction, missing teeth and dental-alignment issues are frequently present in children with clefts. Such issues, coupled with decreased locomotor function (impaired locomotor function), can force repositioning of the segments and prepare the lip for speech production; or grafting bone to the palate.

Dental Problems
In the cleft area, teeth often erupt in a crowded position. Radiographs are often necessary to determine the exact position of the teeth. Because children with clefts often have other medical issues, such as hearing loss, their teeth might be more difficult to diagnose. In addition, some clefts can result from the previous surgeries, which might be more difficult to properly clean the teeth.

Due to the scarring effects of the previous surgeries, the palate — in most cases — does not grow at the same rate as the mandible. Therefore, U.S. might require early orthodontic intervention to expand the maxillary arch. This intervention can begin as soon as the third birthday and should be completed by 6 to 7 years of age. Such interventions prepare the dental arch for the eventual orthodontic procedure.

Preproadoption Consultations
Cleft children present consultations upon request. Many families bring photos, medical information and reports from the country of birth. We cannot rule out diagnoses based on such information, but we might be able to provide information concerning:

• Surgical repair of the lip and/or palate
• Dental and orthodontic management techniques related to cleft lip and palate
• Feeding skills and strategies for children with clefts
• Issues related to learning a new language in international adoptees who have a diagnosis of cleft palate

We always recommend that, within a week of arriving in the U.S., internationally adopted children see a pediatrician for a general health exam, any needed blood work, nutritional assessment and immunizations.

References
Four to six weeks after palatal repair surgery, children undergo speech evaluations and begin speech therapy, which continues as needed. After the initial services, the surgical schedule relieves, giving children time to practice their speech and language development. Future procedures might include conducting symmetry and asymmetry tests to evaluate for potential resonance (hypernasality), possibly revising the lip or nose scar, or bone grafting if the cleft is too wide to instigate speech production, or grafting bone to the gumline.

Speech and Language Development
In the meantime, parents can assist their children in many different ways (even without them noticing it) to help mitigate the potential for speech and language delays. This can include simply reading with them, encouraging their participation in playgroups, and providing age-appropriate toys and other objects that enhance their cognitive development and the ability to anticipate actions. At this stage, language skills also need to be reinforced as they develop throughout the world of sounds.

The objective is to create a dental arch similar to that found in children without clefts. This is often achieved with orthodontic intervention, ensuring a new relationship can be established between the maxilla and the palate. This intervention can begin as early as 1 to 2 weeks after surgery, primarily because it will help ensure that the palate is in place after surgery and can support the upper jaw. This intervention — a clinic setting — activates the device once every five to seven days during the two- to three-week period. After that, a surgeon removes the device and repairs the cleft lip.

Children have patient-scheduling procedures undergo general anesthesiology. Although an overnight hospital stay is rarely necessary, patients often experience significant discomfort after the procedure. Therefore, providers prescribe narcotic analgesics for patients to take home. Patients typically experience some discomfort in the palate as it heals, which is usually experienced as a soreness, and may require an initially primary liquid diet after surgery. Complications might include: healing problems that may last six months to a year, traumatic or functional problems and an inability to eat solid foods; the need for dental implants; the need for dental extractions; and the inability of teeth to develop normally.

Palate repair
• As needed
• Lengthen palate (pharyngeal flap) as needed, based on speech evaluation
• 3 to 4 months
• Begin at 1-2 weeks
• Issues related to learning a new language — especially one with a different speech sound system — after a palate repair, many children have speech therapy and eventually develop normal speech.

Som e children with cleft palates, however, speak more slowly and/or less accurately than other children. When a child palate is in place but the velopharyngeal port to close properly is sometimes already partially obstructed, it may make it more difficult or impossible to separate the oral and nasal cavities during speech. Such an increase in oral nasal airflow can allow excess amounts of air to escape through the nose during speech production, resulting in the perception of hypernasality and/or nasal emissions.

Precaution Concepts
Clefts create communications challenges upon request. Many families bring photos, medical information and reports from the country of birth. We cannot rule out diagnoses based on such information, but we might be able to provide information concerning
• Repair of the cleft lip and/or palate
• Dental and orthodontic management techniques to close lip and palate
• Feeding skills and strategies for children
• Issues related to learning a new language in international children who have a diagnosis of cleft palate
• Speech therapy

We always recommend that, within a week of arriving in the U.S., internationally adopted children see a pediatrician for a general health exam, any needed blood work, a nutritional assessment and immunizations.
Children having pin-retention procedures undergo general anesthesia during the two- to three-week period. After that, a surgeon removes the pin in the clinic setting — activates the device once every five to seven days to maintain pressure, and the child experiences no discomfort, belches, or grunting to bone the gum. Speech and Language Development In most cases, children are adopting (even those without clefts) from outside the U.S. report that language development of the adopted child is their primary concern. One study of children adopted from China at 6 to 25 months of age found that 94.5 percent of the sample developed language milestones within the typical range for English-speaking two-year-olds of two years of age. Some studies show that if surgery for cleft conditions is delayed, speech outcomes are less favorable and articulation errors are more difficult to correct. Anecdotal reports, however, show that children learn a new language — especially one with a different speech sound system — after a palate repair, negative consequences might be less severe. When evaluating language development in children whose cleft-repair surgeries were delayed, it is important to keep in mind all factors related to cleft palate repair. That can result in fluid building up frequently in the middle ear, otitis media, and ear fluid build-up or unequal pressure, it might be necessary for the child to monitor speech and swallowing problems and to correct using speech or swallowing therapy. Some studies show that if surgery for cleft conditions is delayed, speech outcomes are less favorable and articulation errors are more difficult to correct. Anecdotal reports, however, show that children learn a new language — especially one with a different speech sound system — after a palate repair, negative consequences might be less severe.

Speech and Language Development

The objective is to create a dental arch similar to that found in children without clefts. Doing so optimizes the positioning of the palates will have velopharyngeal incompetence or hypernasal speech after surgery and might require a palpharyngoplasty procedure at age 4 to 5 years. This procedure requires raising a flap of tissue from the posterior pharynx and inserting it into the soft palate.

In addition to velopharyngeal dysfunction, missing teeth and dental alignment issues are frequently present in children with clefts. Such issues often include missing teeth, cleft-related malocclusions (such as e, m, n, and p) in place of pressure, or "stop," phonemes, or "nasal" phonemes (c, d, e, and g). For example, the word button could sound like moo een. Therefore, a child might select the stop phoneme and the nasal phoneme to express the meaning of the word, called pharyngoplasty or glossectomy. These steps are similar to those used in cleft palate surgery. Before surgery, children who have cleft palates might have difficulty producing some consonant sounds.

Ear Infections and Hearing Loss

In addition, many children with cleft lip and palate — have a higher incidence of hearing problems than infants who do not have clefts. Children with cleft palates are at risk for infectious and inflammatory diseases during the first two to three months after the surgery. Some studies show that if surgery for cleft conditions is delayed, speech outcomes are less favorable and articulation errors are more difficult to correct. Anecdotal reports, however, show that children learn a new language — especially one with a different speech sound system — after a palate repair, negative consequences might be less severe.

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Robert Wood, M.D., is a craniofacial surgeon and medical director of the Craniofacial Services at Gillette Children’s Specialty Healthcare. He treats patients who have various craniofacial anomalies, including cleft lip and/or palate. Wood received his medical degree from the University of Minnesota Medical School and completed a general surgery residency at Harbor-UCLA Medical Center in Torrance, Ca., and a fellowship in craniofacial surgery at New York University Medical Center.

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A Pediatric Perspective focuses on specialized topics in pediatrics, orthopaedics, neurology, and rehabilitation medicine.

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A P E D I A T R I C P E R S P E C T I V E


A Pediatric Perspective
6 Vol. 18, Number 1 2009


Each year, U.S. families adopt approximately 20,000 children from countries such as Guatemala, China, South Korea, Russia and Ethiopia. Although Minnesota supports the highest proportion of international adoptions per capita of any state.

The International Adoption Medicine Program at the University of Minnesota estimates that 12 percent of its adoption-related referrals involve children who have mild to severe craniofacial anomalies. Cliffs are the most common type of craniofacial anomaly, approximately 75 percent of children with cliffs have both the lip and palate. Cliffs are more prevalent in children of Asian, Latino or Native American descent.

This article will discuss treating children who are 30 months or older. It will highlight some of the problems — beyond cosmetic abnormalities — that cliffs might cause, particularly when treatment is delayed. Such problems include feeding issues, ear infections, hearing loss, sleep and language delays, and dental issues.

Planning Treatment for Children With Cliffs
It is critical to consider that a craniofacial team assesses newly adopted children who have cliffs — even if the children have received treatment in their countries of birth. At Gillette Children’s Specialty Healthcare, a craniofacial team often includes craniofacial plastic surgeons, pediatric audiologists, speech and language pathologists, feeding specialists, pediatricians, and primary-care providers.

Collaboratively, the team can develop a comprehensive treatment plan and address the potential problems that accompany cliffs. More than 150 syndromes include cliffs in lip or palate in their differential diagnosis. Despite cliffs generally isolated abnormalities, nearly 15 percent of all patients with cliffs lip or palate present clinically with multiple concerns. Being aware of the potential problems associated with cliffs can help primary-care providers and pediatricians assess growth and development (giving consideration to the potential for sleep apnea). If children with cliffs require postoperative care, they may need a sleep study to determine the best management strategy.

If children present with sleep apnea, contact the Sleep Center at 651-312-8989.

Surgical Treatments
As the box on Page 2 shows, surgical treatment for children who have cliffs typically begin at birth and conclude by 3 months (cliff lip) or 10 months (cliff palate). Some children might need subspecialty surgery or other interventions.

Because international adoptions usually take place in late infancy or toddlerhood, however, internationally adopted children who have cliffs typically begin surgical treatment at a later age.

The course of surgical treatment for these children depends upon the child’s specific needs. Many have initial lip repair surgery in the country of birth. Only rarely, however, do children experience cleft palate repair before they are adopted internationally. Some children receive no treatment in their country of birth, they require lip and cleft palate surgery when they arrive in the U.S.

Presurgical Treatment
Surgical treatments for children who begin cleft repairs shortly after birth are less invasive than those for children who begin repairs when they are older. Older children who have undergone surgery for their cliffs often develop a prosthesis (to cover the scar and provide a better appearance) before requiring repairs.

Before repairing the lip, a surgeon must pull the child’s alveolus into alignment as much as possible. When clefts treatment begins immediately after birth, use of the Gillette Osteo/Cliff Retainer® — a presurgical orthopaedic device — can align the alveolus.

Plans-Reaction Treatment
After children reach 3 to 4 months, however, the hard and soft tissues lose malleability, and the retainer does not create adequate force to move the alveolus.
Robert Wood, M.D., is a craniofacial surgeon and medical director of the Craniofacial Center Services at Gillette Children’s Specialty Healthcare. He treats patients who have various craniofacial anomalies, including cleft lip and/or palate. Wood received his medical degree from the University of Minnesota Medical School and completed a general surgery residency at University of California Medical Center in San Francisco. After completing a fellowship in craniofacial surgery at New York University Medical Center, he trained in plastic surgery at New York University Medical Center.

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Each year, U.S. families adopt approximately 20,000 children from countries such as Guatemala, China, South Korea, Russia and the U.S.S.R. Many, in the U.S, Minnesota reported the highest proportion of international adoptions per capita of any state.

The International Adoption Medicine Program at the University of Minnesota estimates that 12 percent of its adoptive-related referrals involve children who have mild to severe craniofacial anomalies. Clefts are the most common type of craniofacial anomaly, approximately 25% of children of children with clefts are born with both a lip and palate. Clefts are more prevalent in children of Asian, Latino or Native American descent.

This article will discuss treating children who are 2 years or older. It will highlight some of the problems beyond cosmetic abnormalities — that clefts might cause, particularly when treatment is delayed. Such problems include feeding issues, ear infections, hoarse and harsh sounds, speech and language delays, and dental issues.

Planning Treatment For Children With Clefts

If a child is a craniofacial team serves newly adopted children who have clefts — even if the children have received treatment in their countries of birth. At Gillette Children’s Specialty Healthcare, a craniofacial team often includes craniofacial surgeons, plastic surgeons, audiologists, speech and language pathologists, feeding specialists, pediatricians, and primary-care providers.

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Treat Your Child’s Cleft — or Other Craniofacial Anomaly — with a Cleft-Related Syllabus

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