

What is a cleft lip?

A cleft lip is a hole in the lip that results from a disturbance in lip growth during the first trimester of development. The parts of the lip that are separated vary from child to child. Some children can simply have a notching or cleft in the lip vermilion or philtral column. This notching can vary in degree and is called an incomplete cleft. Other children have a complete separation of the lip that extends all the way up into the nose. This is called a complete cleft lip. This type of cleft often distorts the nose as well. Clefts of the lip can be on one side (unilateral) or on both sides of the lip (bilateral). The cleft does not hurt, and parents should not be afraid to touch it.

Children with a cleft lip often have a hole in the gum below the lip as well. This is called an alveolar cleft. There can also be a separation in the roof of the mouth called a cleft palate. However, because the lip and palate develop separately, not all children with cleft lip have a cleft palate and vice versa.

Children with an isolated cleft lip (no cleft palate), typically have no problem eating. They can be fed with normal nipples, although a cross-cut nipple is usually helpful. Feeding of a child with a cleft palate is more challenging and way to feed these babies is covered under the cleft palate segment of this website.

There are many causes of a cleft lip, most of which have nothing to do with the parents. Therefore parents should not blame themselves for "causing" the cleft. One child out of every 800 children born has a cleft lip. Therefore it is very common. At the NSU Cleft and Craniofacial research lab founded by Dr. Stelnicki, Dr. Stelnicki's research team is constantly searching for new ways to decrease cleft lip scarring. Recent advances in the use of Botox and other scar modeling treatments have improved the post operation scarring in many patients, helping to decrease the tell tale signs of a cleft lip.

Treatment of cleft lip at our center begins before birth when possible. Today, in utero diagnosis of cleft lip and palate is possible at 16 weeks gestation by ultrasound. Families found to have a child with cleft lip and palate by ultrasound are seen by our clinic and counseled as to what to expect when the child is born. The families are taught how to feed the child by our nurse practitioner so that they can be prepared to meet the needs of their special child even before the infant arrives. Genetic counseling and testing is also made available. Dr. Stelnicki then shows to family what to expect when the child is born, and familiarizes the family with what surgeries will need to be done to correct the problem. In this way, our program helps to relieve some of the fear and anxiety that accompanies this problem.

Once the child is born, feeding and airway issues are again addressed by the team. Our nurse specialist works with the family to make sure the baby is receiving optimal nutrition. This often requires special feeding devices such as the Haberman, Mead

Johnson, Dr. Brown or other cleft nipples and bottles, all of which are important parts of allowing the child to grow. Family support is also important at this time. Most families, who have a child born with a cleft or other craniofacial condition, do not know anyone else who has lived with this condition. This can lead to feelings of isolation and despair. To help fight this, Dr. Stelnicki links families together via the family support network at the Cleft and Craniofacial Center at Joe DiMaggio's children hospital to develop a family support network that helps new families learn how to cope with their child's facial difference.

When talking with friends and family about your child, you should be direct. It is important to emphasize that in most cases, your child is completely normal, and simply needs a few surgeries, dental care, and speech therapy to treat the "hole" that is present in your child. It is important to emphasize that this hole does not hurt, and that your child should be held, touched, loved, and cared for just like any other baby. It is important to take pictures in order to record and remember the transformation that is about to occur in your child. These pictures will help you focus on your baby's condition and talk to others about what is happening with your child. When kids get older, they often enjoy looking back at themselves as infants, and seeing how far they have progressed. It will also help children explain to other kids what happened to them as a baby.

Dr. Stelnicki is the founding cleft and craniofacial surgeon at the Joe DiMaggio Children's Hospital Cleft and Craniofacial Center. He believes strongly in team centered care and that complex problems need to be dealt with by an experienced group of health care providers dedicated to your child's wellbeing. State of Florida outcome data, available through Children's Medical Services (CMS), confirms that Dr. Stelnicki is one of the most experienced cleft and craniofacial surgeons in the State. He performs more cleft and craniofacial surgery in one month, than most other plastic surgeons do in a year. This experience is essential when dealing with the complex differences each child with a cleft presents. Every child's cleft is different and having a surgeon with the experience and the tools to deal with your child's problem is essential to achieving the best long-term result.

Depending on the type of cleft lip, surgical treatment will begin anywhere from 2-6 months of age. The goal of surgery is to close the lip hole in a way that scarring is minimized and the lip appears as natural as possible. In some patients, orthodontic treatment will be initiated to properly align the alveolar ridges prior to surgery. This is called Naso-alveolar Molding or NAM. It is performed when there is a large separation in the gum below the cleft lip. This important step allows the surgeon to close the lip cleft without tension, thereby reducing the amount of scar post operatively. Precise alveolar (gum) alignment also allows the surgeon to close the alveolar fistula at the time of lip repair. If successful, the procedure permits closure of the cleft that is usually present in the dental alveolus at an early age. This decreases the need for bone grafting in the future and does not seem to interfere with facial growth if this is done in a gradual and

well-orchestrated manner. Dr. Stelnicki is one of the few surgeons in the state who is trained in the technique of nasoalveolar molding. Nasoalveolar molding is a non-surgical, passive method of bringing the gum and lip together by re-directing the forces of natural growth. It is non-painful, and easy to use. It also allows for correction of the flattened nose prior to surgery, and facilitates nose repair at the time of lip repair. This technique is becoming the "gold standard" for cleft lip repair in many internationally known cleft and craniofacial centers, and we are proud to be able to bring this technique to the families associated with the Joe DiMaggio cleft and craniofacial center.

In patients who cannot undergo active orthodontic molding of the alveolus, a preliminary lip adhesion is performed at age 1-2 months. A lip adhesion is a temporary closure of the lip that simply pulls the lip edges together, but in no way corrects the deformity. The goal of this surgery is to push the alveolar segments (gum ridges) together slowly, by using pressure from the lip adhesion to push the pre-maxilla backward. Then, at 6-9 months of age, a complete primary lip repair is performed.

What is a cleft Palate?

A cleft palate is a hole in the roof of the mouth that results when the right and left sides of the developing mouth do not form. A cleft palate can have up to three components: A hole in the gum line, a hole in the hard part of the roof of the mouth called the hard palate, and a hole in the muscular part of the roof called the soft palate. There are many causes of cleft palate, but the majority of patients have a spontaneous cleft, which is not the result of anything the mother or father did during the pregnancy.

Proper feeding is an important part of caring for a child with cleft lip and palate. It is an essential part of providing adequate nourishment to the growing child. It can also deliver some degree of immunity from disease early in childhood, and is an important part of the bonding process that occurs between mother and child. The suckling action that occurs during feeding is also important. Suckling helps develop important muscles responsible for feeding, drinking, chewing, speech and sound production. It is also pleasurable to your baby, therefore serves as a source of comfort. Therefore in deciding how to feed a child with a cleft palate, a method should be chosen that requires active suckling.

A full term infant needs 2-3 ounces of breast milk or formula per pound of body weight per day in order to gain weight. It is normal for a baby to lose up to 10% of the initial birth weight within the first few weeks of life. But then, this weight should be rapidly gained back and exceeded. A 2-week-old baby usually receives between 18-24 ounces per day, however nasal regurgitation, length of feeding, and other factors may alter this number. Therefore, babies with a cleft palate should be weighed weekly to ensure that the oral intake is enough. Babies should be fed on a 3-4 hour schedule, and no longer than 30 minute per feeding for optimal results.

Infants with an alveolar cleft (a hole in the gum) only usually do not have problems with feeding. However, a hole in the hard and soft palate can interfere with feeding. The hole initially makes feeding difficult because a suction vacuum cannot be effectively generated inside the mouth to pull milk from nipple or breast. To overcome this problem, specialized feeders are used to give adequate nutrition to the child. When used effectively, the child can grow and gain weight, just like any child without a cleft. Our nurse-feeding specialist is experienced in teaching families how to feed these patients and maintain adequate nutrition. We typically recommend the Haebberman feeder, which allows the parent to squeeze pumped breast milk or formula into the child's mouth during active suckling. Other feeders such as the Mead-Johnson are also effective, and both can be ordered by contacting our office directly. In pinch, a cross cut nipple that is squeezed or the NUK nipple, both of which are available in Walgreen's can be used. No matter which bottle is chosen, the nipple should be angled to the side of the palate away from the cleft so that your baby has a chance of getting some milk on his or her own by compressing the nipple with the tongue. The baby should also be held upright during feeding in order to decrease the amount of nasal regurgitation. Please consult our feeding specialist to determine which nipple is best for you.



Breast-feeding is difficult because of lack of suction. However, a few minutes of breast time before each feed is recommended to aid in the creation of the bond between mother and child. After five minutes of breast time, the infant can be fed with pumped breast milk or formula depending on parental desire. The most important thing is that the child is gaining weight and receiving adequate nutrition. For parents who insist on only breast-feeding, there is a feeding tube that can be attached to the surface of the nipple during breast feeding that allows the mother to squeeze extra milk into the baby's mouth during breast feeding. This is typically a second or third choice in terms of feeding techniques, but it can be successful.

It is also common for the milk to come out of the nose. This is called nasal regurgitation and it result from the opening created between the mouth and the nose. When this occurs, stop feeding, allow your baby cough or sneeze the milk out, wipe off the excess with a moist cloth, and then resume feeding once breathing has returned to normal. Your child will learn how to control this with time, and of course it will stop or decrease after the palate is repaired. Babies with clefts often swallow a lot of air when feeding and will need to be burped a lot in order to prevent regurgitation.

We do not recommend the use of an obturator to help feeding. Most babies do just fine without one. The only exception is the nasal alveolar molding device, which is discussed under the treatment of cleft lip. A cleft in the soft palate also creates a speech problem in the child. When we speak, the soft palate that contains a variety of muscles, will intermittently close off the nose from the mouth. This is important in the creation of certain sounds like s, b, p, etc.. When there are problems creating these sounds, the patient is said to have velopharyngeal insufficiency or VPI. Without proper closure and repair of these muscles, normal speech can never be expected. With proper surgery, most children will have normal speech (national average is 75%), however speech therapy is frequently required.

The cleft palate is closed between 9-18 months, depending on the speech and growth patterns of the effected patient. Complete closure of both the hard and soft palate are performed at the time of surgery. Using our technique, the need to perform a surgical procedure to correct speech problems in less than 5% (far better than the national average).



Children should not have anything to eat or drink and least 6 hours before surgery. The surgery typically takes 2 hours. During that time, we will close the hole in the roof of the mouth, create one uvula, and bring together the muscle of the hard palate using a procedure called an intravelarveloplasty. This technique placing the muscles essential for proper speech in a normal position. It is done with special magnifying lenses or a microscope to increase precision. At the end of surgery, your child will have dissolving sutures inside his or her mouth. They will be watched closely for any problems with breathing, and nursing specialist will work with you to start feedings as soon as possible. Feeding is liquid only for 2 weeks via a sippy cup or a syringe. Your child may also wear elbow immobilizers during this time to prevent the placement of any unwanted objects inside the mouth. The immobilizers can be taken off when your child is being held.

After 2 weeks, the palate should be healed, and we will send the patient back to the team speech therapist to observe and enhance speech and language development.

Why does my child have a cleft lip?

There are many causes of a cleft lip, most of which have nothing to do with the parents. Parents should not blame themselves for "causing" the cleft. One child out of every 600 children born has a cleft lip. Therefore it is very common.

What is cheiloplasty?

This is the name of the operation that is performed to close the cleft lip.

When the lip is repaired, Dr. Stelnicki has developed his own, unique lip-muscle repair that aligns the lip, reduces scar, and restores lip function. It uses the best components of the well-known Millard type rotation advancement flap. However, Dr. Stelnicki has modified the muscle repair for tension free cleft closure and adequate lengthening of the deficient lip. Dr. Stelnicki has also modified the skin closure to decrease the amount of external scarring and create a more normal philtral complex (upper lip crease). Botox is frequently offered to families as way to further decrease the scarring in the lip. Dr. Stelnicki's own research has shown that micro-Botox injections decrease scar widening and improve scar appearance when compared to patients without Botox. Dr. Stelnicki is one of the few plastic surgeons in the country to offer this type of repair to his patients.

Lip repair is not performed until the child is steadily gaining weight, is in good overall health, and the lip and gum segments are properly aligned with Nasoalveolar molding or lip adhesion.

In addition to primary lip repair, primary cleft lip nose repair is also performed at an early age. All patients with a cleft lip have some degree of deformity to their nose. Dr. Stelnicki feel the best results in terms of nasal appearance are obtained if the nose is

initially repaired at the time of the lip closure. However, in selected patients, we begin treating the nose prior to lip repair with a technique developed at New York University called nasoalveolar molding (NAM). NAM is performed at the time of orthodontic molding of the cleft alveolus. This technique allows the surgeon and orthodontist to mold the abnormally formed nasal cartilage into better shape prior to surgery. It also allows the lengthening of the middle cartilage into better shape prior to surgery. It also allows of the lengthening of the middle part of the nostrils called the columella. This structure is occasionally deficient in patients with unilateral cleft lip and is frequently deficient in individuals with a bilateral cleft lip. The slow and careful expansion of this region by NAM allows for the creation of a more normal appearing nose at the time of lip closure, without the need for creating abnormal scars across the base of the nose. If NAM is successful, Dr. Stelnicki will likely be able to perform an open rhinoplasty at the time of the lip repair in order to decrease the number of surgeries a child will need in the future.

In patients who are not candidates for NAM, Millard type forked flaps are used to elongate the columella and recreate a nostril sill or have an open rhinoplasty with cartilage grafting later in life.

What age is surgery preformed?

Surgery is typically performed at age 2-6 months, depending on the cleft and the need for naso-alveolar molding (NAM).

What should be done before surgery?

A recent history and physical documenting good health is required one week or less before the surgery. No lab tests are required except in special circumstances. No eating or drinking after midnight, the night before the operation unless otherwise instructed.

How long is the surgery?

The surgery typically takes 1 hour per ear depending of the degree of severity.

What type of anesthesia is used?

Typically this operation is performed under general anesthesia.

What type of postoperative care is needed?

- Patients will have nasal stents that will need irrigation on many occasions
- The sutures will dissolve
- Leave steri strips in place and use arm restraints to protect the lip repair
- Feeding is like normal pre-operative feeding

- No pacifiers are allowed for at least 2 weeks.

Is there a lot of pain?

Most patients only need Tylenol or Motrin dosed according to their weight for pain management.

What complications can occur?

Complications following this operation are rare. However, like any surgery they can occur. The complications most commonly described are bleeding, infection, hematoma, abnormal scarring, asymmetry, and relapse. If any of these complications occur, bring them to the attention of your surgeon immediately.

When should we follow up?

You should see Dr. Stelnicki or his physician assistant 7-14 days after the initial operation. Additional follow-ups will be arranged at that time.

Will the sutures dissolve?

Yes.

How do you feed a child with a cleft lip?

Children with an isolated cleft lip (no cleft palate), typically have no problem eating. They can be fed with normal nipples, although a cross cut nipple is usually helpful. Feeding the child with a cleft palate is more challenging and ways to feed these babies is covered under the cleft palate segment of this website.

How do we clean the lip?

Bathe and shower normally

What will the scar look like?

The goal of surgery is to close the cleft in a way that scarring is minimized and the lip appears as natural as possible. Recent advances in the use of Botox and other scar modeling treatments have improved the post-operation scarring in many patients, helping to decrease the tell tale signs of a cleft lip. Dr. Stelnicki's own research has shown that micro-Botox injections decrease scar widening and improve scar appearance when compared to patients without Botox. Dr. Stelnicki is one of the few plastic surgeons in the country to offer this type of repair to his patients.

What is a cleft alveolus?

A cleft alveolus is a separation in the gum below the cleft lip. It is often treated at the time of cleft lip repair, and may be done by NAM or lip adhesion.

Nasoalveolar Molding Candidates

In some patients, when there is a large separation in the gum below the cleft lip, orthodontic treatment will be initiated to properly align the alveolar ridges prior to surgery. This is called Nasoalveolar Molding or NAM. This technique is becoming the "gold standard" for cleft lip repair in many internationally known cleft and craniofacial centers. Dr. Stelnicki is one of the few surgeons in the state who is trained in the technique of NAM. The procedure is a non-surgical, passive method of bringing the gum and lip together by redirecting the forces of natural growth, thereby reducing the amount of scarring post operatively. It is non-painful and easy to use. Precise alveolar (gum) alignment allows the surgeon to close the alveolar fistula at the time of lip repair. This decreases the need for bone grafting in the future and does not interfere with facial growth if done in a gradual and well-orchestrated manner.

Non-nasoalveolar Molding Candidates/Lip Adhesion

In patients who cannot undergo active orthodontic molding of the alveolus, a preliminary lip adhesion is performed at age 1-2 months. A lip adhesion is a temporary closure of the lip that simply pulls the lip edges together, but in no way corrects the deformity. The goal of this surgery is to push the alveolar segments (gum ridges) together slowly by using pressure from the lip adhesion to push the pre-maxilla backward. Then, at 6-9 months of age, a complete primary lip repair is performed.

What is a cleft lip nasal deformity?

All patients with a cleft lip have some degree of deformity to their nose which the surgeon may address at the time of the initial surgery to improve its appearance.

Cleft Lip Nasal Deformity and Nasoalveolar Molding

In addition to primary lip repair, primary cleft lip-nose repair is also performed at an early age. Dr. Stelnicki feels the best results in terms of nasal appearance are obtained if the nose is initially repaired at the time of the lip closure. In selected patients, we begin treating the nose prior to lip repair with nasoalveolar molding (NAM).

NAM allows the surgeon and orthodontist to mold and lengthen the abnormally formed nasal cartilage and columella into better shape prior to surgery. These structures are occasionally deficient in individuals with a unilateral cleft lip and is frequently deficient in individuals with a bilateral cleft lip. NAM also allows for correction of the flattened nose prior to surgery and facilitates nose repair at the time of lip repair. The slow and careful expansion of this region by NAM allows for the creation of a more normal appearing nose at the time of lip closure, without the need for creating abnormal scars across the base of the nose. If NAM is successful, Dr. Stelnicki will likely be able to

perform an open rhinoplasty at the time of the lip repair in order to decrease the number of surgeries a child will need in the future.

In patients who are not candidates for NAM, other surgical techniques are used to elongate the columella and recreate a nostril sill or have an open rhinoplasty with cartilage grafting later in life.

What other surgeries may my child need?

Following the lip repair, many children are done with their lip surgery. It is simply important to watch dental and speech development as well as the maturation of the lip scar and the growth of the upper jaw. Occasionally, some additional surgeries are required to optimize the final result. As your child grows, he or she may need some "touch up" lip surgery to improve the appearance of the scar. This can be done about age 2-4, prior to going to preschool. The cleft nasal deformity can also be addressed at this time. However, definitive nasal surgery should be delayed until after alveolar bone grafting or final maxillary growth is achieved. The need for additional surgeries such as speech surgery, bone grafting, and jaw advancements are covered in the other sections of this website.

How can I be supportive?

Family support is also important at this time. Most families who have a child born with a cleft or other craniofacial condition do not know anyone else who has lived with this condition. This can lead to feelings of isolation and despair. To help fight this, Dr. Stelnicki links families together via the family support network at the Cleft and Craniofacial Center at Joe DiMaggio's children hospital to develop a family support network that helps new families learn how to cope with their child's facial difference.

When talking with friends and family about your child, you should be direct. It is important to emphasize that in most cases, your child is completely normal, and simply needs a few surgeries, dental care, and speech therapy to treat the "hole" that is present in your child. Emphasize that it does not hurt, and that your child should be held, touched, loved, and cared for just like any other baby. Take pictures in order to record and remember the transformation that is about to occur in your child. When kids get older, they often enjoy looking back at themselves as infants, and seeing how far they have progressed. It will also help children explain to other kids what happened to them as a baby.

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experienced cleft and craniofacial surgeons in the State. He performs more cleft and craniofacial surgery in one month than most other plastic surgeons do in a year. This experience is essential when managing the complex differences each child with a cleft presents. Every child's cleft is different and having a surgeon with the experience and the tools to amend your child's condition is necessary in achieving the best long-term result.

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Post-Operation Instructions

Most patients will stay in the hospital 1-2 days following surgery. Children can go home when they are able to drink well. Your child may be fed with a syringe initially, but after 1-2 days, the use of the soft Haebberman, Mead Johnson, or other nipple may be reinitiated. Expect your child's lip to be covered with steri-strips. Your child may also wear protective elbow immobilizers that prevent your baby from scratching his or her face and disrupting the sutures. These immobilizers are worn for the first 2 weeks but may be removed when you are holding your baby. Your child's sutures will be removed 7-10 days after surgery. You should call our office the day after surgery to make this appointment.

After 2 weeks of healing, you will begin lip massage 5 times a day. Massage is usually done with natural oil like vitamin E. This is essential because it decreases scar and helps prevent lip "notching" which always occurs after surgery. Massage helps you get the best result for your child and our nursing staff will instruct you in the proper method. This massage will continue for up to 6 months after surgery. Palate surgery is done between 12-18 months of age. This surgery is covered in the section on cleft palate. Sometime, injections of medicines like Kenalog are also required in the postoperative period to further soften the scar.

Following the lip repair, many children are done with their lip surgery. It is simply important to watch dental and speech development as well as the maturation of the lip scar and the growth of the upper jaw. Occasionally however, some additional surgeries are required to optimize the final result. AS your child grows, he or she may need some "touch up" lip surgery. This can be done about age 2-4, prior to going to preschool. Then, the lip is usually left alone. The cleft nasal deformity can also be addressed at this time. However, definitive nasal surgery should be delayed until after alveolar bone grafting or final maxillary growth is achieved. The need for additional surgeries such as speech surgery, bone grafting, and jaw advancements are covered in the other sections of this website.