A Review on Cleft Lip and Cleft Palate

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Abstract

Cleft lip and cleft palate are openings or splits in the upper lip, the roof of the mouth (palate) or both. Cleft lip and cleft palate result when facial structures that are developing in an unborn baby don't close completely.Cleft lip and cleft palate are among the most common birth defects. They most commonly occur as isolated birth defects but are also associated with many inherited genetic conditions or syndromes.Having a baby born with a cleft can be upsetting, but cleft lip and cleft palate can be corrected. In most babies, a series of surgeries can restore normal function and achieve a more normal appearance with minimal scarring.

Keywords : Cleft lip, cleft palate, premaxilla, Non – fusion

Introduction

Cleft lip and cleft palate are facial and oral malformations that occur very early in pregnancy, while the baby is developing inside the mother. Cleft results when there is not enough tissue in the mouth or lip area, and the tissue that is available does not join together properly.A cleft lip is a physical split or separation of the two sides of the upper lip and appears as a narrow opening or gap in the skin of the upper lip. This separation often extends beyond the base of the nose and includes the bones of the upper jaw and/or upper gum.A cleft palate is a split or opening in the roof of the mouth.[1] A cleft palate can involve the hard palate (the bony front portion of the roof of the mouth), and/or the soft palate (the soft back portion of the roof of the mouth).Cleft lip and cleft palate can occur on one or both sides of the mouth. Because the lip and the palate develop separately, it is possible to have a cleft lip without a cleft palate, a cleft palate without a cleft lip, or both together.

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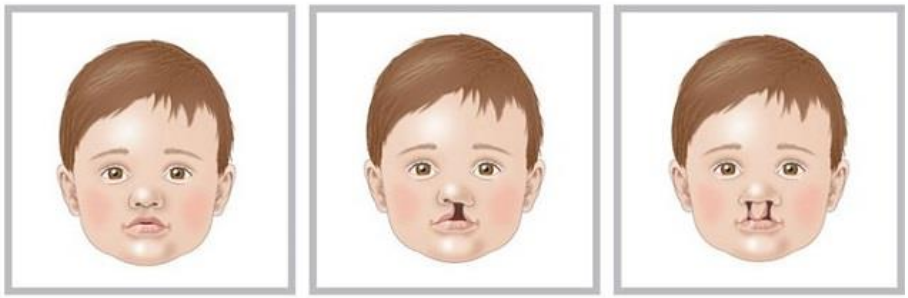
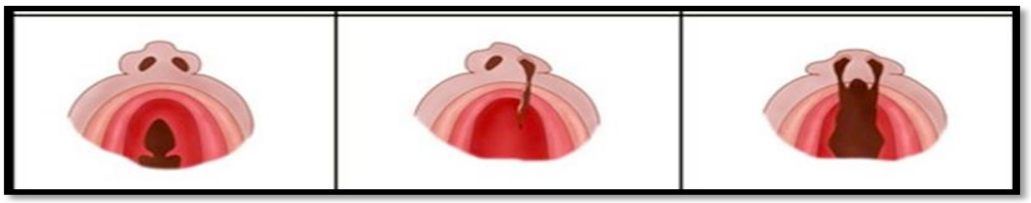


1.Normal lip 2. Left unilateral lip 3.Bilateral lip.

Figure1: Types of cleft palate associated with lip



1.Cleft palate 2.Cleft lip with partial . 3.Bilateral cleft lip with

Figure2: Palate involvementand full palate development

Frequency

Cleft lip, with or without cleft palate, affects one in 700 babies annually, and is the fourth most common birth defect in the U.S. Clefts occur more often in children of Asian, Latino, or Native American descent. Compared with girls, twice as many boys have a cleft lip, both with and without a cleft palate. However, compared with boys, twice as many girls have cleft palate without a cleft lip.

Causes

Cleft lip and cleft palate occur when tissues in the baby's face and mouth don't fuse properly. Normally, the tissues that make up the lip and palate fuse together in the second and third months of pregnancy. But in babies with cleft lip and cleft palate, the fusion never takes place or occurs only part way, leaving an opening (cleft).Researchers believe that most cases of cleft lip and cleft palate are caused by an interaction of genetic and environmental factors. In many babies, a definite cause isn't discovered.The mother or the father can pass on genes that cause clefting, either alone or as part of a genetic syndrome that includes a cleft lip or cleft palate as one of its signs. In some cases, babies inherit a gene that makes them more likely to develop a cleft, and then an environmental trigger actually causes the cleft to occur.

Diagnosis

Because clefting causes very obvious physical changes, a cleft lip or cleft palate is easy to diagnose. Prenatal ultrasound can sometimes determine if a cleft exists in an unborn child. If the clefting has not been detected in an ultrasound prior to the baby's birth, a physical exam of the mouth, nose, and palate confirms the presence of cleft lip or cleft palate after a child's birth. Sometimes diagnostic testing may be conducted to determine or rule out the presence of other abnormalities.[2]

Risk factors

Several factors may increase the likelihood of a baby developing a cleft lip and cleft palate, including:

- Family history. Parents with a family history of cleft lip or cleft palate face a higher risk of having a baby with a cleft.
- Exposure to certain substances during pregnancy. Cleft lip and cleft palate may be more likely to occur in pregnant women who smoke cigarettes, drink alcohol or take certain medications.
- Having diabetes. There is some evidence that women diagnosed with diabetes before pregnancy may have an increased risk of having a baby with a cleft lip with or without a cleft palate.
- Being obese during pregnancy. There is some evidence that babies born to obese women may have increased risk of cleft lip and palate.

Males are more likely to have a cleft lip with or without cleft palate. Cleft palate without cleft lip is more common in females.[3]

Problems Are Associated with Cleft Lip and/or Palate

- Eating problems. With a separation or opening in the palate, food and liquids can pass from the mouth back through the nose. Fortunately, specially designed baby bottles and nipples that help keep fluids flowing downward toward the stomach are available. Children with a cleft palate may need to wear a man-made palate to help them eat properly and ensure that they are receiving adequate nutrition until surgical treatment is provided.
- Ear infections/hearing loss. Children with cleft palate are at increased risk of ear infections since they are more prone to fluid build-up in the middle ear. If left untreated, ear infections can cause hearing loss. To prevent this from happening, children with cleft palate usually need special tubes placed in the eardrums to aid fluid drainage, and their hearing needs to be checked once a year.
- Speech problems. Children with cleft lip or cleft palate may also have trouble speaking. These children's voices don't carry well, the voice may take on a nasal sound, and the speech may be difficult to understand. Not all children have these problems and surgery may fix these problems entirely for some. For others, a special doctor, called speech pathologist, will work with the child to resolve speech difficulties.
- Dental Problems. Children with clefts are more prone to a larger than average number of cavities and often have missing, extra, malformed, or displaced teeth requiring dental and orthodontic treatments. In addition, children with cleft palate often have an alveolar ridge defect. The alveolus is the bony upper gum that contains teeth. A defect in the alveolus can (1) displace, tip, or rotate permanent teeth, (2) prevent permanent teeth from appearing, and (3) prevent the alveolar ridge from forming. These problems can usually be repaired through oral surgery.[4]

Health care Team

Due to the number of oral health and medical problems associated with a cleft lip or cleft palate, a team of doctors and other specialists is usually involved in the care of these children. Members of a cleft lip and palate team typically include:

- Plastic surgeon to evaluate and perform necessary surgeries on the lip and/or palate
- An otolaryngologist (an ear, nose, and throat doctor) to evaluate hearing problems and consider treatment options for hearing problems
- An oral surgeon to reposition segments of the upper jaw when needed, to improve function and appearance and to repair the cleft of the gum
- An orthodontist to straighten and reposition teeth
- A dentist to perform routine dental care
- A prosthodontist to make artificial teeth and dental appliances to improve the appearance and to meet functional requirements for eating and speaking
- A speech pathologist to assess speech and feeding problems
- A speech therapist to work with the child to improve speech
- An audiologist (a specialist in communication disorders stemming from a hearing impairment); to assess and monitor hearing
- A nurse coordinator to provide ongoing supervision of the child's health
- A social worker/psychologist to support the family and assess any adjustment problems
- A geneticist to help parents and adult patients understand the chances of having more children with these conditions

The health care team works together to develop a plan of care to meet the individual needs of each patient. Treatment usually begins in infancy and often continues through early adulthood.[5]

Treatment

A cleft lip may require one or two surgeries depending on the extent of the repair needed. The initial surgery is usually performed by the time a baby is 3 months old.Repair of a cleft palate often requires multiple surgeries over the course of 18 years. The first surgery to repair the palate usually occurs when the baby is between 6 and 12 months old. The initial surgery creates a functional palate, reduces the chances that fluid will develop in the middle ears, and aids in the proper development of the teeth and facial bones.Children with a cleft palate may also need a bone graft when they are about 8 years old to fill in the upper gum line so that it can support permanent teeth and stabilize the upper jaw. About 20% of children with a cleft palate require further surgeries to help improve their speech.Once the permanent teeth grow in, braces are often needed to straighten the teeth.

Additional surgeries may be performed to improve the appearance of the lip and nose, close openings between the mouth and nose, help breathing, and stabilize and realign the jaw. Final repairs of the scars left by the initial surgery will probably not be performed until adolescence, when the facial structure is more fully developed.[6]

Outlook for Children with Cleft Lip and/or Cleft Palate

Although treatment for a cleft lip and/or cleft palate may extend over several years and require several surgeries depending upon the involvement, most children affected by this condition can achieve normal appearance, speech, and eating.

Dental Care for Children with Cleft Lips and/or Palates

Generally, the preventive and restorative dental care needs of children with clefts are the same as for other children. However, children with cleft lip and cleft palate may have special problems related to missing, malformed, or malpositioned teeth that require close monitoring.

- Early dental care - Like other children, children born with cleft lip and cleft palate require proper cleaning, good nutrition, and fluoride treatment in order to have healthy teeth. Appropriate cleaning with a small, soft-bristled toothbrush should begin as soon as teeth erupt. If a soft children's toothbrush will not adequately clean the teeth because of the modified shape of the mouth and teeth, a toothette may be recommended by your dentist. A toothette is a soft, mouthwash-containing sponge on a handle that's used to swab teeth. Many dentists recommend that the first dental visit be scheduled at about 1 year of age or even earlier if there are special dental problems. Routine dental care can begin around 1 year of age.
- Orthodontic car - A first orthodontic appointment may be scheduled before the child has any teeth. The purpose of this appointment is to assess facial growth, especially jaw development. After teeth erupt, an orthodontist can further assess a child's short and long-term dental needs. After the permanent teeth erupt, orthodontic treatment can be applied to align the teeth.
- Prosthodontic care- A prosthodontist is a member of the cleft palate team. He or she may make a dental bridge to replace missing teeth or make special appliances called "speech bulbs" or "palatal lifts" to help close the nose from the mouth so that speech sounds more normal. The prosthodontist coordinates treatment with the oral or plastic surgeon and with the speech pathologist.[7]

Complications

Children with cleft lip with or without cleft palate face a variety of challenges, depending on the type and severity of the cleft.

- **Difficulty feeding.** One of the most immediate concerns after birth is feeding. While most babies with cleft lip can breast-feed, a cleft palate may make sucking difficult.
- **Ear infections and hearing loss.** Babies with cleft palate are especially at risk of developing middle ear fluid and hearing loss.
- **Dental problems.** If the cleft extends through the upper gum, tooth development may be affected.
- **Speech difficulties.** Because the palate is used in forming sounds, the development of normal speech can be affected by a cleft palate. Speech may sound too nasal.
- **Challenges of coping with a medical condition.** Children with clefts may face social, emotional and behavioral problems due to differences in appearance and the stress of intensive medical care.

Prevention

After a baby is born with a cleft, parents are understandably concerned about the possibility of having another child with the same condition. While many cases of cleft lip and cleft palate can't be prevented, consider these steps to increase your understanding or lower your risk - Consider genetic counselling, a genetic counselor who can help determine your risk of having children with cleft lip and cleft palate; Intake of prenatal vitamins; Use of alcohol or tobacco during pregnancy should be avoided as it increases the risk of having a baby with a birth defect.[8]

Conclusion

Recognition of the associated syndromes and anomalies with the oral cleft is essential to assess the problem and risk faced by the child and for counselling the parents. Proper knowledge and details of anomalies associated with OFC will help to provide necessarytreatment and improve survival of these children. Proper epidemiology,dysmorphology assessment and genetic study may lead researchers to the identification of the causative agent.[9]

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