

Cleft Lip and Cleft Palate

The Development of Cleft Lip and Cleft Palate

Cleft lip and cleft palate are birth abnormalities of the lip and mouth. The lip and palate begin forming during just the first few weeks of gestation, often before a woman even knows she is pregnant. During this time, the sides of the mouth begin developing and eventually unite evenly in most infants. In rare cases, however, the sides of the mouth do not fuse together properly, creating a notch or cleft.

Cleft palate – cleft palate occurs when the roof of the mouth does not unite properly. Openings may involve either side of the palate and may extend into the nasal cavity. They may extend from the front of the mouth (hard palate) to the throat (soft palate), and they often include the lip.

Cleft lip – cleft lip occurs when the two sides of the lip do not fuse completely. Cleft lip may vary greatly, from a mild notch in the lip to a severe opening up through the nose. A cleft may extend only partially from the lip towards the nose (incomplete) or go into the nasal cavity (complete). Lip clefts may occur on one side (unilateral) or both sides of the mouth (bilateral).

Causes of Cleft Lip and Cleft Palate

In the U.S., about 1 in 700 babies is born with cleft lip or cleft palate. While the causes of cleft lip and palate are not completely understood, there may be several factors involved.

Genetic Factors -- Genes play a role, and the chance of developing a cleft increases depending on how many family members are affected. A genetic counselor with expertise in craniofacial defects can help you to understand your family's risk.

Dietary Factors – Cleft lip and palate can occur because of **insufficient B vitamins** and **folic acid**. Folic acid plays an important role in fetal development, particularly in the growth of neural (nerve) tubes. Women who are at high risk of giving birth to children with neural tube defects (spina bifida) may lower that risk dramatically by taking folic acid supplements prior to and during pregnancy.

Pregnant women may find dietary folic acid in leafy green vegetables, peas and beans, citrus fruits, orange juice, whole grain breads and cereals. In addition to a nutritious diet and adequate B vitamins, however, folic acid supplements of 800 mcg are usually recommended during pregnancy, and higher dosages may be recommended for couples with a family history of cleft lip and palate. Doses above 1,000 mcg may be toxic, causing irreversible nerve damage. Please discuss recommendations for folic acid supplementation with your physician.

Medications and Chemical Toxins – A number of medications and chemicals can cause depletion of folic acid. **Birth control medication**, especially *Depo Provera*, is known to deplete women's folic acid. Medications that have anti-folate effects – agents that deplete the body's supply of folic acid include *Dilantin* (phenytoin) and other **anti-seizure medications**, *methotrexate* (used for cancer, arthritis, psoriasis, and RU-486 abortion pills, and some insecticides), and others. Medications that increase Vitamin A – excessively high levels of vitamin A, such as can be caused by drugs such as *Accutane* or *Retin-A*, may increase the risk for cleft lip and cleft palate.

Recreational drugs and alcohol – pregnant women who drink heavily are at risk for having babies with Fetal Alcohol Syndrome, which can include clefting. Barbiturates, *angel dust* (piperidine) and other drugs may also increase the risk for cleft lip and palate.

Smoking – a gene in some people will cause a cleft when exposed to cigarette smoke.

Problems Associated with Cleft Lip and Cleft Palate

Feeding Difficulties – Nutrition is the most immediate concern for a baby with cleft palate. While infants with only cleft lip do not usually have problems feeding, infants with cleft palate may be unable to suck properly because the roof of the mouth is malformed. Food may get into the nose or may cause difficulty chewing and swallowing.

There are a number of techniques and devices available to help ensure that your baby receives proper nutrition; these may include use of a squeeze bottle with an elongated nipple to help passage of milk into the throat. Upright positioning and frequent burping are important. Our team of physicians can help you determine the most appropriate ways of feeding your child based on his or her individual needs.

Ear Infections and Hearing Loss – Almost all children with clefts have a functional blockage of the eustachian tube, leading to middle ear fluid and hearing loss.

Speech and Language Delay – Speech may be delayed or abnormal due to an opening in the roof of the mouth, rendering certain sounds unintelligible.

Dental Problems - teeth may not erupt in proper locations, or there may be extra or missing teeth. Children with cleft palates have higher rates of dental caries (cavities) and require regular visits to the dentist. Orthodontic treatment is usually necessary.

Social Effects – the child, parents, other family members, and the child's friends may have trouble adjusting to noticeable facial defects. Such difficulties can have dramatic effects on children's self-esteem and social development.