



CLEFT LIP AND PALATE

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ABSTRACT

This comprehensive article explores the multifaceted aspects of Cleft Lip and Palate, congenital conditions affecting facial and oral structures during fetal development. Delving into causes, symptoms, and diagnostic methods, it illuminates the challenges faced by individuals with these conditions. Surgical interventions, orthodontic solutions, and supportive therapies are presented as effective avenues for treatment. The article also probes into the emotional and social impact of cleft lip and palate, emphasizing the importance of support networks for affected individuals and their families. In essence, it serves as a valuable resource for understanding, addressing, and navigating the complexities associated with cleft lip and palate, contributing to a holistic approach to care and support.

A cleft lip is a gap or opening in the upper lip, and it can range from a small notch to a large opening that extends into the nose. A cleft palate is a gap or opening in the roof of the mouth, and it can vary in size, affecting the front or back of the palate. Cleft lip is defined as a congenital deformity that occurs in the primary palate which is located anteriorly to incisive foramen. Its occurrence may be unilateral, bilateral, complete or incomplete. Cleft palate is defined as a congenital abnormality that occurs in the secondary palate (soft and hard palate). Its occurrence may be unilateral, bilateral, complete or incomplete.

Epidemiology .Generally, its incidence is about 1 in 700 births and there are about 1000 new cases in UK annually. It is most common in the left side than right side. Unilateral clefts are the most common than bilateral clefts with ratio of 9: 1 and its occurrence is twice on the left side in comparison to right side. On the other hand, bilateral clefts are the most common on the left side than right side with a ratio of 6:3:1. According to the race, male are affected by cleft lip and palate than females with a ratio of 2:1. On the other hand, females show the highest incidence of isolated cleft palate. The incidence of clefting differs according to the nature, geography and ethnicity. For example, the occurrence of clefting in



African people showed about 0.3 per 1000 while Caucasian and Japanese populations demonstrated about 1 and 2.1 per 1000 respectively.

Classification. Several authors classified the cleft lip and palate. Veau (1931) classified the clefts into four main groups:

Clefts of soft palate.

- Clefts of hard palate.
- Unilateral clefts of the lip, alveolus and palate.
- Bilateral clefts of the lip, alveolus and palate

2. Nutritional factors .Nutritional status plays an essential role in developing cleft lip and palate. Vitamin B6 deficiency was the main reasons of increased risk of clefts in the Netherlands and the Philippines. In addition, folic acid deficiency was observed as the main reason of increasing clefts. It was observed that the addition of folic supplement decreased the incidence of clefts in USA and North America. Furthermore, zinc is considered as the main element in the fetal development. The deficiency of this nutrient cause cleft lip and palate. It was observed that mother with children with clefts had lower concentrations of zinc in comparison to mothers with children without clefts.

3. Medications. Clefting of the lip and palate can result from some medications such as corticosteroid steroids in which some pregnancies take due to insomnia and anxieties. In addition, retinoid drugs are considered as one of the main reasons that cause clefts in infants because of exposing pregnant women to these drugs.

4. Organic chemicals and solvents. Exposure to chemical and solvents can cause clefts of the lip, palate or both.

2. Genetic factors . Family history is considered as one of the reasons may lead to cause cleft lip and palate. For example, the risk of transfer one parent having cleft lip and palate to their child is 9%. The risk of transfer unaffected parents having a child with a cleft lip and palate to their second child is 4%. The occurrence of cleft lip and palate is either associated with many syndromes such as :

- Pierre Robin syndrome
- Sticklers syndrome
- Treacher Collins syndrome
- Hemifacial microsomia
- Ectodermal dysplasia

Velocardiofacial syndrome .So, in these cases, it called syndromes cleft palate.

Common problems associated with cleft lip and palate The cleft lip and palate causes many problems:

1. Speech problem. Patients with a cleft palate have speech problems which are result from velopharyngeal dysfunction. Inability of soft palate to move upward to provide a contact with nasal cavity results in a passing of air through the nose instead of oral cavity. This condition is known as hypernasality speech. This case can be treated with a surgery to provide the velopharyngeal closure. Pharyngeal flap and sphincter pharyngoplasty are considered as the reliable surgeries for correcting the velopharyngeal deficiency in patients with a cleft lip and palate.



2. Hearing problem and ear infection. Otitis media is a condition where a fluid is accumulated in the middle ear and results in ear infection. This is due to the abnormal action of Eustachian tube opening by two muscles which are tensor veli palatine and levator veli palatine. This leads to the lack of ventilation to the middle ear cavity and accumulation of fluid inside the middle ear. This condition is presented in the child with cleft palate in the first six months of life.
3. Dental problems. Dental problems involve abnormalities in the size and shape of the teeth, For example, the permanent lateral incisor shows abnormalities in size and shape in the side of cleft, abnormalities in the position of teeth, delay of eruption of permanent teeth and delay of formation of permanent teeth.
4. Feeding and nutritional problems. Feeding problems in babies with cleft lip and palate occur because babies are incapable of sucking either their mother's nipple or from a bottle. Therefore, this affects the weight and growth of the baby because the amount of milk or food is not enough for growth. There are a variety of methods that enable the baby to feed and gain a normal weight such as the use of disposable syringe, spoon and cup and prosthetic obturator device.
5. Cosmetic problems. Patients with cleft lip have cosmetic problems and also cause problems for production of labial sounds. Babies with cleft lip face difficulty when they try to make a contact between upper and lower lips.
6. Psychological problems. All above problems impair the psychological side of a patient with cleft lip and patient where they suffer from depression, anxiety and lack of esteem and they are incapable of communicating with their peers in the school. Furthermore, some patients feel anxiety due to the other people's reactions and worried about meeting people in social events.

Treatment of cleft lip and palate .

1. Early treatment and evaluation . Initial assessment of a child with cleft lip is undertaken to know the extent of the cleft. The parents are informed of the cleft by a specialist nurse. The team often discusses with parents the treatment plan of their child. Parent feels worry of this defect and it is very important to show them previous cases of clefts which were treated to improve the psychological side.

The most important thing is the feeding of the infant. A variety of feeding devices are available and this depends on the type of clefts. For example, for infants with isolated cleft lip, a bottle or breast can be used. On the other hand, infants with cleft lip and palate face challenges when feeding they are incapable of sucking either their mother's nipple or from a bottle. For that reason, feeding devices such as nipples, cross cut nipples and longer nipple can be successfully assist the infant when feeding. The mother can try fed her child if she wishes. In case of cleft lip the mother can place her finger over the lip to provide a seal between her nipple breast and lip defect. In case of unilateral cleft palate, the mother can put her nipple breast on the non-affected side of the palate (Beumer et al., 2011). In case of cleft palate, the mother can put their nipple breast on the side of the defect with supporting her breast by fingers.

Causes:

Genetic Factors: Cleft lip and palate can have a genetic component, and a family history of the condition may increase the risk.



Environmental Factors: Exposure to certain substances during pregnancy, such as tobacco smoke or certain medications, may contribute to the development of cleft lip and palate.

Diagnosis and Symptoms:

1. Prenatal Diagnosis:

Advances in medical imaging allow for the early detection of cleft lip and palate during pregnancy through ultrasound.

2. Common Symptoms:

Visible cleft in the lip or palate.

Feeding difficulties due to challenges with sucking and swallowing.

Speech difficulties as the child grows.

Increased risk of ear infections and hearing loss.

Treatment Options:

1. Surgical Intervention:

Cleft Lip Repair: Typically performed within the first few months of life to restore a more normal appearance to the lip.

Cleft Palate Repair: Usually done by the age of one to improve feeding and speech development.

2. Orthodontic and Speech Therapy:

Orthodontic Devices: Braces and other devices may be used to address dental issues related to clefts.

Speech Therapy: Helps children overcome speech difficulties associated with clefts.

Emotional and Social Impact:

1. Psychological Effects:

Body Image: Individuals with clefts may face challenges related to self-esteem and body image.

Social Interaction: Speech difficulties and facial differences can influence social interactions, potentially leading to feelings of isolation.

2. Support Networks:

Parental Support: Parents of children with clefts often benefit from support groups and counseling.

Community Resources: Organizations like the Cleft Palate Foundation provide valuable resources and support for affected families.

Conclusion: In conclusion, cleft lip and palate are congenital conditions that require early intervention and a multidisciplinary approach for optimal outcomes. Advances in medical science and ongoing research contribute to improved treatment options and support systems for individuals and families affected by these conditions. By addressing the physical, emotional, and social aspects of cleft lip and palate, we can work towards enhancing the quality of life for those living with these conditions. Cleft lip and palate are the most common facial deformity and clefting may involve lip only, lip and palate and palate only. Environmental (such as smoking, alcohol, poor nutrition) and genetic factors (such as familial factors and chromosomes) are the main reasons of clefting in infants. Treatment of clefting involves a



number of specialists who decide the best treatment plan depending on the site of defect and age of the infant.

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