Alveolar Cleft Bone Graft

What is an alveolar cleft?

It is an opening in the bone of the upper jaw that sometimes contains teeth and is covered with mucosa before the eruption of the teeth.

Why is a bone graft necessary?

An alveolar cleft usually connects the anterior palate (front most part of the hard palate) to the nasal cavity. Because of the cleft, the nose does not have a floor and therefore, food (liquids and solids) can easily leak into the nose. This causes irritation of the tissue in the nasal passage, which usually results in rhinitis (inflammation of the lining of the nose causing irritation or constant drainage). A deviated septum or an enlarged turbinate in the nasal passage may cause obstruction. The closure of this opening prevents constant irritation and drainage. Simple closure of the opening without a bone graft heals poorly unless done very early in life. Bone graft ensures appropriate healing and also provides bone in the cleft area, which is essential for the eruption and maintenance of the permanent teeth.

Can an alveolar cleft be repaired in early life to minimize the problems associated with it?

It can only be repaired if the two segments of the upper jaw are in the right position (alignment and approximation.) There is still a 50% chance a bone graft will be needed. The quality and quantity of bone formed as a result of early repair without bone graft may not be strong enough to support permanent teeth.

What is the appropriate age for the repair of an alveolar cleft?

After 6 years of age, after or when certain permanent teeth have come through, is generally when bone grafting is done. Eruption of first molars guides the eruption of other teeth between the incisors and the molars. These molars also provide stable teeth for a fixed dental appliance for palatal expansion often needed before the repair. The bone graft fuses the two halves of the upper jaw in cleft patients and subsequent orthodontic correction of the upper palate may become difficult if not impossible.

In small children, it may not be possible to obtain enough bone from the hip to fill in the alveolar cleft and surgery may have to be delayed at the surgeon’s discretion.

How do we know that our child is ready for a bone graft?

Based on the cleft palate team’s annual evaluation, you will be advised to seek appropriate dental and orthodontic care in preparation for bone graft.

Sometimes, children with an incomplete alveolar cleft may require bone graft if the bone in the affected area is evaluated to be insufficient for support of permanent teeth.

Your child may require check-ups every six months or every month for six months with a pediatric dentist/orthodontist. He will check for eruption of first molars and the need for expansion before bone grafting.
When should we schedule our child for bone grafting?

Call Plastic Surgery clinic nurse during office hours M-F, 9-5 at (816) 234-3687 as soon as your child is evaluated by a pediatric dentist/orthodontist for palatal expansion and other dental needs. Obtain a copy of the X-rays and the dental report and have the dentist/orthodontist send us a complete report of evaluation and treatment plan. We also need to know the recommended length of time of dental treatment before bone grafting.

What is an alveolar cleft bone graft?

It is the repair of the cleft within the gums with placement of bone from the hip bone (iliac crest). Bone graft is obtained through a 1.5 inch long incision near the left hip bone. There are usually no visible signs in the hip area except the scar from the surgical incision. The bone is then packed into the cleft area in the mouth and the floor of the nose and gums. Any opening in the front of the hard palate is also closed at this time. The sutures will dissolve and will not need to be removed.

What can we do to prepare our child for this surgery?

1. Use good dental hygiene by brushing your child’s teeth and gums after meals and at bedtime.
2. Obtain regular dental care including good follow-up with the pediatric dentist/orthodontist.
3. Provide foods rich in calcium, Vitamin D and protein
4. Explain the surgery procedure and care to your child
5. Obtain all of your child’s dental records

Are there any other preparations before surgery?

5 days before surgery, your child will need to take prescribed antibiotics to decrease the risk of infection. Saline (salt water) oral rinses will also be ordered starting 2 weeks before surgery. To do the rinses, mix 1 tablespoon of table salt in 1 cup of warm water. Have your child swish the solution around his mouth for a few minutes. Then spit it out. Have your child do this oral rinse 3 times a day.

Your child’s dentist/orthodontist will be asked to replace the palatal expander with a removable retainer fixed to the molars. This will be removed during the surgery and replaced after the surgery is finished.

Surgery and Post-Operative Care:

The surgery takes 1-1/2 hours for one side (unilateral cleft). It is preferred that a bilateral cleft be repaired in 2 stages, about 6 months apart.

Pain medication is given through an IV for the first 12-24 hours. Pain medication is given by mouth when your child begins drinking/ eating.

Your child will stay 1-2 days in the hospital. Your child will have a physical therapist help him walk, especially stairs. This is due to the discomfort from the hip donor site.

For the first week after surgery, your child may only have liquids to eat/ drink. Then for the next 2 weeks, advance his diet to soft foods. See the "Cleft Surgery/Oral Trauma - Liquid Diet" and "Cleft Surgery/Oral Trauma - Soft Diet" CARE CARDS.

Saline oral rinses and gentle teeth brushing should continue for 3 weeks after surgery.
Avoid contact sports, swimming, biking, and running for 3 weeks after the surgery.

Your child should stay home from school for at least 2 weeks, possibly 3.

Although the surgical site usually heals well in 3 weeks, the bone graft takes about 3 months to heal.

Your child will be seen within 2-3 weeks of surgery and then again at 3 months after the surgery. X-rays will be taken at the second post-operative visit to evaluate the bone graft.

The palatal appliance should stay in for the entire 3 months, until your follow-up visit with the surgeon. The appliance is usually not needed after the bone grafting is completely healed.

**What else may be needed in future?**

A small percentage of children with a cleft lip and palate may have poor maxillary (upper jaw) growth with an under-bite and or cross-bites. Your child may require additional orthodontics as recommended by his orthodontist. Sometimes, jaw surgery may be required to help the orthodontist correct an under-bite and or cross-bites.

**When should I call the doctor?**

After surgery, call the plastic surgeon or nurse practitioner if:

- Your child has pain not relieved by pain medicine.
- Your child has fever of 101° F (38.3° C) or higher after 3rd day of surgery.
- You have any questions or concerns.

**You can reach the plastic surgeon or the plastic surgery nurse practitioner by calling:**

(816) 234-1625 during the day Monday through Friday  
OR  
(816) 234-3000 after hours and on weekends or holidays

You can reach the Plastic Surgery Clinic at The Children’s Mercy Hospital Monday through Friday from 9 a.m. to 5 p.m. at (816) 234-3020. You can reach the Plastic Surgery Clinic at Children’s Mercy South Monday through Friday from 9 a.m. to 5 p.m. at (913) 696-8220.