

Together with treatment of cleft lip, jaw and palate, there are a series of additional therapies and measures which contribute to optimal healing and development:

- nutritional support and possible postoperative measures
- care measures
- therapies

### **Other measures**

#### **Nutritional support and possible postoperative measures**

Newborn babies with a cleft suffer from difficulties in eating, because they cannot suck properly due to the palatal cleft. They are also unable to move the lips completely due to the split lip muscles. Depending on the situation, it is necessary to supplement nutrition in order to improve weight gain. The optimal form of nutrition is established individually for each child. Aids frequently used for feeding after birth are: special suction bottle (Haberman Feeder), drinking cup or spoon or syringe.

#### *Plate therapy*

An impression of the newborn's maxilla is taken in the first 1-2 days of life in order to make a drinking plate. The first attempt at drinking with the drinking plate is then made with the support of a breastfeeding counselor. If the drinking plate is used in the first days of life, the newborn quickly gets used to it and will not perceive it as a foreign body.

Several functional problems may be treated using the plate, preventing significant leaking of milk through the nose. It also prevents the tongue from stretching into the palatal cleft and getting accustomed to an unnatural movement pattern. Keeping the tongue out of the cleft space also contributes to a spontaneous narrowing of the palatal cleft width before surgical repair. The plate is fixed with a tasteless denture adhesive cream and should be first wiped clean while dry and then cleaned with a toothbrush and toothpaste once a day. It is then disinfected for three minutes with mucosal disinfection solution in order to prevent fungal colonization. The plate must not be boiled because it is not heat-resistant.

#### *Plaster therapy*

Lip and jaw segments in wide clefts are slowly brought closer together through continuous pull with the help of this special elastic plaster. Even a wide cleft jaw may be largely apposed by the age of 3 months with this pre-treatment using plaster and plate.

#### *Lip stitching*

For complete bilateral clefts with an anteriorly protruding premaxilla, a procedure called lip-adhesion may be useful. Simple stitching together of the skin of the lips initially creates an elastic pull for a few weeks, which brings the premaxilla back into its correct position. There is thus lesser tension and a natural jaw form is present under the lip when definitive lip closure is performed with a muscle suture.

#### *Haberman Feeder*

This feeder has a special valve system. On one hand, it allows milk to flow from the bottle with feeding movements, even if no vacuum can be built up in the mouth. This allows the infants to satisfy their natural desire for suction, despite cleft palate, even if they do not possess enough suctioning strength for breastfeeding or drinking from the normal bottle. On

the other hand, the valve system ensures that the bottle remains free of air. In this way, the baby swallows very little air, which reduces bloating and vomiting. Feeding with the Haberman Feeder is practiced in the first days of life at the maternity unit with the guidance of breastfeeding counselors.

How to use: About three-quarters of the feeder should be filled with milk, so the baby does not need too much strength for drinking. To use, place the feeder at a slight angle in the mouth on the side opposite the cleft, so that it does not press too much on the cleft. Milk may leak through the nose. This is not really problematic, but the nose should be rinsed with clean water thereafter. The feeder is boiled once a day.

## Care measures

### *Preventive dental care*

Brushing of the teeth (baby brush, fluoride tooth paste for children) begins after the eruption of the first milk tooth.

To receive information about optimal caries prevention and appropriate hygiene measures, we recommend three routine dental care appointments in consultation with the [School Dental Clinic Basel](#)):

- prior to surgery, at around 4 months
- after surgery, at around 12 months
- a follow-up appointment at around 18 months to assess a possible risk of caries

As soon as all the milk teeth have completely erupted, the use of pacifiers and night bottle is no longer advisable from the point of view of speech therapy and orthodontic treatment. Position of the teeth and jaw are altered by the pacifier and bottle, which rarely corrects on its own in older children and requires braces. Altered tooth and jaw position impair articulation and the tongue gets used to incorrect movement patterns.

### *Scar care*

Excessive physical strain, for example, during sports or jumping around, should be avoided for the first ten days after surgery. After cleft lip closure in infancy, no special scar ointment is usually prescribed, since it generally contains additives which can provoke skin irritation. We show parents how to massage the scar to make it soft and smooth. This should be started two weeks after surgery, once unproblematic wound healing is complete. Therapy with silicone plasters is needed only in rare cases of excessive scar formation. The sun's UV rays may lead to imbalanced, often permanent skin discoloration. Therefore, a fresh scar should not be exposed to direct sunlight for six months, and sunblock should be used on sunny days.

## Therapies

### *Speech therapy, stimulation therapy*

Early speech therapy may support the development of correct primary functions (swallowing, sucking, biting, chewing, breathing). Since later sound production for speech builds on these primary functions, temporary therapy may be useful in certain cases. Parents are shown stimulation methods which may be integrated into the toddler's play. The exercises activate and strengthen muscle functions. In order to facilitate feeding in newborns, stimulation can help support tongue orientation. After surgery, stimulation supports fine motor skills at the site where the lip was sutured.

Later, when the child starts speaking, emphasis is placed on correct pronunciation of syllables (articulation) and normal sound production in the soft palate (nasality). Speech therapy may be helpful if these are abnormal. The type of therapy differs greatly for problems relating to articulation and nasality. Exercises which improve posture and overall body tension (e.g. using myofunctional therapy or physiotherapy) are also included in the therapy of soft palate function. For more information see "Diagnosis and Treatment – Insurance Benefits").

This is important because the muscles of the soft palate form a functional unit with the supporting muscles of the head and body. The aim is to always provide therapy for a limited period of time and to not exhaust the child therewith. If speech sounds do not normalize completely with therapy, a second speech-improvement surgery of the palate may be useful in exceptional cases, in order to enable further improvement

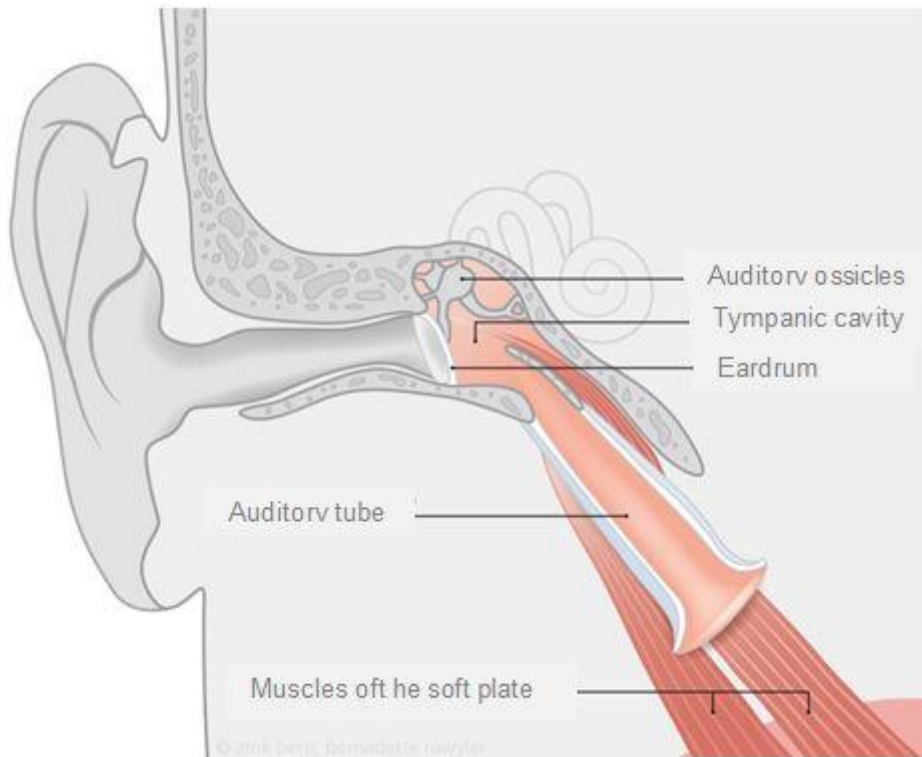
### *Orthodontics*

The drinking plate, the cleft plaster, and stitching of the lips are considered the first orthodontic aids, because they have the best effect on the position of the jaw segments. Nevertheless, orthodontic treatment is often necessary after eruption of milk teeth. Removable braces are used on milk teeth. Fixed braces are then fitted from ages 12–15. Braces have different functions depending on the age at which they are used and on design. Removable braces mainly impact muscular interplay and balance between the lip, tongue and soft palate musculature (functional orthodontics). This allows for weaning off of incorrect motor patterns and additionally supports speech therapy. Other braces, removable or fixed, may increase the width of the maxilla (expansion). Dental braces with a fixed orthodontic wire on the teeth (multiband) are used for alignment of teeth. These braces are used only after eruption of permanent teeth. Normal tooth position may often be achieved with brace therapy. In individual cases, however, surgical treatment is necessary in addition to brace therapy to correct the malpositioned jaw. This is performed closer to the end of the child's growth (18–20 years), so that the end result is not altered due to further growth.

### *Hearing*

Good aeration of the middle ear through the auditory tube is important so that the eardrum can vibrate freely. If aeration is inadequate, fluid accumulates in the middle ear (middle ear effusion). As a result, sound is muffled and the child cannot perceive it well. The muscle function of the palate helps the auditory tube to open while swallowing and the middle ear is aerated. This function should begin to normalize after surgery for palatal closure. Aeration of the middle ear may also be carried out on one's own by inflating a balloon positioned over the nostril (Otovent). This air pressure carries air into the middle ear. Such therapy is helpful if aeration is temporarily impaired, for example, during a cold, when mucous membranes are

temporarily swollen and constrict the ventilation pathway. If fluid permanently accumulates in the middle ear, ventilation must be enabled by inserting a small ventilation tube into the eardrum (tympanic drainage). Although this treatment is performed under general anesthesia, the child is able to go home in the evening. Ventilation of the middle ear usually improves on its own as the child grows, and the use of ventilation tubes may be dispensed with.



Cross-section of the ear: The muscles of the soft palate open the auditory tube and aerate the tympanic cavity of the middle ear.

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