

Depending on the extent of the malformation, cleft lip, jaw and palate may impede various functions:

- feeding after birth
- muscle and tongue function
- middle ear aeration and impaired hearing
- language and speech development
- teeth and dental arches
- long-term development

### **Accompanying symptoms and consequences**

Depending on the extent of the malformation, cleft lip, jaw and palate may impede various functions.

#### **Feeding after birth**

Each newborn child is born with the natural desire to be breastfed. However, children with a cleft lip or palate need more time and patience, at least in the beginning, until they are able to drink correctly. An attempt should be made to see if breastfeeding is possible. An isolated cleft lip or cleft lip and jaw are usually not an obstacle to breastfeeding. Sometimes breastfeeding is also possible with an isolated cleft of the soft palate. Children with a complete cleft palate often cannot be provided adequate nutrition through breastfeeding, because they cannot suck enough milk from the breast or may get tired quickly while breastfeeding. In these cases, pumped milk is supplemented. This is initially tried using a cup or spoon in the first few days, but a special bottle may be used very soon thereafter in most cases.

Parents receive support and guidance from a specialized breastfeeding counseling team at the maternity unit during this process. It may be very helpful, for example, to trigger the milk ejection reflex, so that the milk flows from the breast. In addition, certain breastfeeding and holding positions may help better breastfeed the baby. A drinking plate is made to ease feeding in cases of complete cleft hard and soft palate (for more, see “Diagnosis and Treatment”).

Breastfeeding is still beneficial even if it does not provide adequate nutrition. On one hand, it has a positive effect on the mother-baby bond; while breastfeeding movements train incorrect and underdeveloped oral muscles and improve middle ear aeration, which helps counteract frequent middle ear effusions, on the other. Moreover, mother’s milk provides immunological protection from the exposed mucous membranes of the nose. This is why we do not use a feeding tube. It is necessary only in exceptional cases, if there are problems in addition to the cleft.

#### **Muscle and tongue function**

Even before birth, the tongue in cleft palate is displaced, both in the resting state as also during swallowing. This wrong movement pattern of the tongue should be corrected as much as possible after birth (for more, see “Manifestations: Associated Malformations”). In older children, the positioning of the tongue in a remaining cleft in the dental arch may lead also to

swallowing and speech coordination problems. The position of the teeth depends, in turn, on the functions of the tongue and lip and the growth of the maxilla and mandible. Interdependent states thus exist that we pay attention to early on and treat in a comprehensive manner.

### **Middle ear aeration and impaired hearing**

Normally, the auditory tube opens while swallowing and the middle ear is aerated. The muscles of the velum (soft palate) play an important role in this. This aerating function does not occur if these muscles are separated by a midline cleft palate separating the right and left sides. This may result in an accumulation of secretions in the middle ear (middle ear effusion) and result in hearing impairment. This problem is treated by ENT specialists under the same anesthesia as the cleft surgery (for more, see “Diagnosis and Treatment: Surgeries”). Good hearing is in turn important for normal speech development.

### **Language and speech development**

Depending on the extent of the cleft palate, the separation of the oral and nasal cavities is lacking and the muscles of the velum are split. Both result in air leaking through the nose when producing speech sounds, which leads to characteristic speech (“nasality”). The tongue is posteriorly displaced in a cleft palate, which also leads to speech function disorders. We therefore close the hard and soft palates prior to the development of first sounds in order to enable normal speech function early on. Hearing impairment may additionally impede speech development, which is why it is regularly checked during consultation.

### **Teeth and dental arches**

If the bone of the dental arch is affected (cleft jaw), the lateral incisor may occasionally be either altered in form, missing, or may even be duplicated. This is explained by the fact that the cleft runs along the dental germ, such that the tooth is either missing or divided into two. The type of alteration may differ in primary and permanent teeth. So, a missing primary incisor does not mean that the permanent tooth will also be missing. The altered position of the teeth near the cleft jaw and alteration in the enamel results in a higher tendency to develop caries. Tooth-friendly nutrition and consequent attention to dental hygiene by the parents is therefore especially important.

### **Long-term development**

After surgery, functional development and growth of the regions affected by the cleft are assessed in annual consultations. It is ensured that the interaction of the affected regions allows for correct overall function (nasal breathing, lip closure, swallowing and speech function, teeth and jaw position). Due to close functional relationships, additional therapy is coordinated directly by experts during consultation (speech therapy, orthodontics, surgery and ENT). Correct form and function are always closely interrelated and, together with gentle surgical technique, contribute to largely normal growth.

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Stand: 20.3.2018