

1	Angle and ramus osteotomies	336
1.1	Bilateral sagittal split ramus osteotomy (BSSO)	336
1.2	Vertical ramus osteotomy	344
1.3	Inverted L-osteotomy	345
2	Osteotomies of the mandibular body	346
2.1	Osteotomy of the lateral body	346
2.2	Subapical (block) osteotomies	347
3	Genioplasty	348



7.2 Standard osteotomies in the mandible

Prior to the decision to start the treatment, patients should always meet both orthodontist and surgeon to receive as broad information as possible. Preoperative orthodontic care takes on average 1.5 years and, when the patients are ready for surgery, they meet the surgeon again to get further information. It must be kept in mind that the inclusion of patients in decision making increases their awareness and also acceptance of the result. Postsurgical support is also mandatory.

Several procedures have been described for correction of deformities of the mandible. For osteotomies aiming to change the position of the mandibular base, the main idea is to get a moveable/slideable distal fragment apart from the proximal fragments, which contain the condyles and, therefore, should stay as precisely as possible in the preoperative position.

Many anatomical and functional reasons have guided the development of procedures as we know them today. In 1957, Trauner and Obwegeser introduced the step-shaped sagittal split osteotomy for correction of both the prognathic and retrognathic mandible. The original osteotomy has subsequently been modified by numerous authors in an effort to increase the areas of bone contact, minimize the need for dissection of soft tissues, avoid nerve injuries, and prevent relapse. The sagittal split technique today is widely accepted as the method of choice for correcting a variety of mandibular anomalies. The distal segment of the mandible can be positioned in almost all planes.

The vertical ramus osteotomy can be used especially when correcting asymmetry of the mandible. The standard way is to make a sagittal split osteotomy at the side which rotates forward and the vertical ramus osteotomy at the side which rotates backwards. There is usually no need to internally fix the vertical osteotomy line, but mandibulomaxillary fixation (MMF) for 2-3 weeks is required. Sometimes this type of osteotomy is also used for surgical treatment of temporomandibular joint (TMJ) dysfunction and pain. The goal

is to decrease the pressure of the condyle against the retro-discal ligament (caused by occlusion) in cases where the disc is anteriorly displaced. Advancement of the mandible is also possible after vertical ramus osteotomies, but here bone grafts need to be positioned between the fragments. Fixation of the fragments is required.

When an increase of ramus height is indicated, the inverted L-osteotomy can be used. Bone grafts may be positioned in the line of osteotomy when additional height is needed. In those cases the osteotomy line should be perpendicular to the surface of the lateral cortex and is performed through a retromandibular transcervical incision. "Bird face" deformities have been corrected by this procedure. When only a slight increase of height is needed and the anatomy of the ramus is favorable, an oblique line of osteotomy can be made and correction achieved by sliding the fragments towards each other. This procedure is usually performed transorally.

Bilateral mandibular body osteotomy is not often used nowadays. Previously, it was more often performed in cases of prognathism, especially when the body was long and one tooth was missing on each side, or in case of an anterior open bite with first contacts in the premolar or molar region. This osteotomy is performed via a transoral or a combined transoral-transcutaneous approach. Extra care should be taken to avoid injuries to the inferior alveolar nerve.

Subapical osteotomies are also used in orthognathic surgery. They may be total, including the complete alveolar process or partial (block or segmental) osteotomies. They are mostly performed to correct an anterior open bite and are then restricted to the area between the mental foramina. This type of osteotomy can also be used for patients with severely compromised lower anterior teeth (eg, deep fillings, root resorption), making orthodontic moves impossible. The procedure can be combined with other osteotomies, ie, the sagittal split osteotomy.