



7.4 Special considerations and sequencing in 2-jaw osteotomies

Technically, 2-jaw surgery is the combination of a mandibular and a maxillary osteotomy or osteotomies. In 1-jaw surgery the occlusal plane of the non-osteotomized jaw may be used as a reference for positioning, as only one jaw is going to be mobilized. Whereas in 2-jaw surgery, as both jaws are moved, a new occlusal plane is created in most cases. The potential creation of a new occlusal plane is the key element in double-jaw procedures. A three-dimensional change of major portions of the facial skeleton may result. The new occlusal plane is transferred to the patient with the help of an intermediate occlusal splint.

Double-jaw surgery is usually required for facial asymmetries, combined anterior-posterior problems involving both jaws, vertical deformities and/or transverse discrepancies, eg, apertognathia, open bite (dentoalveolar, skeletal base, combination of both), as well as severe one-vector anomalies such as extreme class III cases, and crossbites.

The evaluation of the deformity is made as previously described by clinical examination, cephalometric and articulated model analysis mounted after a face bow transfer. Based on this analysis, the position of the new occlusal plane is determined. Some points must be considered:

- The new position of the maxilla is planned based on cephalometric and clinical analysis.
- Clinical analysis is more important than cephalometrics.
- The anterior vertical position of the maxilla is essentially determined by the desired amount of incisor show, usually about 3–4 mm.
- The occlusal plane should be parallel to the bipupillary line.
- The dental midline should be congruent to the facial midline.
- The occlusal plane angle relative to the Frankfurt horizontal should be in between +8 and –4.

In most 2-jaw osteotomy cases, the first osteotomy and movement is performed in the maxilla. The desired movements of the maxilla are performed first on the articulated model (model surgery) and an intermediate acrylic intraocclusal wafer is made with the maxilla in the new position and the mandible in its original (unmodified) position. With the maxilla in the desired new position the mandible model osteotomy is performed and the final acrylic wafer is constructed.

The intermediate wafer or splint is the key for the new maxilla position and all desired movements of the osteotomized segment are transferred by it. The teeth must passively fit in the splint when the mandibulomaxillary fixation is established. In addition, intraoperative bone-to-teeth measurements are performed, the same way as in maxillary surgery alone, to confirm the desired jaw and tooth position. After internal fixation of the maxilla in the desired new position temporary MMF and the intermediate splint are removed and the mandible osteotomy is performed. The mandible is positioned with the help of the second splint. Internal fixation for the mandibular is performed again with the patient in temporary MMF. Hardware selection is done identically as it is done for single-jaw surgery in each location. The desired occlusion must be checked after releasing MMF, with and without the final splint. If the position is not the desired one, osteosynthesis has to be redone. For correction of facial asymmetries, 2-jaw osteotomies may be combined with bone grafts (**Fig 7.4-1a–d**).