

Initially incomplete neurosensory deficiencies are not specifically treated, but observed and documented. In case of a complete sensory deficit, there should be a reevaluation of the situation 2–4 weeks after surgery, because a decision needs to be made to wait for regeneration or to attempt repair or decompression, for instance in the case of a rare complete lingual nerve deficiency.

Motor nerve injuries associated with facial nerve palsy or weakness are looked at differently because of their devastating effect on the patient. Depending on the degree of the damage and the suspected reason an individual decision is necessary, whether close observation, or exploration with possible nerve repair, or even facial reanimation is indicated.

Tooth injuries

Especially segmental and subapical osteotomies bear a risk for tooth injuries. They can be caused by direct trauma with osteotomes, saws, drills, or osteosynthesis screws leading to a root injury with or without devitalization. Obviously, devitalized teeth need endodontic treatment as soon as the patient's mouth opening capacity will allow for that to prevent further problems, such as infections or tooth resorption. Small defects in the root area without transection of the neurovascular bundle normally do not affect the prognosis of the tooth, whereas large defects, for example longitudinal cuts due to reciprocating saws may induce devitalization and root resorption.

Clinical and experimental studies using laser Doppler flowmetry have shown that necrosis and sensitivity disorders of the dental pulp and periodontium due to reduced blood supply following osteotomies may occur. In those cases, there is a risk for infection and tooth loss. However, it should be recalled that especially after maxillary osteotomies in the Le Fort I level transient loss of sensitivity of upper teeth is quite common, but as a rule it will return spontaneously after several weeks or months.

“Bad splits”

Unfavorable osteotomies or “bad splits” are another potential complication, especially in sagittal split mandibular ramus osteotomies according to the original technique, when large spreading osteotomes for dissection of the mandibular ramus are used. Modifications of this technique and the use of smaller osteotomes can reduce the risk for bad splits and comminution, especially in class II patients with their typical thin and compact ascending ramus.

Once an unfavorable split has occurred, it must be checked first, whether the split is complete or can be completed to allow for the desired movement of the fragments, and whether there is a possibility to position and to internally fix the fragments for a stable result. If so, a simplification of the fractured area by repositioning and fixation of the fragments is advisable. Then, an individual decision is needed about how to perform stable internal fixation with respect to size and position of bone fragments. Depending on the case, it can be necessary to apply plates and/or lag screws transorally or transbuccally with the use of load-sharing or load-bearing osteosynthesis material. Keeping a patient postoperatively in mandibulomaxillary fixation (MMF) is also an option after “bad splits.”

Instrument fractures, foreign bodies

A rare intraoperative complication is the fracture and loss of instrument, osteosynthesis material, or orthodontic appliances (brackets) with displacement into soft tissues. This can happen with tips of burrs, screw heads, blades of self-retaining screw drivers, etc. First, it is important to realize that such a problem has occurred. Then, the lost material must be located clinically or by intraoperative x-ray examination. The indication for removal depends on the location, the size, and the kind of material, as well as the operative risk and the calculated time for the procedure. If the removal is necessary, but not possible in the same operation, the patient must be informed about the problem and the need for a secondary procedure.

2 Early postoperative complications

Bleeding and swelling

After surgery, complications are often related to secondary bleeding with gross swelling and edema causing airway obstructions. In these cases monitoring, local physical treatment with cold dressings, and the application of steroids are mostly sufficient. Revision surgery is usually not needed. The use of intraoral drains in mandibular osteotomies can help to reduce the risk for airway obstruction, but then the infection rate rises.

In acute and severe cases, reintubation or even tracheostomies may become necessary to solve an airway problem.

Wound healing disturbances including infection

Wound healing disturbances and infections are rare complications in orthognathic surgery, despite the fact that transoral approaches with wound contamination and facultative pathogenic bacteriae are the norm. Infections occur most often in the angular region of the mandible following sagittal split procedures. Studies reveal that they may be related to the duration of surgery. Beside purulent infections, which are treated by incision and drainage, rare cases of osteomyelitis and cervicofacial actinomycosis have been reported.

To reduce the risk of infection, stabilization of the osteotomized fragments with internal fixation devices and prophylactic application of antibiotics have proven to be effective. Controversial standpoints exist about the duration of the antibiotic prophylaxis. Duration of prophylaxis longer than 3 days does not reduce the rate of infections, even high-dose perioperative antibiotic administration seems to be sufficient. Amoxicillin-clavulanic acid, cefuroxime, and clindamycin are known to be effective.

Relapse

Early relapse with gross discrepancy between the planned and achieved occlusion is either the result of an inaccurate fragment positioning, dislocation of one or both condyles, inadequate fragment fixation, or failure of the osteosynthesis material (eg, fracture or loosening). A reoperation for correction is indicated after a diagnosis has been established.

Nerve injuries

Intraoperative nerve injuries are mostly not detected during surgery, but become evident in the early postoperative phase. Depending on the procedure and the nerve branches involved, neurosensory dysfunction can be seen with various degrees of numbness of the lower lip and chin, the cheek area, the upper lip, the tongue and parts of the palate. The neurosensory function must be carefully assessed. The patient needs to be informed about the course of such a condition, its prognosis, and whether further treatment is needed. A regular recall should exist to document the course. Rarely, partial or complete facial palsy or weakness can be found following orthognathic surgery. Precise examination and review of the operation may help to find the most likely reason for and the severity of the damage. Based on the diagnosis a decision must be made together with the patient, whether to wait or to reexplore the nerve.