

IMF Screw Set. For temporary, perioperative stabilisation of the occlusion in adults.

Surgical technique

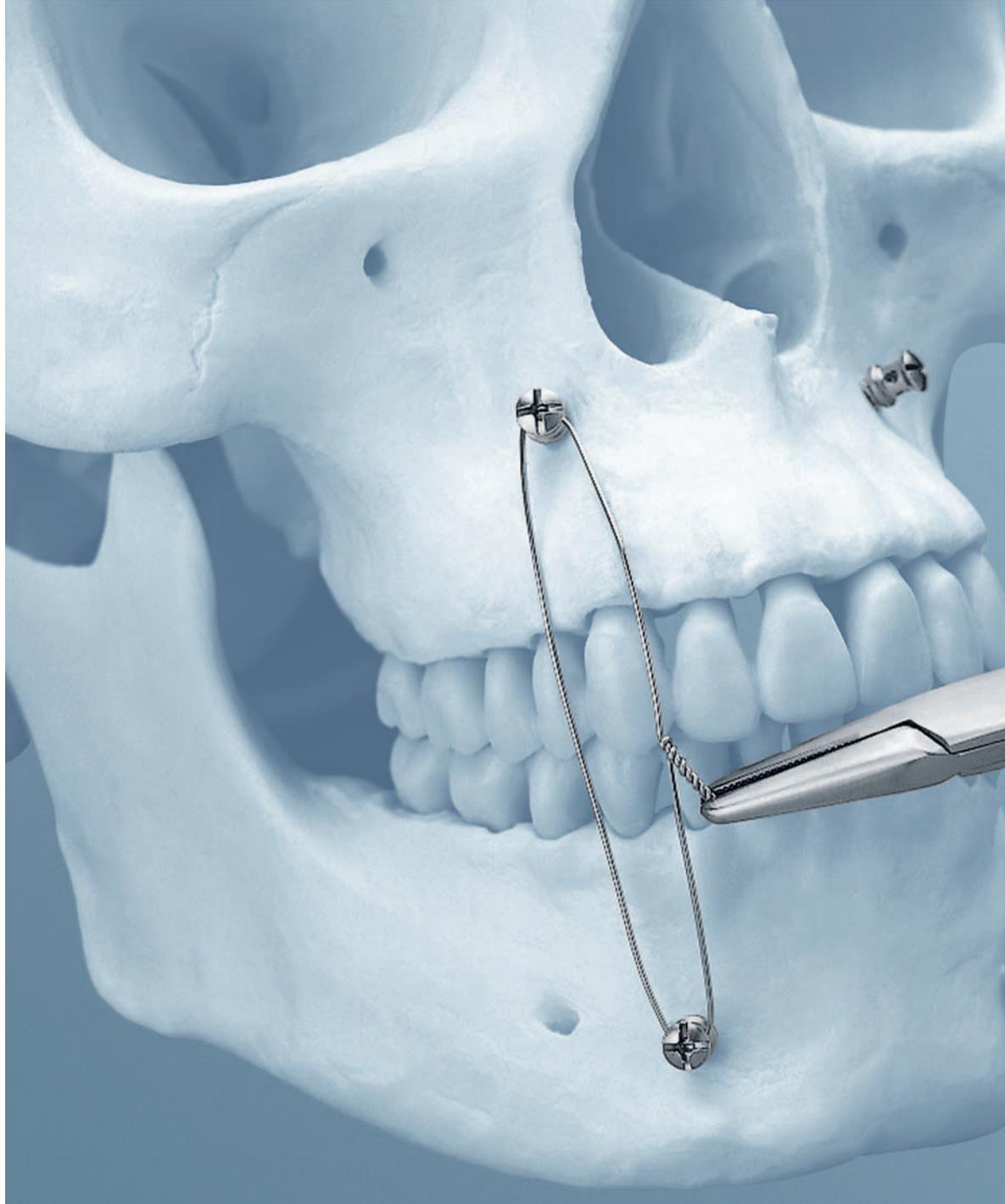


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 Image intensifier control

Warning

This description is not sufficient for immediate application of the instrumentation. Instruction by a surgeon experienced in handling this instrumentation is highly recommended.

Features and benefits

Features

- 316L stainless steel for maximum strength
- Self-drilling, self-tapping screws for one-step insertion
- Groove under screw head secures wires or elastics
- Cruciform screw head fits with existing Synthes instrumentation
- Two cross holes in the screw head align with the cruciform head slots, simplifying wire passage



Benefits

- Simplified intermaxillary fixation technique when compared to arch bars
- Reduced application time
- Minimised potential risk of wire punctures
- Easy application and removal
- Minimal number of instruments and implants
- Reduced trauma to the soft tissues
- Improved postoperative oral hygiene

Indications and contraindications

Indications

- Simple nondisplaced mandibular and maxillary fractures
- Orthognatic procedures
- For temporary use during bone healing

Contraindications

- Severely comminuted and/or displaced fractures
- Unstable, segmented maxillary or mandibular arches
- Combined maxillary and mandibular fractures
- Paediatric

Surgical technique

The following surgical technique assumes that the first screw is placed in the maxilla. However, screw placement, number of screws, and order of insertion are dependent on the fracture type, location and the surgeon's preference.

The screws must be positioned superior to the maxillary tooth roots and inferior to the mandibular tooth roots and be inserted either medial or lateral to the long axis of the canine roots. The advantages of the lateral approach include increased lateral stability and greater control over posterior open bite.

For wiring recommendations, refer to figures 11 and 12, page 7.

1

Determine number and position of screws

Determine the number and the position of the IMF screws to be inserted, based on the fracture type and location (figure 1).

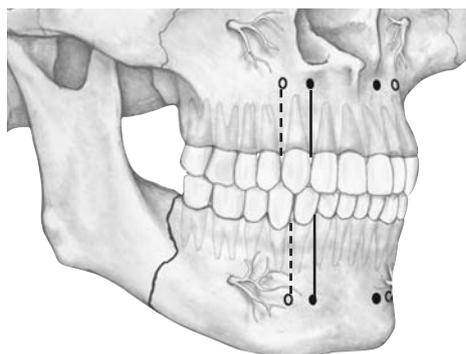


Fig. 1

- — Medial to canine roots
- - - - Lateral to canine roots

2

Locate maxillary tooth roots

Locate and identify the maxillary tooth roots, paying particular attention to the canine roots which are the longest of the tooth roots. It is important to avoid the existing dentition as well as infraorbital and mental nerves. A helpful guide to estimating the length of the dentition from radiographs can be found in figure 2.

Note: Supernumerary, unerupted and developing teeth may be present and should be confirmed or refuted with appropriate x-rays. The maxillary screws should be placed 5 mm superior to the tooth roots.

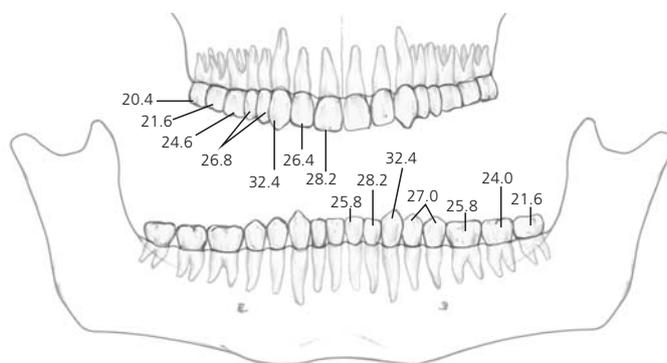


Fig. 2
Average tooth lengths (mm) including a 20% magnification associated with the radiograph. Actual lengths modified from RC Wheeler (1974) Dental Anatomy, Physiology and Occlusion. WB Saunders Co., 20, Philadelphia.

3

Insert screw into maxilla

Pick up an IMF Screw (8 mm [201.928] or 12 mm [201.932]) using the 2.4 mm cruciform Screwdriver with Holding Sleeve (313.940). Insert the screw into the maxilla (figure 3) and advance it making sure that the screw head does not compress the gingiva. The cruciform slots of the screw head can be used to orient the cross holes relative to the occlusal plane (figure 4).

Notes: In dense cortical bone, it may be necessary to predrill with a \varnothing 1.5 mm drill bit.

Since the IMF screws are self-drilling it may not always be necessary to incise and elevate the gingiva. If making an initial incision, an electrocautery device, which helps to control bleeding, may be used rather than a scalpel. This may ensure a smoother insertion.



Fig. 3



Fig. 4

4

Insert screw into mandible

Before inserting the mandibular screw, identify the important anatomic structures. Again, special attention should be paid to the canine roots and the mental nerve (figure 2). Insert the second screw into the mandible 5 mm inferior and medial or lateral to the canine root (figure 5). If placing these screws inferior and lateral to the canine root in the mandible, greater care must be employed to identify and avoid the mental nerve.

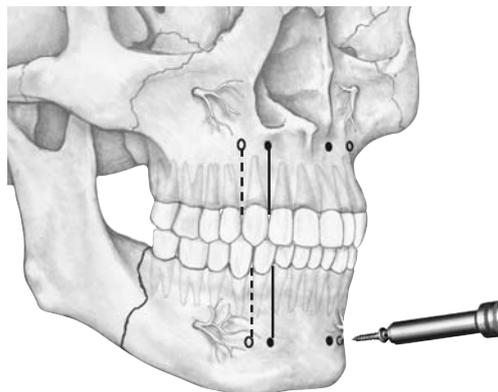


Fig. 5

5

Insert additional screws

Repeat the procedure by inserting at least two additional screws on the contralateral side, one in the maxilla and one in the mandible following the previously outlined procedure (figure 6).



Fig. 6

6

Insert wire

Insert a wire through the cross holes of the maxillary and opposing mandibular screws (figure 7). The wire may also be wrapped around the screw head grooves rather than inserting it through the cross holes.



Fig. 7

7

Establish occlusion

Before tightening the wires, the occlusion should be established. Bring the maxillary and mandibular dentition into occlusion, making sure that each condyle is in its proper position within the glenoid fossa.

8

Tighten wires

Clamp the free ends of the wires into the Wire Twister (398.906). Pull the wires taut to hold the jaws in occlusion and then twist the wires to tension (figure 8). Cut the wires with the Wire-Cutting Scissors (398.909) and bend the cut wire end under to prevent soft tissue irritation (figures 9 and 10).

In order to consolidate the segments it is important to secure the wire in an X-pattern in addition to the vertical pattern that provides maxillomandibular stabilisation and reduces lateral excursion (figures 11 and 12).

Note: Due to the tension placed on the wires, there is a potential for loosening if left in postoperatively. The wire should be carefully monitored for this condition during postsurgical evaluations and tightened as necessary.

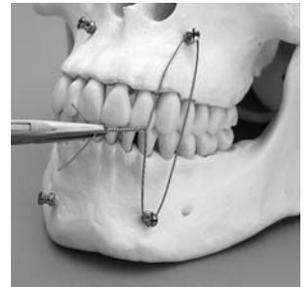


Fig. 8

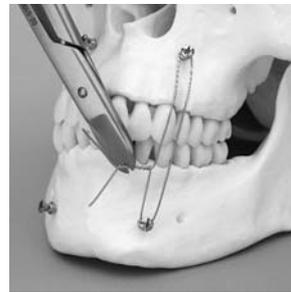


Fig. 9



Fig. 10

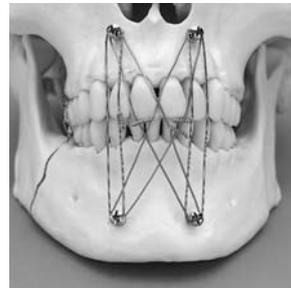


Fig. 11

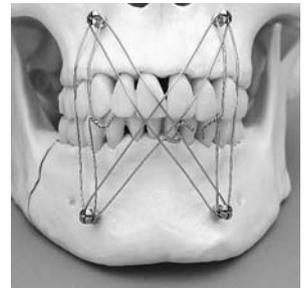


Fig. 12

9

Check stability

Check to ensure that no posterior open bite is produced during tensioning of the wires. The placement of additional IMF screws, Ernst ligatures or Ivy loops on the posterior dentition may be used to prevent or correct this condition (figure 13).

Note: Overtightening of the wires could lead to rotation of the segments and interference with the reduction. Verify that the fracture is adequately reduced at the inferior border.

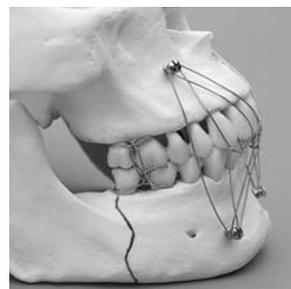


Fig. 13

Instruments and implants

Instrument Set for IMF Screws (174.736)
Module IMF Screws (674.736)



IMF Screws, Stainless Steel (201.928/932)
Diameter 2.0 mm
Length 8 and 12 mm



Cerclage Wire, Stainless Steel (291.240)
Diameter 0.6 mm
Length 175 mm



Handle, medium, with Quick Coupling (311.421)



Screwdriver Shaft 2.4, cruciform, not self-holding (313.448)



Holding Sleeve (313.970)



Drill Bit Ø 1.5 mm with Stop (317.680)

Length 44.5/8 mm, 2-flute, for J-Latch Coupling



Drill Bit Ø 1.5 mm with Stop (317.720)

Wire Twister (398.906)



Wire-Cutting Scissors, Straight (398.909)



Additionally available:

- Module, small, for IMF Screws Ø 2.0 mm (304.728)
- Screwdriver Shaft 2.4, cruciform, self-holding, for Quick Coupling (314.447)
- Drill Bit Ø 1.5 mm with Stop, length 44.5/8 mm, 2-flute, for Mini Quick Coupling (317.780)
- Drill Bit Ø 1.5 mm with Stop, length 44.5/12 mm, 2-flute, for Mini Quick Coupling (317.820)





Synthes GmbH
Eimattstrasse 3, CH-4436 Oberdorf
www.synthes.com

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