

Mandibular Distraction

Dynamic Osteosynthesis System - MD-DOS

Step-by-step procedure

- 1 When the procedure is done using local anesthesia, a mandibular and buccal nerve block are given. The incision in the buccal sulcus starts at the level of the lower occlusal plane and extends to the first molar (Fig 1). The lingual and buccal soft tissues are not degloved though. Care should be taken to make the incision well away from the buccal gingival margin when an erupted third molar is to be removed during the distraction procedure. A third molar should be removed first. The pilot drill is placed lateral to the surface of the lower molar teeth (Fig 3a-b). Its point is placed lateral to the center of the ascending ramus. A marking with a round bur 27 facilitates controlled drilling (Fig 2). It's important to make sure that the distractor will interfere as little as possible with the upper dentition upon laterotrusion.

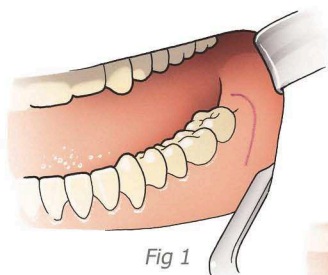


Fig 1

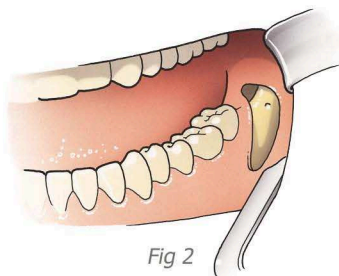


Fig 2

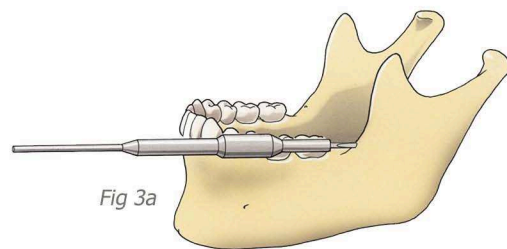


Fig 3a

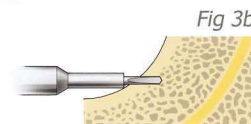


Fig 3b

all drilling at max 250 RPM

- 2 The spacer drill will cut the bone shoulder for the spacer (Fig 4a-b). Care is taken not to enter too deep. It is not necessary that a 360° shoulder is created. A 180° shoulder in cortical bone is sufficient. The upper part of the cortex is left untouched to provide strong anchorage for the fixation screw.

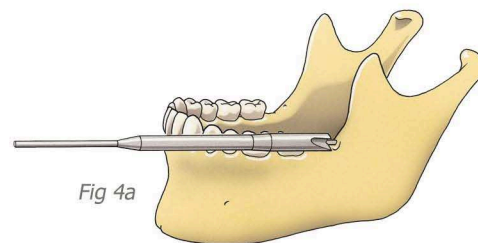


Fig 4a

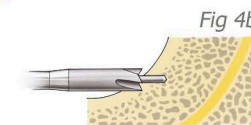


Fig 4b

all drilling at max 250 RPM

- 3 The two stage flat drill (Fig 5ab) and the depth drill (Fig 6a-b) (the latter only when cortical bone is present in the depth) are used to prepare the final diameter of the bony cavity.

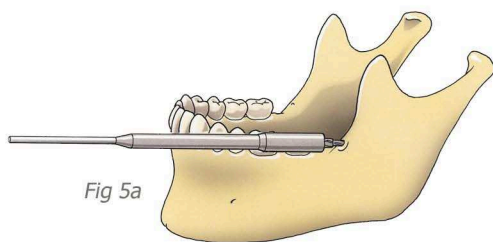


Fig 5a

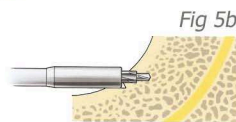


Fig 5b

all drilling at max 250 RPM

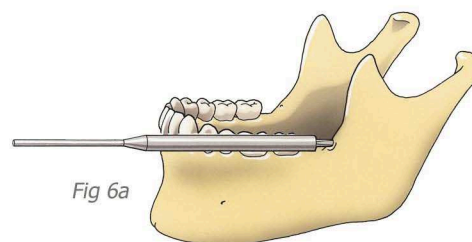


Fig 6a

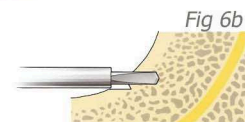


Fig 6b

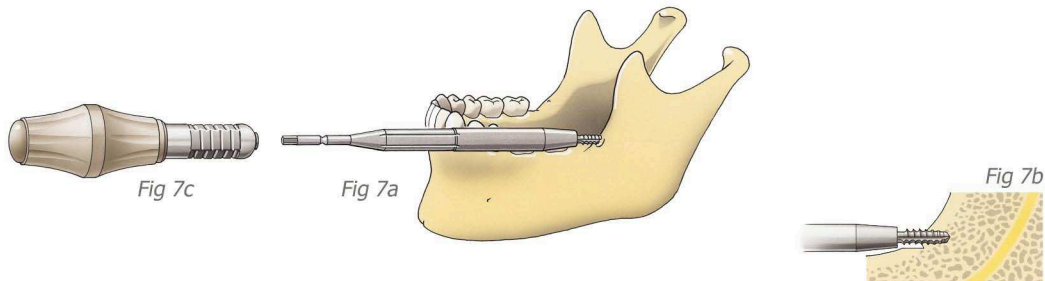
all drilling at max 250 RPM

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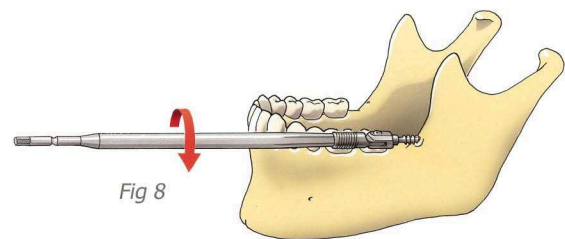
Dynamic Osteosynthesis System - MD-DOS

Step-by-step procedure

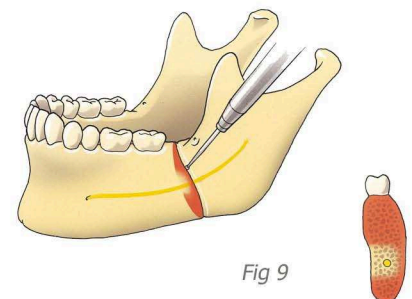
- 4 The tap is used to cut the screw profile (Fig 7a-b-c). The ratchet is rarely necessary.



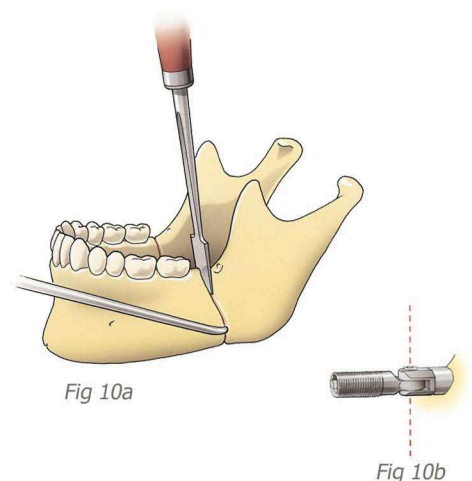
- 5 The vertical hinge of the PFU is tested. Digital pressure should allow for some rotation. The PFU is applied with the PFU-screwdriver (Fig 8). The tightness of the fit, the stability of the posterior fixation and the future position of the corticotomy/osteotomy line are checked for. The PFU is then removed.



- 6 Extra anaesthetic infiltration is given intraorally at the lower border. The corticotomies are performed with a round bur 27. The buccal corticotomy is situated posterior to the last molar. If the third molar was impacted and removed, the corticotomy starts in the anterior part of the alveolus. The lower border should be completely transected. The lingual corticotomy extends down depending upon the position of the mandibular canal. Both corticotomies are joined accomplishing an osteotomy at the upper border (Fig 9).



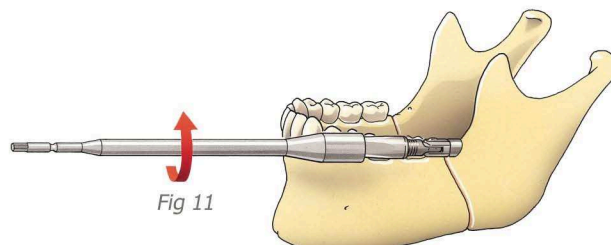
- 7 The green stick fracture is done before the placement of the PFU, with a 1 cm wide sharp osteotome and a long "St. John's mobilizer" (Fig 10a). The PFU is installed as described in 5, together with the spacer. It is important that the hinge is placed perpendicularly to the occlusal plane (Fig 10b). Gravity, suprahyoid muscle pull and masticatory forces could otherwise create bite opening forces. The hinge should be vertical when the screw is tight. If not, the PFU is removed, and installed again.



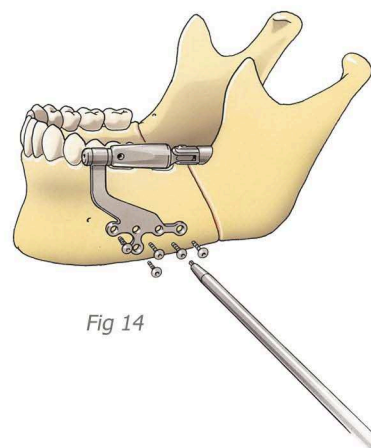
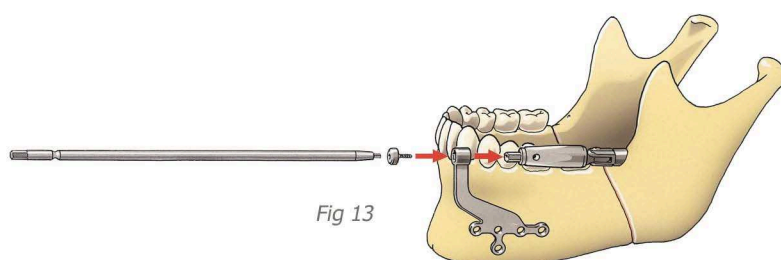
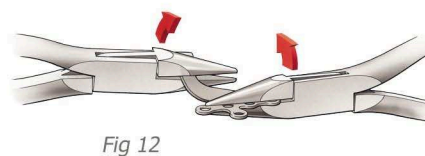
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- 8** The DU is applied with the DU-screwdriver (Fig 11). It is placed in a comfortable position in relationship to the cheek and the brackets.



- 9** An appropriate AFU (A or B) is chosen and bent to accommodate both the mandibular surface and the distraction screw (Fig 12). The protection screw is adjusted (Fig 13) and the bone screws (L5 & 7 mm, Ø 2.3 mm) are fixing the plate to the cortex (Fig 14).



- 10** The mucous membrane is sutured in the usual way. When the necessary lengthening is achieved, either a blocking screw is mounted or the patient is instructed to activate when sagging is noticed. MD-DOS is removed using infiltration anaesthesia after 2 months of contention.