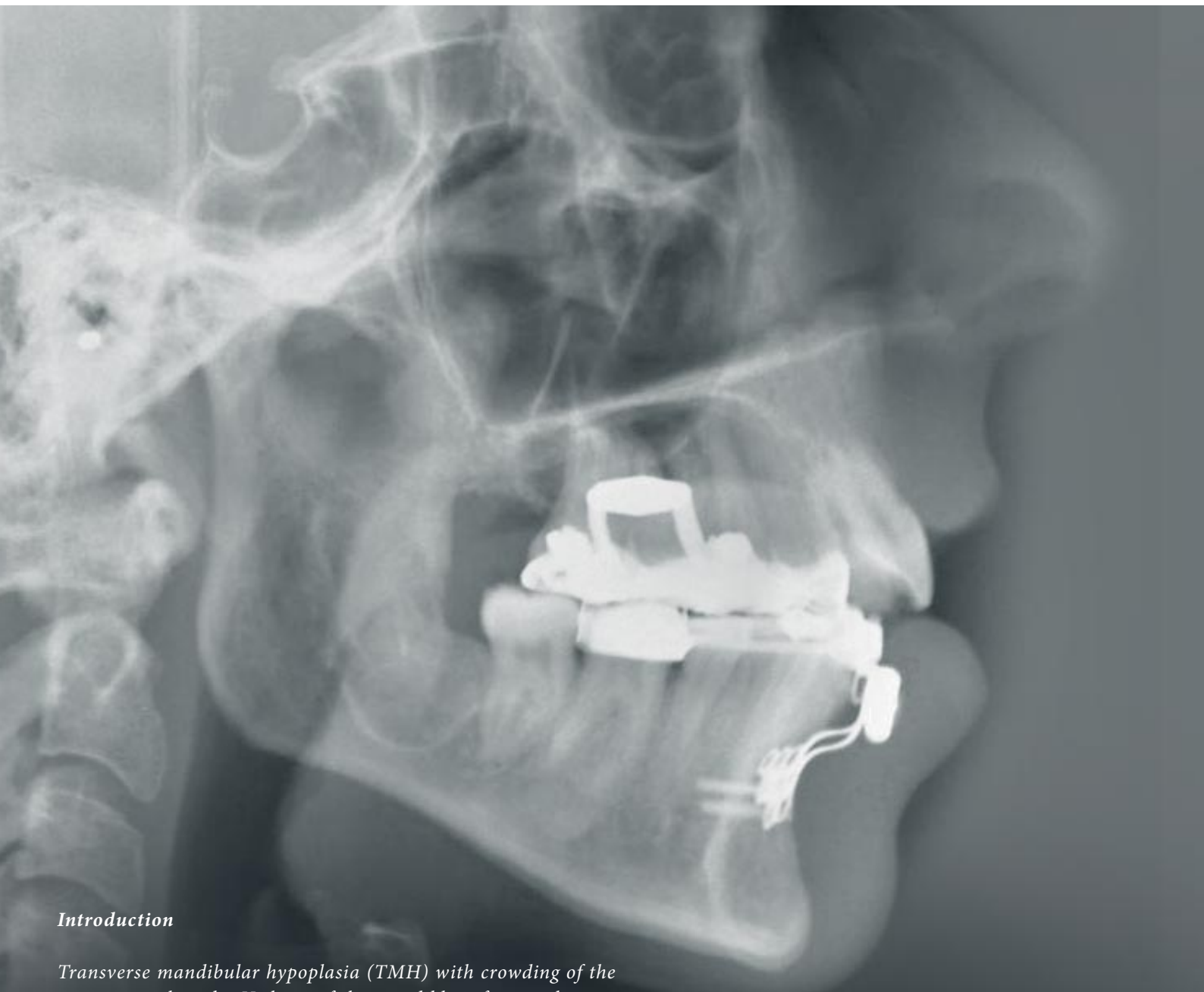


The Bologna Midline Distractor
(BMD)



Introduction

Transverse mandibular hypoplasia (TMH) with crowding of the anterior teeth and a V-shape of the mandible is frequently seen in patients with Class I and II malocclusions and Class III patients requiring decompensation before orthognathic surgery. Traditionally, teeth slicing and teeth extractions with compensating orthodontics, functional appliances or orthopaedic devices have been the first choice of treatment, but have resulted in instability, compromised periodontium and compromised facial aesthetics.

The surgical technique of widening the symphyseal area of the mandible is based upon gradual distraction following vertical interdental symphyseal osteotomy and has proven to be successful. However, the distraction devices used so far are rather bulky with great discomfort for the patients, including mucosal irritations, hyperplasia and pain.

The Bologna Midline Distractor (BMD) is a slim, but very strong alternative.

The Bologna Midline Distractor BMD

Developed in cooperation with

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The Bologna Midline Distractor

The Bologna Midline Distractor (BMD) offers the combination of bone-borne and tooth-borne anchorage. Therefore a maximum reliability of force transmittance can be guaranteed. The L-shaped mesh offers flexible fixation options, giving in this way the possibility to avoid damaging of the dental roots. The distractor is made of titanium alloy (Ti-6AL-4V) and the plates are made of titanium grade II. The bar for the dental fixation is made of stainless steel to enable a stable fixation with the dental anchoring. The connection to the teeth will be made by the orthodontic team in correspondence to the patient's individual dentition. The distractor is very stiff and resistant which is a prerequisite for an ideal parallel widening. The activation mechanism remains completely extra mucosal. Once the inferior plates have been removed, the upper tooth-bone average can be left in situ as an orthodontic retainer.

The Bologna Distractor (BMD) avoids any inter-canine/premolar relapse, which has been referred with other types of symphyseal distractors, and allows a parallel bone and dental arch widening.

Advantages

- Easily placed and activated
- Parallel widening due to stiff and resistant device applying a very slim and comfortable distractor
- No mucosal irritation with discomfort and pain
- Allows simultaneous orthodontic treatment with fixed appliances
- Can be removed easily under local anaesthesia

Indications

- (Extreme) transverse mandibular hypoplasia in non-syndromal and syndromal patients
- Anterior dental crowding
- V-shape of the mandible

Relative contra-indication

- Class II/1 and II/2 deep bite; the deep bite may interfere with the position of the Midline Distractor. This can be overcome by placing the BMD more apically or by wearing an occlusal splint during the distraction and consolidation period.

Intraoperative procedure



Fig. 1: Incision



Fig. 2: Osteotomy line

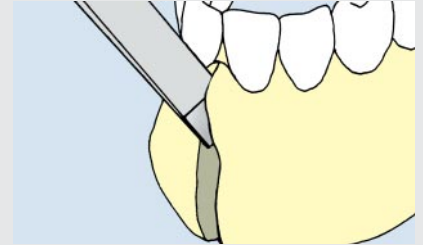


Fig. 3: Spreading the mandible using an osteotome or Smith Spreader 38-846-20-07

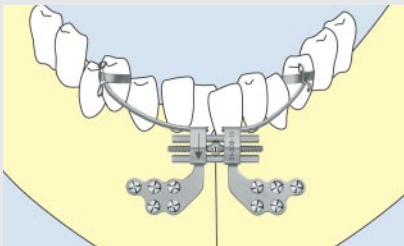


Fig. 4: Distractor device is fixed to the bony part of the mandible

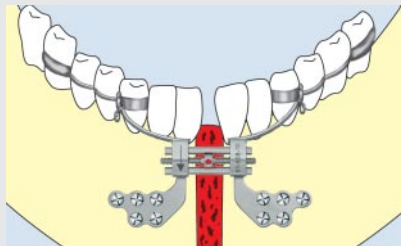


Fig. 5: Test of the distraction procedure intraoperatively



Fig. 6: Distraction procedure started, soft tissue is closed

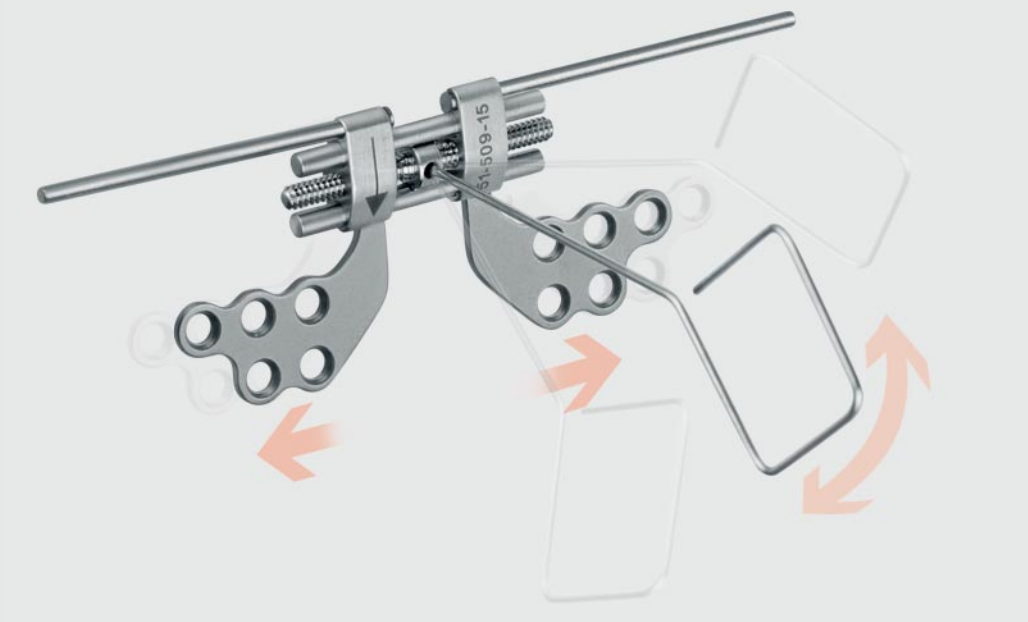
Intraoperative procedure

The surgery is performed under general anaesthesia with preferable naso-endotracheal intubation. Via a standard incision in the labial vestibulum easy access is gained to the bony structures of the dental roots in the symphyseal area. The inferior plates of the distractor are bent and adjusted to the form of the mandible. The superior teeth anchoring arms are bent, inserted and fixed with steel wires in the slots of the dental bands, which have been previously applied by the orthodontist. The BMD is fixed with six monocortical screws, placed in the best holes in the plates to avoid the dental roots. The line of the ideal interdental symphyseal osteotomy is marked and the lower part is osteotomized with a saw. A possible interference of the distractor with the upper incisors is checked. The distractor is removed and the osteotomy is completed with a chisel. Now the distractor is refixed in a final manner. To check undisturbed distraction the distractor is slightly activated and deactivated. The mucosa is primarily closed. Complete healing of the mucosa without irritation during distraction can be observed.

Oral hygiene

The design of the Bologna Midline Distractor is based on a hyrax-appliance and therefore food remnants are not likely to stick in the device. Patients must be instructed to routinely clean the device at least twice per day thoroughly. Visit of an oral hygienist is recommended on a regular base.

Distraction protocol



Latency phase:

Once the Bologna Midline Distractor has been implanted, a latency period of approx. 5-7 days (depending on the patient) must be observed before starting the distraction process.

Distraction phase:

Active distraction is performed with a patient activating wire (ref. no. 51-509-90-07, see page 7). The distractor features an arrow to indicate moving direction.

One complete movement with the activating wire (90°) equals 0.25 mm. The recommended distraction length per day is 0.5 mm (two movements) to 1.0 mm (four movements) based on the general patient considerations.

Consolidation phase:

The consolidation phase lasts approx. 10-12 weeks. In order not to jeopardize the distraction result, the distractor must be left in situ until complete osseous consolidation has been achieved. Orthodontic treatment can already be started during this phase.

Removal of the distractor:

At the end of the consolidation period the distractor can be removed in an outpatient clinic. The mucosa surrounding the distractor is infiltrated with local anaesthesia including a vasoconstrictor. A mucosal flap is raised and the screws including the distractor are removed. The mucosa is primarily closed. The healing of the mucosa is normally restored within one week.

Clinical examples

Case 1



Fig. 1: Pre-OP



Fig. 2: Pre-OP



Fig. 3: Complete osteotomy and fixation with monocortical screws



Fig. 4: Intraoperative activation



Fig. 5: During active distraction



Fig. 6: After orthodontic treatment

Case 2



Fig. 1: Pre-OP



Fig. 2: End of distraction



Fig. 3: After orthodontic treatment

Case 3



Fig. 1: Pre-OP

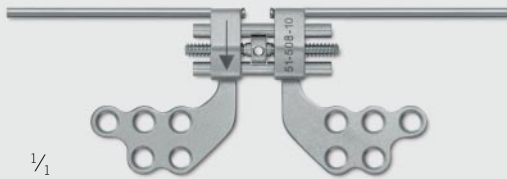


Fig. 2: End of distraction



Fig. 3: After orthodontic treatment

Ordering details and Literature



Bologna Midline Distractor



Activating wire

Ordering Details

Distractors

51-508-10-09	Bologna Midline Distractor, 10 mm (incl. activating wire)
51-508-15-09	Bologna Midline Distractor, 15 mm (incl. activating wire)

Recommended Screws (Centre Drive® or maxDrive®)

25-872-05-09	maxDrive® Mini Screws 2.0 x 5 mm
25-872-07-09	maxDrive® Mini Screws 2.0 x 7 mm
25-662-05-09	Centre Drive® Mini Screws 2.0 x 5 mm
25-662-07-09	Centre Drive® Mini Screws 2.0 x 7 mm
25-672-05-09	Cross Drive Mini Screws 2.0 x 5 mm
25-672-07-09	Cross Drive Mini Screws 2.0 x 7 mm

Recommended Instruments

25-407-04-04	Screwdriver handle
25-486-97-07	maxDrive® screwdriver blade 2.0 mm
25-540-98-07	Centre Drive® screwdriver blade 2.0 mm
25-540-97-07	Cross Drive screwdriver blade 2.0 mm
25-449-05-91	Twist drill 1.5 x 50 mm, 5 mm stop
25-449-07-91	Twist drill 1.5 x 50 mm, 7 mm stop
25-516-13-07	Modelling plier (2 recommended)
25-441-18-07	Plate holding forceps
25-435-20-07	Lindorf plate holding instrument

Optional Instruments

51-509-90-07	Patient activating wire (spare part)
38-846-20-07	Smith Spreader
48-160-12-07	Osteotome

Storage

55-962-08-04	Insert module, purple, w/o lid and inserts
55-963-17-04	Lid for distraction module
55-962-18-04	Storage module, purple, w/o lid and inserts
55-963-09-04	Lid storage module
55-964-24-04	Insert empty, 2 sections
55-964-17-04	Insert universal

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