

# Trans Palatal Distractor - TPD All-in-One

## Step-by-step procedure

- Attention:**
- Preoperative planning is advised in full cooperation with the surgeon and the orthodontist.
  - The accurate device can be chosen by the use of the TPD Dummies.
  - Each dummy is an exact copy of its correspondent TPD device. (Abutment plates and distraction module).
  - Take care when presenting the dummies into the palate, to add the mucosa thickness.

**1** Corticotomies are performed as usual for SA-RPE, with transection of the median, anterior and lateral support (Fig 1a-d). The median support is split by a median buccal approach. Septal release is performed. Bleeding from a small artery within the osseous triangle forming the lateral nasal wall and lateral maxillary walls frequently occurs and must be treated adequately to avoid postoperative bleeding problems. The transection can be performed with a round bur (preferably 33 mm to allow drainage into the sinus) for the lateral support, a small Lindemann bur or a smaller round bur for the anterior support, as well as with a small straight sharp osteotome for the median support. Mobilisation of the segments is done by prying motions with the osteotome (Fig 1d). Control by hand if both segments shows equal opposition.

- References:**
- Steinhäuser, 1972
  - Epker and Bell, 1976
  - Wolford, 1985
  - Lines, 1975
  - Glasman, 1984
  - Betts, 1995



Fig 1a

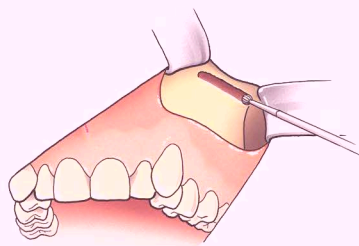


Fig 1b

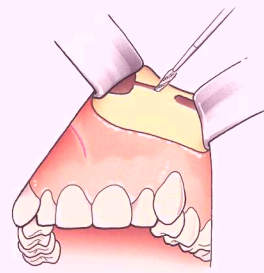


Fig 1c

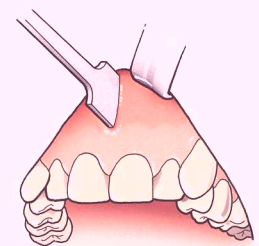


Fig 1d

**2** After application of local anaesthesia with a vasoconstrictor, two incisions of 1 cm long are made in the palatal gingival over the roots of the second premolars (3/2 expansion canine/first molar) or the first molars (parallel expansion when the pterygo-maxillary junction is also released) (Fig 2). A small relieving incision is made perpendicular to end in the middle of the first incision.

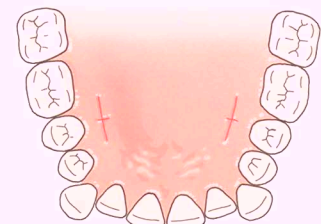


Fig 2

**3** Advantageously while placing the device, the TPD placing instrument (Ref 03-706W) can be used to keep the distractor device in a correct position to insert a screw.

The abutment plate of the TPD All-in-One device, marked with the character "L" (left), is placed subperiosteally, on the bone surface on the left side of the patient (Fig 3).

The abutment plate of the TPD All-in-One device, marked with the character "R" (right), is placed on the right side of the patient.

By this way the distraction module of the TPD All-in-One device is placed with the holes for the blocking screw on the right side of the patient.

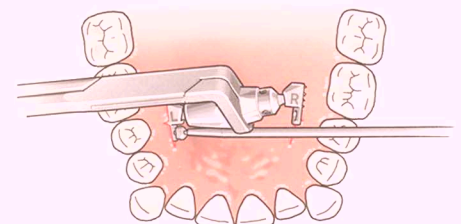


Fig 3

**Caution:** Both characters L (left) and R (right) need to be clearly visible while looking in the mouth.

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- 4 Insert the first 7 mm monocortical self drilling screw of 2.0 mm diameter (Ref 70-707S) , only **halfway depth** with the internal screwdriver insert (Ref 99-909S) mounted in its handpiece (Ref 99-901A) (Fig 4).  
Insert the second 7mm screw only **halfway depth**.

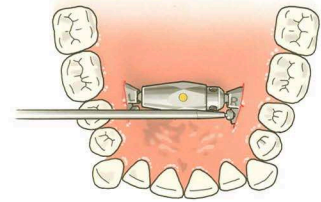


Fig 4

- 5 Place the hinge key (Ref 03-951A) horizontally into the mouth of the patient and bring the head of the hinge key over the distraction module of the TPD All-in-One device (Fig 5a).  
Alternative activation is also possible with the patient key (Ref. 03-950S) (Fig 5b).  
Push gently the handle distally to rotate the module from cranially to caudally (**downwards**) and activate till light pressure is obtained between the two bone surfaces.

**Warning:** While placing the TPD All-In-One device **avoid at any time** to try activation in opposite direction. If so, the distractor module will be blocked against the abutment plates, and this handling will **cause inevitable breakage** of the distraction rod.

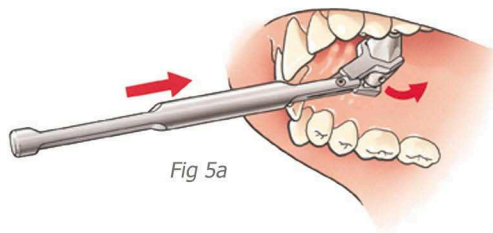


Fig 5a

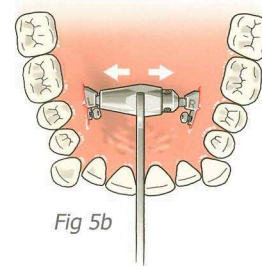


Fig 5b

- 6 Once the distraction module is in horizontal position, tighten rigidly both osteosynthesis screws by using the external screwdriver insert (Ref 99-910S) mounted in its handpiece (Ref 99-901A) (Fig 6).  
Activate the module till a diasteme occurs of 2 mm between the incisors to control the opposition force.  
Deactivate by means of the patient key (Ref 03-950S) in opposite way, till the incisors become on there original place and tension disappear.  
One resorbable suture on the posterior incision line is a safe measure against postoperative bleeding from the palatal branches.

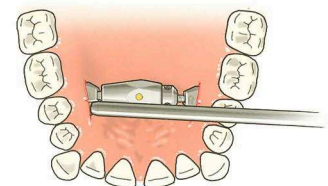


Fig 6

- 7 Rotate the module in a position that one of the three boreholes for the blocking screw becomes visible.  
Insert the blocking screw (Ref 99-100S) in the bore with the internal screwdriver only (Ref 99-909S) **without** the screwdriver handpiece (Ref 99-901A) to avoid damaging the screw-thread in the module (Fig 7).

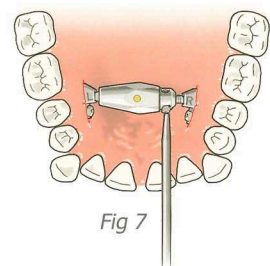


Fig 7

- 8 After one week latency period the blocking screw (Ref 99-100S) has to be removed by using the screwdriver (Ref 99-101A). Clean carefully the blocking screw and store it away till the necessary expansion will be achieved.

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### 9) Activation

The patient is asked to activate the TPD All-in-One device 1/3 mm (1 colour code) twice a day with the patient key (ref. 03-950S) by rotating it downwards, from cranially to caudally till the next colour code appears. Colour codes are red, yellow and blue (3 colour codes = 1 full turn = 1 mm.).

#### **Attention using of the patient key**

Bring the key head over the module, with the handle close to the upper incisors (Fig. 8) and pull downwards till the handle touch the lower teeth.

Remove the key and turn the key head (180°).

Bring the key head again over the module, and repeat to pull downwards till the next colour code appears.

In difficult cases (restricted mouth opening) the hinge key (ref. 03-951A) can be useful (Fig 5a).

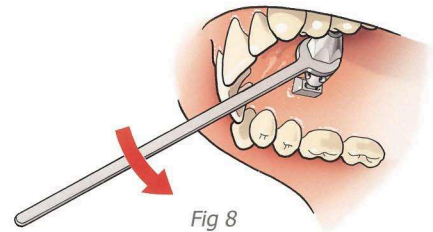


Fig 8

### 10) Achieved expansion period

Once the necessary expansion is achieved, the stored blocking screw (ref. 99-100S) must be inserted in one of the three boreholes of the TPD All-In-One distraction module, by means of the small screwdriver (ref. 99-101A).

Control after the first stabilization if the osteosynthesis screws are still fixed. Retightening is recommended under local anesthesia.

#### **Attention:**

Before inserting the blocking screw, clean accurately the insertion hole.

**Do not tighten the blocking screw hardly** to avoid damaging the screw-thread of TPD All-In-One distraction module. Beware to insert the blocking screw if some friction occurs. In case of any friction, turn slowly the screwdriver from right to left and back till the correct entrance is found in the thread of the screw hole, and there is no friction feeling while inserting the blocking screw.

11) The consolidation period should be at least 4 months.

### 12) Orthodontic treatment

Arch wire appliance is **needed** to control a perfect dental arch and avoids a U-shape arch phenomena.

This to control the expansion less or more anterior, or posterior.

Orthodontic alignment can start 1 month or earlier after the end of activation.

### 13) Removal of the TPD All-In-One device

- Apply local anesthesia.
- Clean carefully the insert hole in the blocking screw, before inserting the small screwdriver (ref. 99-101A).
- Unscrew the blocking screw (ref. 99-100S).
- Unscrew a few turns, the osteosynthesis screws (ref.70-707S) in the abutment plates of the TPD All-in-One device.
- De-activate the distraction module of the TPD All-in-One device with the patient key (revolve the key upwards – from caudally to cranial) - revolve three full turns upwards.
- Remove the osteosynthesis screws (ref. 70-707S) and revolve the distraction module to complete removal.
- In case distraction rod is damaged by the blocking screw, the rod need to be cut.