Orthodontics

Skeletal Anchorage in Orthodontics
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Introduction

Anchorage control has always been a difficult and unpredictable challenge for orthodontists. Unlike tooth borne appliances, which rely on patient compliance to achieve tooth movement, (bone borne) implants provide true stationary anchorage, allowing treatment to proceed more rapidly with highly predictable results.

In comparison to a single point anchorage with cylindrical implants the micro-plate fixation with our new C-tube design offers additional benefits:

- Immediate force loading
- Easy fixation with Drill-Free or self tapping screws
- Maximum retention force
- Microplates are easy to adapt
- Minimum irritation to the oral tissues

At the same time C-tube anchorage provides

- Reduced risk of tooth damaging (root resorption, tooth loosening, tooth tilting)
- Precise control of desired tooth movement
- Normal dental hygiene can be maintained
- Minimized side effects

The use of titanium micro plates in implant quality (TiAl6V4) provides perfect bio-compatibility and at the same time ideal resistance with respect to bending or adaptation.

Developed in cooperation with

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Indications

- Orthodontic tooth-moving procedures where maximum stability is required
- Patients in their permanent dentition
- Patients where dental fixation is not possible (tooth or alveolar loss, trauma)

Contra-indications

- Patients without sufficient bone condition
- Cases of abnormal mastication pattern or poor oral hygiene
- Mixed dentition

The C-Tube Plate

In cases of dental regulations a C-tube (Chung’s microplate with tube) can be fixed in the lateral part of the maxilla or mandible. The eyelet will remain in the buccal sulcus and serves to hold the dental arch wire.

The principle of C-tube fixation in the lateral maxilla
Case 1

15-year-old boy is presenting Class II Division 1 malocclusion with permanent dentition. Severe teeth crowding in both upper and lower jaw and protrusion of the upper lip. Maxillary first bicuspids extracted.

Pre-treatment intraoral view and lateral cephalogram

Dental situation of the maxilla

The side view shows clear protrusion of the maxilla.

Patient's lateral cephalogram

Intra-Operative approach

Small lateral incision with buccal mucosal flap and periosteal elevation in order to place the C-tube plate

The C-tube plate has been adapted and is fixed with 2 Drill-Free screws 1.5 x 5 or 7 mm between the 2nd premolar and the 1st molar.

After suturing the eyelet remains in the vestibulum.
Initial stage of treatment

The eyelet serves as an anchorage point for the dental arch wire. Elastic rubber applied to the cuspid for distal retraction.

Occlusal view of the maxilla

The C-tube plate fixed between the roots with two miniscrews

3 months post operative

Side view

Leveling of maxillary teeth is completed.

Frontal view

8 months post operative

Side view

Retraction of maxillary anterior teeth is started by Ni-Ti spring.

Frontal view
12 months post operative

*Final result after 1 year*  *The dental arch is completely formed*  *Frontal view*

Post-treatment intraoral view and lateral cephalogram
The C-palatal plate:
The C-palatal plate is recommended in more severe cases, where the orthognathic situation has to be corrected and palatal traction is needed. The palatal plate is designed to compensate more complex and multidirectional traction forces.

The basic principle of C-palatal plate fixation: The plate is fixed to the hard palate with three or two Drill-Free screws.

The dotted lines indicate the submucosal position of the C-palatal plate. Springs are attached to the exposed (red) part of the plate.

Advantages of the C-palatal plate
- The surgical intervention is quick and simple (Easy and fast surgical intervention)
- Immediate force loading after surgery is possible
- Simultaneous application of various force vectors
- Good resistance against shear forces

Indications
- Dentoalveolar disproportion – protrusion problem
- Correction of teeth in the maxilla only
- Malocclusion Class II and Class III
## Set Recommendation

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<thead>
<tr>
<th>Plates</th>
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<tr>
<td>C-tube plate</td>
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<td>Palatal plate</td>
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<td>25-678-07 1.5 x 7 mm</td>
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<td>Screwdriver blade</td>
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<th>Additionally: (optionally)</th>
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<td>2 Bending Pliers</td>
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| Landorf plateholding instrument | 25-435-15 |        |
| Rose burr                   | 51-535-66   |        |
| Angled Screwdriver with drill bit | 50-900-00  |        |
| with blade                  | 50-915-15   |        |