Micrognathia Secondary to Pierre Robin Sequence. Treated with distraction osteogenesis using an internal mandible distractor.
**Patient profile**
The patient is a 2-year-old male with a history of respiratory distress from birth resulting from significant micrognathia in the setting of Pierre Robin sequence. He underwent placement of a tracheostomy and subsequent repair of a cleft palate. In the absence of other imminent, planned surgery, his parents sought consultation regarding removal of the tracheostomy and correction of the micrognathia.

![Figure 1](image1)
![Figure 2](image2)

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**Preoperative planning**
The patient underwent a CT scan of the head and neck in axial and coronal planes at 1.5 mm slices for 3-dimensional reconstruction.

![Figure 3](image3)
![Figure 4](image4)
**Surgical treatment**

Bilateral 2 cm incisions were made along the angle of the mandible (Figure 5). Inverted-L osteotomies were made in the anterior cortex of the mandibular ramus, using a thin reciprocating saw. The posterior cortex was gently fractured using an osteotome to obtain separation between the proximal and distal segments of the mandible.

The modular Synthes CMF Distraction System was used. Distractors were constructed using 1.5 mm cloverleaf footplates on a 25 mm distractor body with universal joint. Flexible extension arms, 40 mm in length, were attached to the activation end of the distractor. The screw holes inferior to the distractor body were removed. The distractors were placed into each wound. Small stab incisions were created posterior to the lobules of the ears and the flexible extension arms were gently pulled through the soft tissue and out of the stab incisions using forceps. Each footplate was fixed to the mandible across the osteotomy with 1.5 mm self-drilling screws, 4 mm in length (Figure 6).

Once the distractors were fixed to the mandible, device stability and complete separation of the bone segments were confirmed by turning the extension arms a few millimeters, with the activation instrument. The distraction devices were returned to the closed state. The wounds were copiously irrigated with warm, sterile saline and closed in layers, using tissue adhesive for the skin. A non-stick sterile dressing was placed over each incision and over each exit site behind the ears.
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Postoperative management

**Distraction protocol:**
The parents began activating the distractor 1 turn 3 times per day for a total of 1 mm/day, beginning on the second postoperative day. This was done for 12 days.

**Extension arm removal and consolidation phase:**
At the start of the consolidation phase, the flexible extension arms were removed easily in the office using the extension arm removal instrument.

On one side, the entire device was covered by the soft tissue. On the other side, a small amount of the distractor body remained visible but was not symptomatic during the consolidation phase. This was likely due to the more posterior osteotomy on this side as compared to the other.

The consolidation phase lasted 8 weeks.
Results
The patient was advanced a total of 12 mm (Figures 9–12). Removal of the devices was performed in the operating room without incident. Intraoperative pharyngoscopy at that time demonstrated adequate airway size (Figure 13). The devices were easily removed through the same incisions that were previously used. The entire process was well tolerated by both the family and the patient.
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Product information

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<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>04.315.065</td>
<td>BC Distractor Body End Activated with U-Joint, 25 mm for CMF Distractor</td>
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<td>04.315.312</td>
<td>1.5 mm Mandible Cloverleaf Foot, B-Type for CMF Distractor</td>
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<tr>
<td>04.315.313</td>
<td>1.5 mm Mandible Cloverleaf Foot, C-Type for CMF Distractor</td>
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<td>04.315.127</td>
<td>Removable Extension Arm, flexible, 40 mm for CMF Distractor</td>
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<td>400.054</td>
<td>1.5 mm Titanium Cortex Screws, self-drilling, 4 mm</td>
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<td>01.315.000E</td>
<td>CMF Distraction System Eval Set</td>
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Surgeon profile

Peter J. Taub, MD, FACS, FAAP
Plastic and Reconstructive Surgery
Mount Sinai Kravis Children’s Hospital
New York, New York

Results from case studies are not predictive of results in other cases.
Results in other cases may vary.