chronOS Strip. Osteoconductive beta-tricalcium phosphate ($\beta$-TCP) composite.
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chronOS Strip may be folded, twisted, cut, or sutured intraoperatively for optimal placement.

The notched corner design in chronOS Strip Mx allows manual removal by tearing or cutting prior to implantation.

Perforations in chronOS Strip Mx’s design help it conform to patient anatomy, providing an osteoconductive scaffold beneath the rod and between the pedicular screws.

chronOS Strip Mx is packaged with 2 strips to a perfusion pouch, which allows thorough wetting and bilateral implantation along one level of the posterolateral spine.

chronOS Strip is a synthetic bone void filler manufactured from chronOS beta tricalcium phosphate (β-TCP) granules and a resorbable polymer [poly(lactide co-ε-caprolactone)]. The result is a flexible, osteoconductive, three-dimensional composite with excellent handling characteristics that conforms to the implant site, allowing site-specific placement.

Each strip is sterile-packaged in a perfusion pack, allowing easy perfusion with autologous bone marrow and/or blood. Perfusion with bone marrow aspirate (BMA) provides a favorable environment for bony ingrowth.

chronOS Strip Mx takes chronOS Strip one step further by adding cuts in the strip to facilitate implantation. The easy removal of chronOS Strip Mx’s notched corners assists in implantation beneath the interpedicular rod, and stabilizes the graft material along the posterolateral gutters.

**ChronOS Strip features**
- A composite pairing the structure of an osteoconductive β-TCP ceramic scaffold with the handling advantage of a resorbable polymer
- Resorbed and replaced by bone in 6–18 months during the bone remodeling process\(^1,2\)
- Can be used alone or with autograft
- 100% synthetic, reducing the chance for disease transmission
- Standardized pores are within the size range identified as ideal for bony ingrowth\(^3\)

**ChronOS Strip Mx features**
- chronOS Strip Mx’s T-shaped design wedges the implant below the rod
- chronOS Strip Mx’s Level Packs consist of two strips inside each perfusion pouch and take the guesswork out of how much graft to use per level
- After removal, the marrow rich corners of chronOS Strip Mx can be mixed with autograft

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Indications and Contraindications

**Indications**
chronOS Strip is indicated for:
- Bony voids or gaps that are not intrinsic to the stability of the bony structure
- Use in the treatment of bony defects created surgically or through traumatic injury

chronOS Strip, combined with autogenous blood and/or bone marrow or autograft, is intended to be used in the spine for posterolateral fusion. Following placement into the bony void, chronOS Strip resorbs and is replaced with bone during the healing process.

**Contraindications***
chronOS Strip should not be used in:
- The presence of active or suspected infection
- Areas which are subject to excessive impact or stress

*Please see package insert for complete description of indications, contraindications, warnings and precautions.
Preparation

1
Surgical considerations
chronOS Strip must always be applied by endosteal or subperiosteal implantation (i.e., in direct contact with healthy bone). chronOS Strip may be used in conjunction with autograft. When combining with autograft, a 1:1 ratio should be used.

It is recommended that chronOS Strip be saturated with the patient’s own bone marrow and/or blood prior to implantation. To facilitate the homogenous saturation of chronOS Strip, it is provided in a perfusion pack with a Luer fitting to allow attachment of a syringe, such as the one found in the ProCure Choice Marrow Aspiration Kit.

2
Perfuse chronOS Strip

Optional instruments

| 710.111.99S | ProCure Choice Marrow Aspiration Kit, with 11 gauge, 11 cm needle, with multi-port, sterile |
| 710.151.99S | ProCure Choice Marrow Aspiration Kit, with 11 gauge, 15 cm needle, with multi-port, sterile |
| 710.150.99S | ProCure Choice Marrow Aspiration Kit, with 11 gauge, 15 cm needle, with single port, sterile |

Aspirate bone marrow using the ProCure Choice Marrow Aspiration Kit or fill a syringe with the patient’s blood.

**Note:** Refer to the *ProCure Choice Marrow Aspiration Kit Technique Guide* for the suggested surgical technique for aspirating bone marrow.

Unscrew the protective cap on the perfusion pack port.

Attach the syringe containing fluid to the Luer fitting on the chronOS Strip perfusion pack.
Inject the perfusion pack with fluid following the recommended volume ranges to thoroughly wet the chronOS Strip.

**Recommended volumes for perfusion of chronOS Strip**

<table>
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<tr>
<th>Strip Size (mm)</th>
<th>Perfusion Volume Range (cc)</th>
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<tr>
<td>50 x 25 x 3</td>
<td>4–10</td>
</tr>
<tr>
<td>100 x 25 x 3</td>
<td>7–20</td>
</tr>
<tr>
<td>50 x 25 x 6</td>
<td>7–10</td>
</tr>
<tr>
<td>100 x 25 x 6</td>
<td>15–20</td>
</tr>
<tr>
<td>47 x 18 x 3 (2 strips)</td>
<td>5–10</td>
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**Caution:** Do not exceed the recommended upper volume limit as this may over-pressurize the perfusion pack.

Perfuse the chronOS Strip by gently pumping the syringe plunger 3 to 5 times or until the implant appears wetted throughout (Figure 1).

**Note:** Do not pull the syringe plunger back to its maximum stroke as this may cause the plunger to disengage from the syringe barrel, resulting in the loss of the syringe contents.

Remove the syringe to relieve any pressure from the perfusion pack.

Remove the implant by grasping it through the perfusion pack to secure it, while tearing at the designated notch at the top of the pack (Figure 2).
Implant chronOS Strip

3

Implant

For chronOS Strip

Mechanical stability is a prerequisite for good bony incorporation when using chronOS Strip.

If there is instability, stabilize the operative area using appropriate osteosynthesis procedures and hardware fixation.

Once the defect is stabilized, manipulate or secure chronOS Strip intraoperatively to fill the defect according to surgeon preference.

Implant chronOS Strip in direct contact with bone, without any intermediate connective tissue layer.
For chronOS Strip Mx

Prepare chronOS Strip Mx by tearing or cutting the notched corners from each of the perfused strips.

Place the strips bilaterally along the posterolateral gutters, making sure the perforations fit snugly underneath the rod and between the pedicle screws. Mix with autograft and the previously removed corners where desired.

Implant chronOS Mx Strip in direct contact with bone, without any intermediate connective tissue layer.
chronOS Beta-Tricalcium Phosphate Strip, sterile

07.801.100.99S  50 mm x 25 mm x 3 mm

07.801.101.99S  100 mm x 25 mm x 3 mm

07.801.110.99S  50 mm x 25 mm x 6 mm

07.801.111.99S  100 mm x 25 mm x 6 mm

chronOS Beta-Tricalcium Phosphate Strip Mx, sterile

07.801.200.99S  47 mm x 18 mm x 3 mm (2/pkg.)

Diagrams show actual dimensions of strips.
Also Available

ProCure Choice Marrow Aspiration Kit, sterile
(needle and syringe included)
710.111.99S  with 11 gauge, 11 cm needle, multiple-port,
(side holes)
710.151.99S  with 11 gauge, 15 cm needle, multiple-port,
(side holes)
710.150.99S  with 11 gauge, 15 cm needle, single-port
(distal hole)

References


4. Microstructure of chronOS (Source: Dr. M Bohner, RMS Foundation; Dr. G Richards, AO Research)