The HemiCAP® Toe Classic

The HemiCAP® Toe Resurfacing Systems restore the surface geometry of the metatarsal head and preserve functional structures using an innovative 3 dimensional mapping system and a contoured articular resurfacing implant.

Anatomic “Inlay” with proven threaded fixation
Minimal bone removal maintains future options
Specifically designed for the lesser metatarsals
Description
The HemiCAP® Contoured Articular Prosthetic incorporates an articular resurfacing component and a taper post component that mate together via a morse taper interlock to provide stable and immobile fixation of the implant and stress bearing contact at the bone/prosthetic interface.

Materials
Articular Resurfacing Component: Cobalt-Chromium Alloy (Co-Cr-Mo)
Surface Coating: Titanium (CPTi)
Taper Post: Titanium Alloy (Ti-6Al-4V)

Indications
Hemiarthroplasty implant for the first metatarsophalangeal joint for use in the treatment of patients with degenerative and post-traumatic arthritis in the first metatarsal joint in the presence of good bone stock along with the following critical conditions: hallux valgus or hallux limitus, hallux rigidus, and an unstable or painful metatarsal/phalangeal (MTP) joint. The device is a single use implant intended to be used with bone cement.

Patient selection factors to be considered include:
1) Need to obtain pain relief and improve function
2) Patient age as a relative contraindiction to an arthrodesis procedure
3) Patient overall well-being, including ability and willingness to follow instructions and comply with activity restrictions

Contraindications
Absolute contraindications include:
1) Significant bone demineralization or inadequate bone stock
2) Inadequate skin, musculontendinous or neurovascular system status
3) Inflammatory or rheumatoid arthritis, infection, sepsis, and osteomyelitis
4) Patients that have a known sensitivity to metal alloys typically used in prosthetic devices

Relative contraindications include:
1) Uncooperative patient or patient incapable of following preoperative and postoperative instructions
2) Osteoporosis
3) Metabolic disorders which may impair the formation or healing of bone
4) Infections at remote sites which may spread to the implant site
5) Rapid joint destruction or bone resorption visible on roentgenogram
6) Chronic instability or deficient soft tissues and other support structures
7) Vascular or muscular insufficiency
Proven Threaded Fixation versus “Push and Pray” Implants
The threaded taper post, morse taper interlock and inlay design provides optimal fixation in the metatarsal bone and reduces shear forces that may cause loosening.

Restores a Smooth Joint and Sesamoid Articulation
Resurfacing the metatarsal head with a HemiCAP provides a smooth articulating surface.

Provides Improved Joint Decompression
Metatarsal resurfacing combined with soft tissue mobilization, debridement and resetting the joint line provides improved joint decompression.
1. Use the **Drill Guide** to locate the axis normal to the articular surface and central to the defect. Choose the correct **Drill Guide** diameter sufficient to circumscribe the defect. Confirm the appropriate **Articular Component** diameter by matching it to the **Drill Guide** diameter. Place the **Guide Pin** into a cannulated powered drill and secure at the etch marking on the **Guide Pin**. Advance the **Guide Pin** through the **Drill Guide** into the bone making sure that it is central to the defect.

*Note: It is important to verify that the **Drill Guide** is seated on the curved surface such that four points of contact are established on the articular surface. A normal axis and correct **Articular Component** diameter are necessary for proper implant fit.*

2. Place the **Step Drill** over the **Guide Pin** and drill until the proximal shoulder of the **Step Drill** is flush to the articular surface.
3. Tap the hole to the etched depth mark on the **Tap**. Insert bone cement into the pilot hole.

4. Place the **Driver** onto the **Taper Post** over the **Guide Pin** and advance the **Taper Post** until the line on the **Driver** is flush with the height of the original articular cartilage level.

5. Remove the **Guide Pin**. Clean the taper in the **Taper Post** with the **Taper Cleaner**. Place the **Trial Cap** into the **Taper Post** to correct depth of the **Taper Post**. The peak height of the **Trial Cap** must be flush or slightly below the existing articular cartilage surface to avoid the **Articular Component** from being placed proud or above the surface of the defect. Adjust depth if needed using the **Driver** to rotate the **Taper Post** (*rotate clockwise to advance and counterclockwise to retract*). Remove the **Trial Cap**.
6. Place the **Centering Shaft** into the taper of the **Taper Post**. Place the **Contact Probe** over the **Centering Shaft** and rotate around the **Centering Shaft**. Read the **Contact Probe** to obtain offsets at four indexing points (superior/inferior and medial/lateral) and mark each of the identified offsets on the appropriate **Sizing Card**. Select the appropriate **Articular Component** using the **Sizing Card**.

![Sizing Card](image)

7. Remove the **Centering Shaft** and replace with the **Guide Pin**. Advance the **Circle Cutter** onto the articular surface by twisting the **Circle Cutter** back and forth avoiding any bending of the **Guide Pin**. Score articular cartilage down to subchondral bone.

![Circle Cutter](image)

8. Choose the appropriate **Surface Reamer** based on the offsets. Drill the **Surface Reamer** over the **Guide Pin** until it contacts the top surface on the **Taper Post**. Make sure not to bend the **Guide Pin** during drilling as it may result in **Articular Component** malalignment. Begin rotation of the **Surface Reamer** prior to contact with bone to prevent chipping of the articular rim.

![Surface Reamer](image)
9. Remove the **Guide Pin**. Clean the taper in the **Taper Post** with the **Taper Cleaner** and remove any debris from the surrounding implant bed.

   ![Taper Cleaner](Located in Disposable Kit)

10. Place the **Sizing Trial** into the defect that matches the offset profile of the chosen **HemiCAP® Articular Component**. Confirm the fit of the **Sizing Trial** so that it is congruent with the edge of the surrounding articular surface or slightly recessed. If the **Sizing Trial** is proud at the edge of the articular cartilage, ream with the next appropriate sized reamer and use the matching **Sizing Trial**. **Sizing Trials** must match the **Surface Reamer’s** offset size.

11. Before placing the **Articular Component** on the **Implant Holder**, make sure that sufficient suction is present to hold the device on the distal suction cup. Align the **Articular Component** on the **Implant Holder**. For non-spherical **Articular Components**, orient the etch marks on the back of the **Articular Component** with the etch mark on the handle of the **Implant Holder**. Align the **Articular Component** with the appropriate offsets. Insert into the taper of the **Taper Post**.

   ![Implant holder](Located in Disposable Kit)
12. Use a slight tap on the Impactor to seat Articular Component. Progressively tap the Impactor until the Articular Component is firmly seated on the bone.

System Catalog

Instrumentation System

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9000-1200</td>
<td>Instrument Kit, 7mm</td>
</tr>
<tr>
<td>9000-3000</td>
<td>Instrument Kit, 12mm includes 12mm Sizing Trials</td>
</tr>
<tr>
<td>9000-3001</td>
<td>Instrument Kit, 15mm includes 15mm Sizing Trials</td>
</tr>
<tr>
<td>7007-1205</td>
<td>2.0mm Guide Pin (5 PK) for 12 &amp; 15 mm Implants</td>
</tr>
</tbody>
</table>

Taper Post (Fixation Components)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9070-0013</td>
<td>Taper Post, 7.0mm x 13mm (for 12mm only)</td>
</tr>
<tr>
<td>9095-0018</td>
<td>Taper Post, 9.5mm x 18mm (for 15mm only)</td>
</tr>
</tbody>
</table>

12mm Articular Components

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9122-1015</td>
<td>1.0mm x 1.5mm Offset</td>
</tr>
<tr>
<td>9122-1020</td>
<td>1.0mm x 2.0mm Offset</td>
</tr>
<tr>
<td>9122-1520</td>
<td>1.5mm x 2.0mm Offset</td>
</tr>
<tr>
<td>9122-1525</td>
<td>1.5mm x 2.5mm Offset</td>
</tr>
<tr>
<td>9122-2025</td>
<td>2.0mm x 2.5mm Offset</td>
</tr>
<tr>
<td>9122-2030</td>
<td>2.0mm x 3.0mm Offset</td>
</tr>
</tbody>
</table>

15mm Articular Components

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9152-1525</td>
<td>1.5mm x 2.5mm Offset</td>
</tr>
<tr>
<td>9152-1535</td>
<td>1.5mm x 3.5mm Offset</td>
</tr>
<tr>
<td>9152-2030</td>
<td>2.0mm x 3.0mm Offset</td>
</tr>
<tr>
<td>9152-2040</td>
<td>2.0mm x 4.0mm Offset</td>
</tr>
<tr>
<td>9152-2535</td>
<td>2.5mm x 3.5mm Offset</td>
</tr>
<tr>
<td>9152-2545</td>
<td>2.5mm x 4.5mm Offset</td>
</tr>
</tbody>
</table>
Sizing Cards (HemiCAP® Toe Classic)

1. Maximum SI _________
   Maximum ML___________

2. Select 12mm HemiCAP® offset values
   if no match is found, use the next highest offset value
   - 1.0 mm x 1.5 mm
   - 1.0 mm x 2.0 mm
   - 1.5 mm x 2.0 mm
   - 1.5 mm x 2.5 mm
   - 2.0 mm x 2.5 mm
   - 2.0 mm x 3.0 mm

3. Select 12mm Surface Reamer size
   Choose the Surface Reamer that matches the highest offset value.

---

Sizing Card

1. Maximum SI _________
   Maximum ML___________

2. Select 15mm HemiCAP® offset values
   if no match is found, use the next highest offset value
   - 1.5 mm x 2.5 mm
   - 1.5 mm x 3.5 mm
   - 2.0 mm x 3.0 mm
   - 2.0 mm x 4.0 mm
   - 2.5 mm x 3.5 mm
   - 2.5 mm x 4.5 mm

3. Select 15mm Surface Reamer size
   Choose the Surface Reamer that matches the highest offset value.
**Instrumentation** *(HemiCAP® Toe Classic)*
Warnings
Improper selection, placement, positioning, alignment, and fixation of the implant components may reduce the service life of the prosthetic components. Inadequate preparation and cleaning of the implant components mating surfaces may result in improper fixation of the device. Improper handling of the implants can produce scratches, nicks or dents that may have adverse clinical effects on mating joint surfaces. Do not modify implants. The surgeon shall be thoroughly familiar with the implants, instruments, and surgical technique prior to performing surgery.

When defining offsets of articular surfaces, care should be taken to ensure that instruments are properly aligned and mated with taper in Taper Post. Visually confirm distal tip of contact probe is making contact on articular surfaces and free from any soft tissue structures to ensure accuracy. Use light pressure on contact probe to slightly indent articular surface at each offset point, ensuring that the selected implant will be flush or slightly recessed with the articular surface.

Prior to placing implant, carefully trim articular cartilage debris around prepared margin. Remove bone particles and lavage thoroughly. To ensure mechanical interlock of the Taper Post and implant, carefully clean Taper Post taper with provided instruments. All drilling or reaming should be done with vigorous lavage to minimize heat effects to adjacent bone and cartilage tissues.

Accepted practices in post operative care should be used. The patient is to be instructed and monitored to ensure a reasonable degree of compliance to post operative instructions and activity restrictions. Excessive activity, impact, and weight gain have been implicated in the reduction of the benefit and service life of prosthetic devices.

Precautions
HemiCAP® implants are intended to be fitted and installed with the HemiCAP® instrument set. Use of instruments from other systems may result in improper implant selection, fitting, and placement which could result in implant failure or poor clinical outcome. The HemiCAP® instrument set should be regularly inspected for any signs of wear or damage. Do not reuse implants or disposable instruments.

Possible Adverse Effects
1) Material sensitivity reactions. Implantation of foreign material in tissues can result in histological reactions. Particulate wear debris and mild tissue discoloration from metallic components have been noted in other prosthetic devices constructed of similar materials. Some types of wear debris have been associated with osteolysis and implant loosening.

2) Infection or allergic reaction.

3) Loosening, migration or loss of fixation of implant.

4) Fretting and crevice corrosion can occur at the interface between the implant components.

5) Fatigue fracture of the implants as a result of bone resorption around the implant components.

6) Wear and damage to the implant articulating surface.

7) Wear and damage to the adjacent and opposed articular cartilage surfaces or soft tissue support structures.

8) Intraoperative or postoperative bone fracture.
HemiCAP Toe Classic

The Arthrosurface HemiCAP System is also available for the following joints:

- Shoulder
- Patello-Femoral
- Unicompartmental
- Talus (Available in most International markets via CE mark)
- Hip
- Femoral Condyle (Available in most International markets via CE mark and as a part of a IDE study in the U.S.)

This product is covered by one or more of U.S. Patent Nos. 6,520,964; 6,610,067; 6,679,917 and other patents pending.
HemiCAP® is a trademark of Arthrosurface, Inc. U.S. © 2019 Arthrosurface, Inc. All rights reserved.
Printed in U.S.A.