

Over the last 15 years OSSIS' materials and design engineers have been working with orthopaedic surgeons to become a leading innovator in custom-made implants.

OSSIS combines the use of advanced imaging technologies and software platforms with its extensive implant design and clinical experience, to deliver effective custom-made implants to surgeons.

OSSIS' range of custom-made implants embody the results of its extensive investment in innovation and technology, with proprietary technologies such as specialised surface textures, fixation structures and other design features, allowing surgeons to offer possible treatments of a broad range of major anatomical defects.

### AceOs® and AceOs Plus

AceOs® and AceOs Plus are custom-made titanium acetabular implants designed to specifically match the patient's anatomy. They are used for revision and primary hip surgeries for patients with, but not limited to, osteolysis, pelvic dissociation, fractures, implant loosening, trauma and dysplasia.

#### **Hemi-Pelvis**

Hemi-Pelvis is a custom-made titanium implant to be used in oncology surgeries, where the implant is designed to reconstruct the pelvis after tumour resection and provide a stable hip joint. Sterilisable plastic osteotomy guides are provided with the Hemi-Pelvis implant.

### **Features of the Hip Solutions**

- Preplanned cup size and orientation to allow for a defined size acetabular liner and femoral head and specific cup orientation
- Selected bone removal so that bone excision is kept to a minimum
- Flanges designed to contour the patient's anatomy
- Optimised screw placement for fixation into higher quality bone for enhanced stability
- Porous scaffold 3D printed onto all bone facing surfaces
- Plug in centre of custom cup of all AceOs® and AceOs Plus implants to allow for bone graft to be packed behind prostheses
- Soft tissues attachment points that are optimally located on the Hemi-Pelvis implant for soft tissue reconstruction
- Manufactured in a titanium alloy (Ti6Al4V)
- Sterilisable plastic anatomical bone models and trial implant provided with the OSSIS hip solutions

### **Implant Design Process**

Taking the surgeon's clinical input and custom implant feature requests, the OSSIS engineers design the implant specific to the patient. Surgeon's approval of the design is based on digital images of the proposed implant, both in isolation and in position on the patient's anatomy (including screw positions).



## **Step one: BEFORE**

The first step is that OSSIS receives the patient's imaging and a Prescription Form completed by the surgeon.

## **Step two**

The patient's hip anatomy is digitally reconstructed from the CT data. If the patient is having a Hemi-Pelvis implant then MRI data is also used.

## **Step three**

Using computer-aided design software and clinical experience, OSSIS engineers digitally debride the acetabulum to determine bone removal required.



# **Step four**

Based on the resulting shape of the prepared acetabulum, a digital implant is created and screw positions are determined.

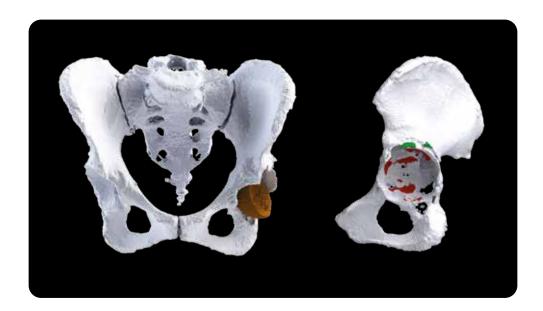
# Step five

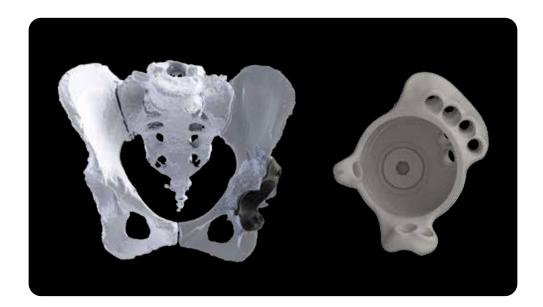
Surgeon signs off on the final design of the custom implant for manufacture.

## **Step six: AFTER**

Post-operative xray of the custom implant in patient.

### **AceOs® Case Study**





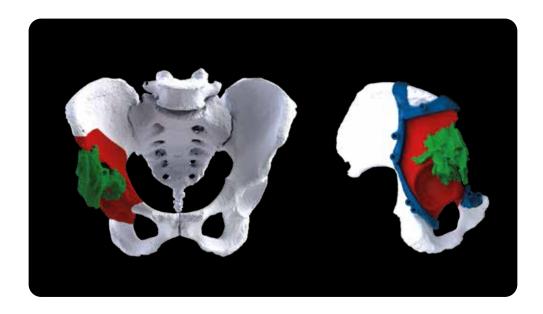
The patient required a custom-made acetabular implant for extensive uncontained acetabular defects after metal-on-metal in-situ hip replacement.

CT data and x-ray imaging were shared with OSSIS, along with the Prescription Form completed by the prescribing surgeon.

The AceOs® implant was designed for a posterior surgical approach, as outlined by the surgeon. Clinical feedback was provided and updates were made. Following this, the surgeon approved the implant design.

The implant was manufactured in titanium alloy (Ti6Al4V) using 3D printing, with post-manufacture machining and finishing processes.

### **Hemi-Pelvis Case Study**





The patient required a custom-made pelvic implant due to a supra-acetabular chondrosarcoma.

CT, MRI and x-ray imaging were shared with OSSIS, along with the Prescription Form completed by the prescribing surgeon.

The Hemi-Pelvis implant was designed for an ilioinguinal surgical approach, as outlined by the surgeon. Clinical feedback was provided for tumour margins, osteotomy guides and implant design, and updates were made. Following this, the surgeon approved the implant design.

The implant was manufactured in titanium alloy (Ti6Al4V) using 3D printing, with post-manufacture machining and finishing processes.



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OSSIS designs and manufactures custom-made implants which are used by surgeons to treat patients with unique clinical needs that cannot be effectively treated with off-the-shelf products.

As each OSSIS implant is unique to the patient, mechanical testing and engineering data and clinical test results are often unavailable for such devices. Consequently, the mechanical integrity of such devices cannot be validated. Surgeons should consider these issues and inform their patients about the additional risks associated with custom-made implants.

For product information, including indications, contraindications, warnings, precautions and potential adverse effects, see product instructions for use or call OSSIS.

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