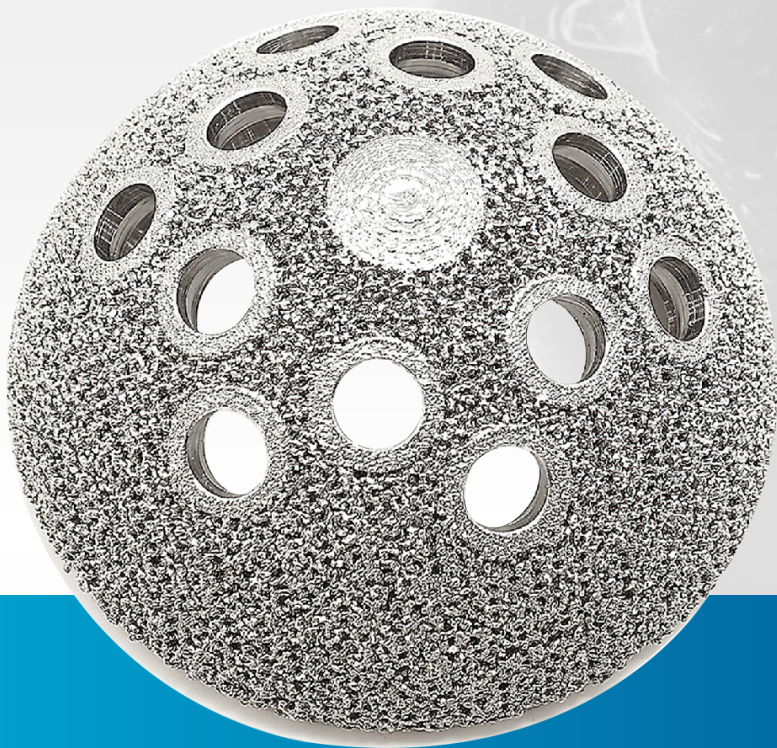




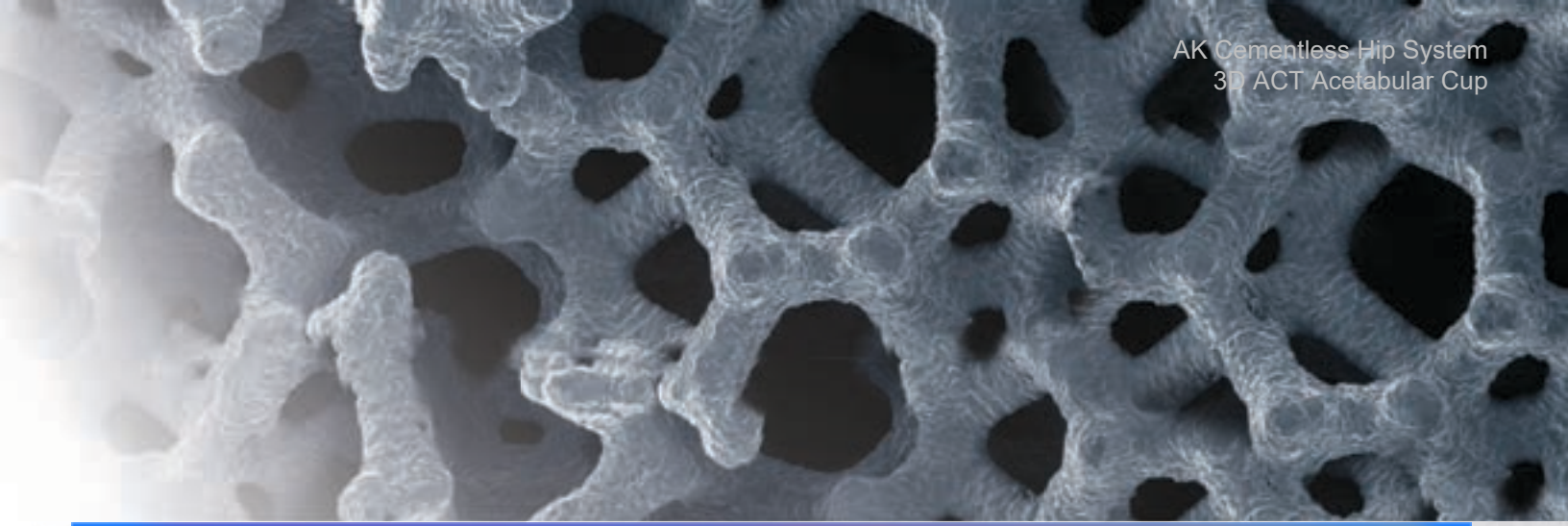
AK
MEDICAL



AK-AC-II-TTM Cup Surgical Technique

TTM(Titanium Trabecular Metal) is not a coating, but the bone in-growth friendly interconnected 3D-geometric structure, it is created by Electron Beam Melted free from fabricated technology, the effectively long-term osseointegration and biocompatibility have been proved in many published studies.





Easy to Use



No Structural Allograft Preparation

The need for allograft bone preparation is virtually eliminated, saving precious surgical time.



Trabecular Metal Augments

- Interfaces are cemented against the *Trabecular Metal* Revision Shell, creating a monolithic construct without concerns of micromotion



Trabecular Metal Cup-Cage Constructs

- Cage can be contoured to fit the acetabulum while providing mechanical stability of the Cup-Cage construct until biological ingrowth occurs within the *Trabecular Metal* Revision Shell

Trabecular Metal Revision Shells & Liners

- *Trabecular Metal* Material allows excellent cement interdigitation between liner and revision shell
- Cemented liner allows for placement at the exact coverage angle and has a grooved backside to provide rotational stability



Trabecular Metal Buttress & Shim Augments

- Sizing allows use with *Trabecular Metal* Revision Shells of any size
- Shims placed between Buttress Augment flange and host bone optimize the fit of the device against the iliac bone

One Comprehensive Modular System

The AK-AC-II-TTM System has the flexibility for mixing and matching implants intraoperatively enabling more efficient case management and execution in the OR relative to what other implant systems can offer.^{3-5,11} Important time savings is realized before and during surgery.

Durable

No Graft Resorption

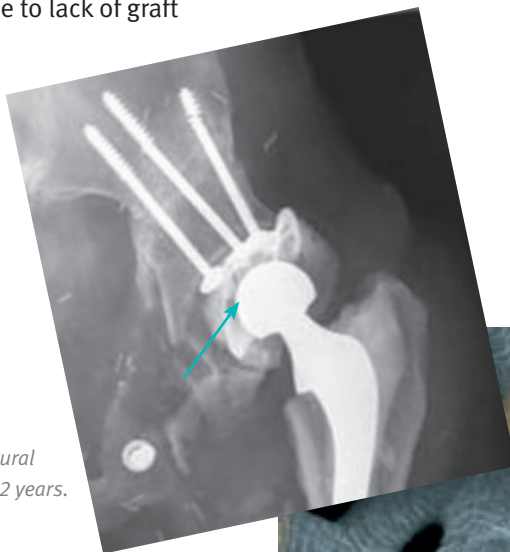
Use of TMARS eliminates the concern about graft vascularization and resorption and eventual collapse. This also eliminates the need for a future revision due to lack of graft incorporation.

No Disease Transmission

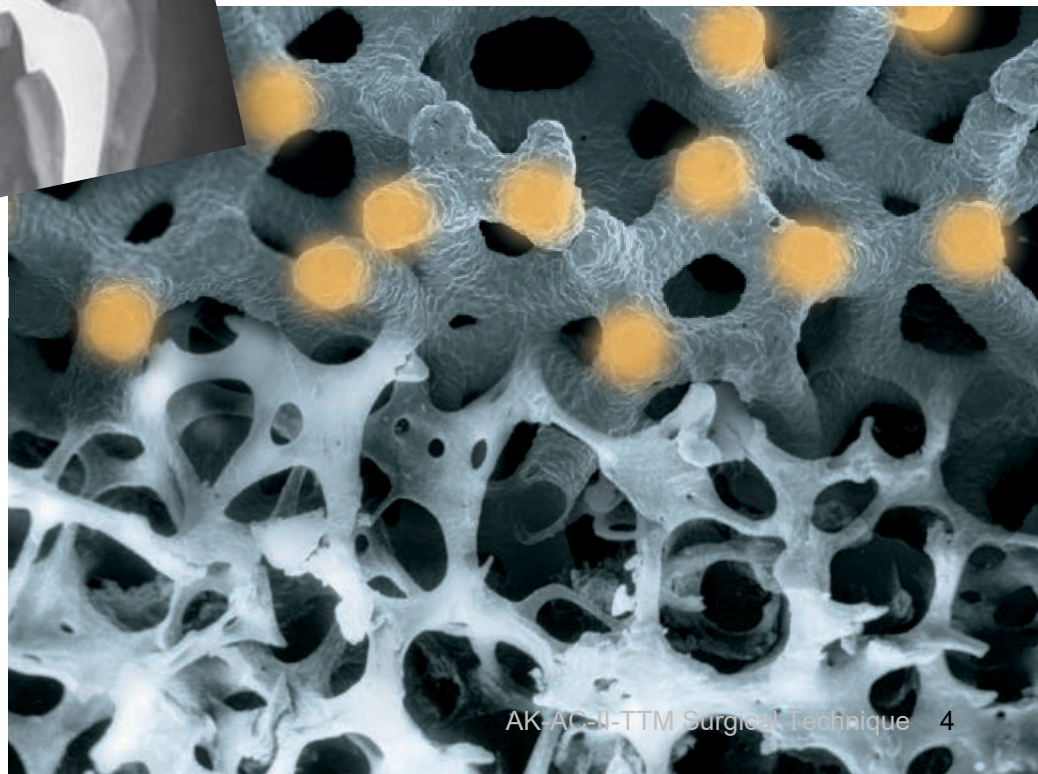
Use of TMARS alleviates concerns about disease transmission that may be caused by use of a donor graft.

Great Potential for Biologic Ingrowth

Trabecular Metal Technology offers a high coefficient of friction which helps reduce micromotion, enabling tissue growth. Its 3D construct provides a high level of porosity and potential for osteoconductivity allows for more rapid in-growth supporting a vascularized structure to maintain healthy bone. Implant durability leads to longevity and reduced risk for future surgeries.



Failure of structural allograft after 12 years.





Proven Technology

Clinical Success

Trabecular Metal Technology has more than 17 years of clinical history with orthopaedic implants and over 75 peer-reviewed journal publications have been issued, providing additional confidence in this technology.¹⁹⁻²¹



Pre-Op: Uncontained Segmental Defect, >50% of Acetabulum



Pre-Op: Uncontained Bone Loss, <50% of Acetabulum



Pre-Op: Uncontained Segmental Defect, >50% of Acetabulum



Type I & Type II
Defects

Full Range of Revisions

Successfully Treated^{1,2,12,16-18}

An array of revision cases ranging from simple to extremely complex has been effectively treated with *Trabecular Metal* implants. Defects spanning Paprosky Type I through IV have been successfully treated with the *Trabecular Metal* Acetabular System



Type IIIA
Cavity Defect



Type IIIA
Segmental Defect



Type IIIA
Extensive Segmental Defect



Type IIIB
Contained Medial Defect



Pelvic
Discontinuity

A Step-Wise Algorithmic Approach to Challenging Revisions

While other algorithmic approaches may be used to discuss acetabular revision, this brochure uses Paprosky's classification of acetabular defects to explain the usage of AK-AC-II-TTM-I Acetabular Cup System Components. This approach provides preoperative indications to predict

defects and solutions intraoperatively. It is based on the severity of bone loss and the ability to obtain cementless fixation for a given bone-loss pattern.¹⁶ This system can be used as a guide to maximize contact between the host bone and the *Trabecular Metal* Components, thus optimizing mechanical stability.

Paprosky Classification¹

Defect Type	Defect Characteristics
I	Acetabular rim, anterior column, and posterior column intact and supportive; small, local, contained defects
IIA	Moderate superomedial migration <3cm; >50% host-bone contact
IIB	Moderate superolateral migration <3cm; >50% host-bone contact
IIC	Isolated medial migration, medial to Kohler's line; intact rim
IIIA	Severe superolateral migration >3cm; 40-60% host-bone contact; inadequate stability; defect <1/2 circumference
IIIB	Severe superomedial migration; <40% host-bone contact; inadequate stability; medial to Kohler's line; risk of pelvic discontinuity
Pelvic Discontinuity	Partial or complete fracture

Reconstruction Options

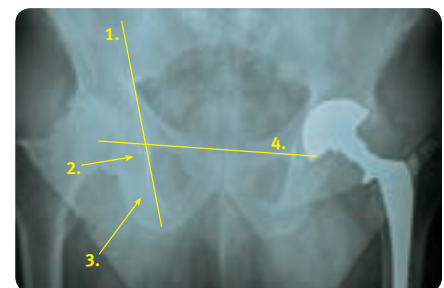
The integrity of the host-bone stock determines the reconstruction option available:

- Completely supportive acetabulum (ingrowth likely)—*Trabecular Metal* Revision Shell
- Partially supportive acetabulum (ingrowth possible)—*Trabecular Metal* Revision Shell with Augments
- Non-supportive (ingrowth unlikely)—*Trabecular Metal* Revision Shell with Buttress Augments and/or Cage

Four Landmarks

Indications for component revision are dependent upon four radiographic criteria:

1. **Kohler's Line**—integrity of medial wall and superior anterior column
2. **Acetabular Tear Drop**—integrity of medial wall and inferior portion of anterior and posterior column
3. **Ischial Lysis**—integrity of posterior wall and posterior column
4. **Vertical Migration**—integrity of superior dome



Type I & Type II Defects



Radiograph of Defect

Type I Defect

Kohler's Line: Intact
Tear Drop: Intact
Ischial Lysis: Minimal to none
Vertical Migration: Minimal to none

Type IIA Defect

Kohler's Line: Intact
Tear Drop: Violated
Ischial Lysis: Mild to moderate
Vertical Migration: Minimal to none



Example of Defect

Type IIB Defect

Kohler's Line: Intact
Tear Drop: Intact
Ischial Lysis: Mild
Vertical Migration: <3cm

Type IIC Defect

Kohler's Line: Moderately violated
Tear Drop: Moderate lysis
Ischial Lysis: Minimal
Vertical Migration: Minimal to none



Algorithmic Repair

Solution

AK-AC-II-TTM-I Acetabular Cup
with Highly Crosslinked Poly-
ethylene Liner

- Designed to prevent backside micromotion
- Cement secures screws
- Isoelastic loading of bone
- Cemented Highly Crosslinked Polyethylene Liners with large-diameter heads, up to 40mm, for additional joint stability and range of motion



Type IIIA—Cavitary Defect



Radiograph of Defect



Example of Defect



Algorithmic Repair

Type IIIA Cavitary Defect

Kohler's Line: Intact

Tear Drop: Minimal lysis

Ischial Lysis: Minimal

Vertical Migration: >3cm

Solution

Trabecular Metal Augment in oblong cup position^{2,16-18}

- Uses the *Trabecular Metal Augment* to fill the superior bone void and restore head center to natural anatomic position
- Cementing the AK-AC-II-TTM-I Acetabular Cup to the augment creates a monolithic construct



Type IIIA—Segmental Defect



Radiograph of Defect



Example of Defect



Algorithmic Repair

Type IIIA—Segmental Defect

Kohler's Line: Moderately violated but intact

Tear Drop: Minimal lysis

Ischial Lysis: Mild

Vertical Migration: >3cm

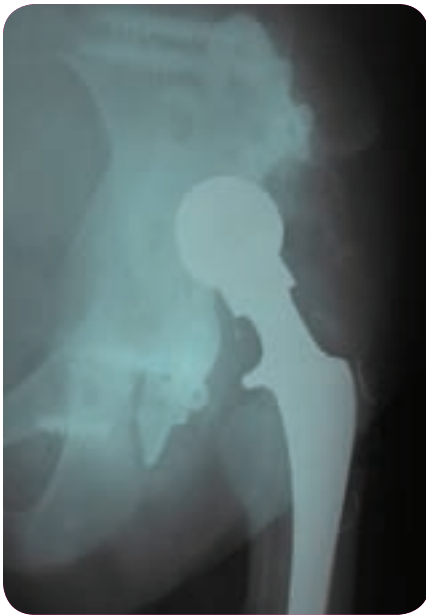
Solution

Trabecular Metal Augment in flying buttress position^{2,16-18}

- Uses the *Trabecular Metal Augment*, inverted, as a load-bearing structural support to replace the missing acetabular rim
- Cementing the AK-AC-II-TTM-I Acetabular Cup to the augment creates a monolithic construct



Type IIIA—Segmental Defect



Radiograph of Defect



Example of Defect



Algorithmic Repair

Type IIIA—Extensive Segmental Defect

Kohler's Line: Intact
Tear Drop: Minimal lysis
Ischial Lysis: Mild
Vertical Migration: >3cm

Solution

Trabecular Metal Buttress Augment

- *Trabecular Metal Buttress Augment* provides a superior step for placement against the ilium and is an alternative to allografts, which are expensive and tend to resorb
- *Trabecular Metal Shim Augments* are available to supplement the fit of the superior flange of the buttresses onto the ilium
- Cementing the TTM Acetabular cup to the augment creates a monolithic construct



Type IIIB—Contained Medial Defect



Radiograph of Defect

Type IIIB Medial Defect

Kohler's Line: Violated
Tear Drop: Violated, significant lysis
Ischial Lysis: Severe
Vertical Migration: >3cm



Example of Defect



Algorithmic Repair Step 1

Solution

Trabecular Metal Augments
in footings position^{2,16-18}

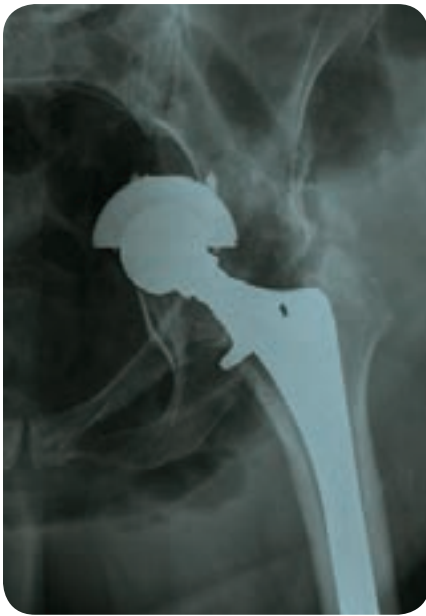
- *Trabecular Metal Augments* sized to fit defect, providing a foundation for the shell and filling voids from medial and/or superior defects
- Cementing the TTM Acetabular cup to the augment creates a monolithic construct



Algorithmic Repair Step 2



Pelvic Discontinuity



Radiograph of Defect



Example of Defect



Algorithmic Repair

Pelvic Discontinuity

- Superior aspect of pelvis is separated from the inferior aspect as a result of bone loss or an acetabular fracture

Solution

Cup-Cage Construct

- The Cage spans the acetabular defect and provides mechanical stability until biological ingrowth occurs within the Acetabular Cup
- Used in situations where the *Trabecular Metal Revision Shell* alone does not provide adequate stability
- The AK-AC-II-TTM-I Acetabular Cup provides potential for bone ingrowth and long-term fixation
- Three components—shell, cage, and liner—cemented together create a monolithic construct



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Approach Acetabular Cup with Confidence



Easy to Use

No structural allograft preparation • One comprehensive modular system

Durable

No resorption issues • Potential for biologic in-growth

Proven Technology

17+ years of clinical history • Full range of revisions successfully treated

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Reference No.	Name	Specification
1	4713-II Acetabular Cup Impactor Head	
2	G30098 Acetabular Impactor	
3 & 16	4704-II Cement Impactor (Acetabulum Side)	
4	G30012 Ratchet Handle	
5	G30023 Reamer Handle	
6	4709-II Screw Drill Guide	
7	G30013 Polyxial Screwdriver	
8	G30011 Depth Gauge	
9	8923-IV Soft Drill x2	Φ4X200, Φ4X210
10		
11		
12	G30006 Liner Impactor x4	22#, 28#, 32#, 36# 42#,44#,46#,48#, 50#,52#,54#,56#, 58#,60#,62#,64#
13 & 19	G20137-II Cup Trial x12	
14	G30013 Polyxial Screwdriver	
15	G30010 Screw Holder	
	G20138-II Liner Trial x2	42/22, 44/22
	G20138-II Liner Trial x9	44/28, 46/28, 48/28, 50/28, 52/28, 54/28, 56/28,58/28, 60/28
17 & 19	G20138-II Liner Trial x8	48/32, 50/32, 52/32, 54/32, 56/32, 58/32, 60/32, 62/32
	G20138-II Liner Trial x6	52/36, 54/36, 56/36, 58/36, 60/36, (62)64/36
18	4701B Acetabular Reamer x26	40-65(1mm increment)