EXACTECH | HIP

Operative Technique

Revision Acetabular System

TABLE OF CONTENTS

REVISION CUP DESIGN TEAM

David J. Covall, MD
Resurgens Orthopaedics

Andrew H. Glassman, MD
The Ohio State University

Jeffery Pierson, MD
Franciscan St. Francis Health

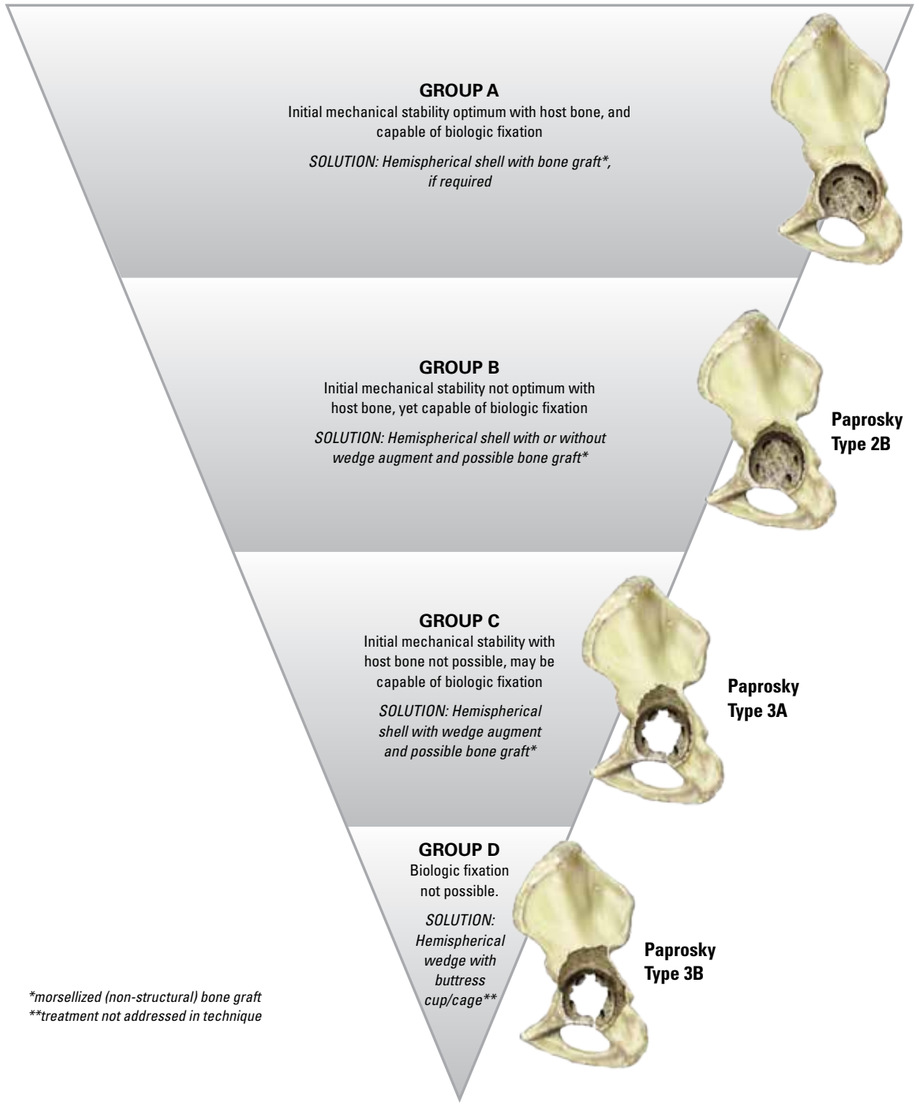
INTRODUCTION

This technique is designed to detail the use of the Revision Acetabular System including Crown Cup® (plasma coating or InteGrip®) with the use of acetabular augments. If the Crown Cup with InteGrip is used in a primary indication, please follow the steps in the current Crown Cup Operative Technique (Lit # 711-65-30).

CLASSIFICATION SYSTEM

The vast majority of acetabular revisions can be effectively managed with a porous-coated hemispheric acetabular component. However, in certain situations, supplemental reinforcement of the damaged acetabulum with structural graft, a metallic augment or a cage is necessary. Preparing an often irregularly shaped defect to accommodate an augment was, until now, completed with a freehand technique.

The classification system below illustrates diminishing initial mechanical stability within the native acetabulum.[1]



*morsellized (non-structural) bone graft
**treatment not addressed in technique

PRE-OPERATIVE PLANNING

Pre-operative planning and acetabular templating is strongly recommended to aid in proper restoration of the anatomic hip center. This can be achieved by measuring the size of the acetabular components being removed and utilizing the Crown Cup templates to determine the appropriate acetabular shell and augment, if required.

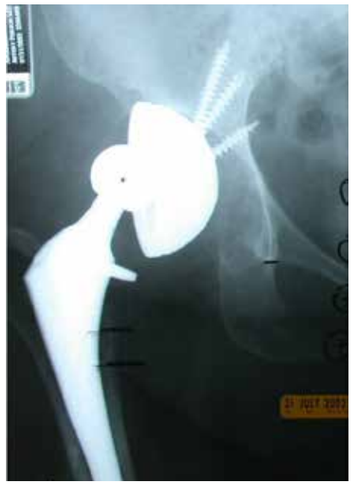
Anterior-Posterior (A/P) and Medial-Lateral (M/L) radiographs are necessary for templating and surgical planning. The desired magnification for all imaging should be 120 percent, which corresponds to the templates provided for the Crown Cup system.

In cases where the acetabulum is compromised, the contra-lateral side may be used to assess the biomechanical requirements of the reconstruction (i.e. hip center).

Position the acetabular template over the A/P radiograph, aligning the acetabular shell surface with the subchondral bone and position the head center in the appropriate location.

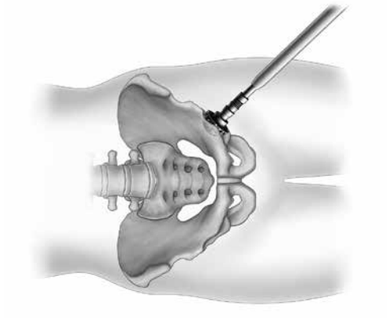
Based on pre-operative planning, the surgeon must assess the acetabular region and decide if supplemental fixation may be required. The need for additional fixation must also be evaluated intra-operatively based upon the quality of the host bone.

Note: For digital templating, follow the software manufacturer's instructions for use while following the preceding instructions regarding placement and implant fit.

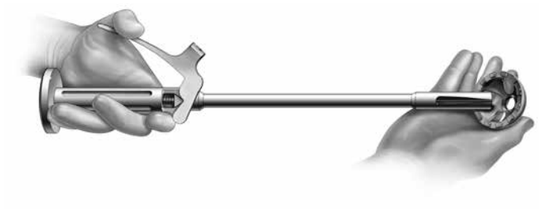


NOTES

OPERATIVE TECHNIQUE OVERVIEW

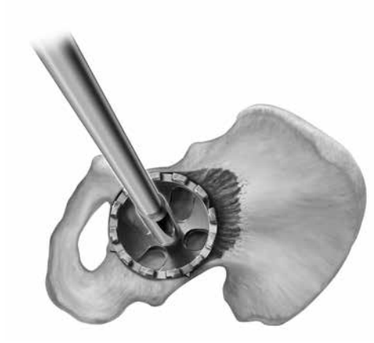


1
Acetabular Reaming



2
Assembling of Acetabular Shell Trial

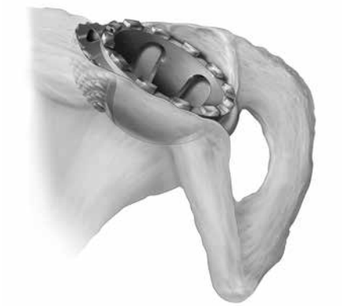
4
Rasp Assembly



3
Shell Trial Placement

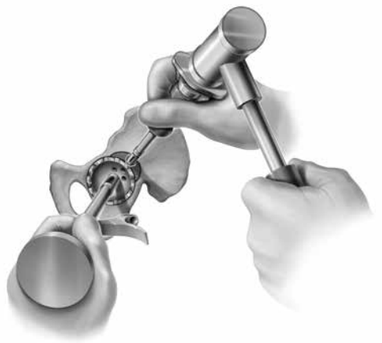
5
Rasping Defect

6
Rasp Handle Placement

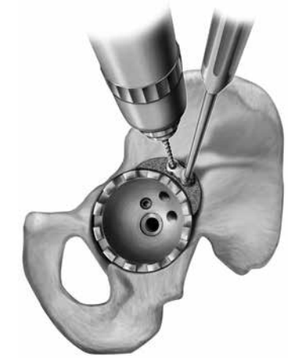


7
Rasp Placement

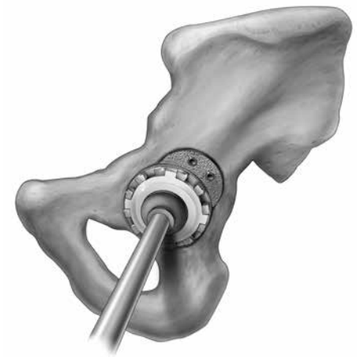
8
Cement on Augment



9a
Augment Insertion



9b
Drill Guide Insertion



10
Liner Impaction

DETAILED OPERATIVE TECHNIQUE

REMOVAL OF EXISTING CUP

Remove the existing acetabular shell and components with the use of AcuDriver (Lit # 719-01-30), manual osteotomes, or dedicated radial blade systems, conserving as much bone as possible. Once the component is removed, carefully evaluate the acetabulum with close attention to the integrity of the anterior and posterior columns as well as the medial wall.*

ACETABULAR REAMING

1. Assemble a hemispherical Acetabular Reamer approximately 4-6mm smaller than the size of the removed acetabular shell with either the straight or offset Reamer Handle and attach to power *(Figure 1).*

2. Conservatively ream progressively larger while being mindful of bone quality and defect type. Stop when contact is made with anterior and posterior columns.

   Note: Do not ream the defect.

ACETABULAR SHELL TRIAL INSERTION

3. Assemble the appropriately sized Acetabular Shell Trial onto the Acetabular Shell Impactor by squeezing the handle of the Shell Impactor and inserting the tip into the recessed area at the apex of the shell. Release the handle to engage the Shell Impactor *(Figure 2).*

4. Introduce the Shell Trial into the reamed acetabulum and impact into place *(Figure 3).*

   Note: Align the rail cut-out with the center of the defect.

5. Leave the Shell Impactor attached to the shell trial and have an assistant stabilize for defect preparation.

SURGICAL TIPS

In contrast to primary surgery (with significant bone removal), minimize bone removal with acetabular reamers and contour remaining bone into a hemisphere.

Keep the acetabular reamer low in the socket to restore the anatomic hip center.

Defect preparation will follow after the acetabulum is reamed.

**This technique is designed to detail the use of the Exactech® Revision Acetabular System. If the Crown Cup with InteGrip is used in a primary indication, please follow the steps in the current Crown Cup Operative Technique (Lit # 711-65-30).*

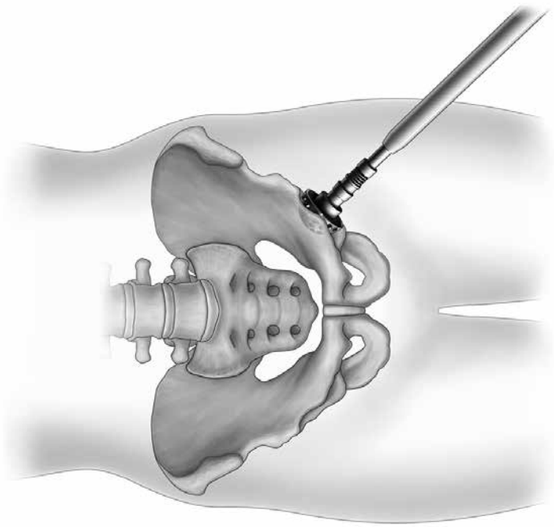


Figure 1
Acetabular Reaming

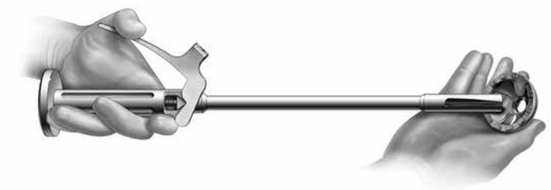


Figure 2
Assembling of Acetabular Shell Trial

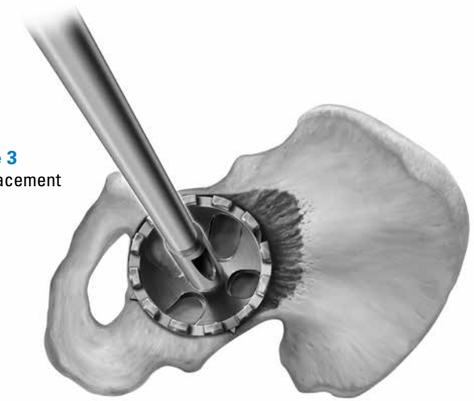


Figure 3
Shell Trial Placement

Figure 4
Rasp Assembly

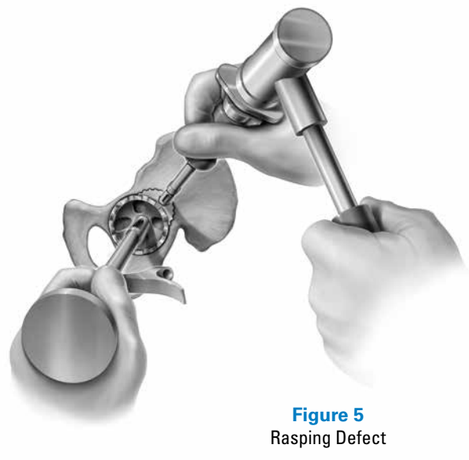


Figure 5
Rasping Defect

Figure 6
Rasp Handle Placement

DEFECT PREPARATION

6. Select the **Augment Rasp** that corresponds to the Shell Trial grouping and assemble it to the **Rasp Handle** *(Figure 4).*

   *Note: An **Augment Starter Rasp** is available to begin defect preparation, if desired.*

7. Sequentially rasp the defect until subchondral bone is exposed in the defect region and the Shell Trial/Augment Rasp construct achieves stability. Ensure the Shell Trial stays fully seated. Note the position of the center of the Augment Rasp relative to the defect for replication when inserting final implants *(Figure 5).*

   Note: Be mindful to advance hand superiorly while the rasp advances along the contour of the Shell Trial (Figure 6). The Augment Rasp is fully seated just below the base of the crowns (Figure 7).

8. Remove the Augment Rasp and Shell Trial and select the final implants.

SURGICAL TIPS

Most revisions have areas of sclerotic bone; have a high speed burr ready to decorticate before using the augment starter rasp.

If using an Offset Impactor be mindful of the location of the offset relative to the Augment Rasp Handle.

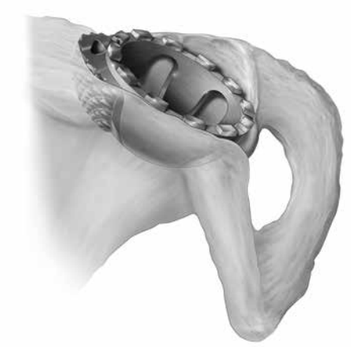


Figure 7
Rasp Placement

ACETABULAR SHELL IMPLANTATION

9. Impact the acetabular shell implant, prepare and partially seat at least one 6.5mm bone screw into the dome of the acetabular shell prior to inserting and impacting the augment.

   Note: Once the augment is placed, seat the initial screw in the acetabular shell and prepare for any additional screws that may be needed.

AUGMENT IMPLANTATION

10. Select the augment implant based on the final Augment Rasp used during defect preparation. Assemble the **Augment Inserter** onto the Rasp Handle and insert the Augment Inserter prongs into the augment *(Figure 8).*

    Note: Orientation of inserter prongs.

11. Prepare PMMA bone cement according to the surgeon's preferred method and place a thin layer of cement on the concave surface of the augment that contacts the shell.
12. Impact the augment into the prepared defect until positioned in same location as the augment rasp *(Figure 9a).* Remove and clean any excess bone cement.
13. Drill pilot holes using a 3.2mm Drill and the **Augment Drill Guide** *(Figure 9b).*
14. Insert 4.5mm Screws into drilled pilot holes.

TRIALING/LINER INSERTION

15. Follow the trailing and liner insertion technique as shown in the Crown Cup OperativeTechnique (Lit # 711-65-30) *(Figure 10).*

Figure 8
Cement on Augment

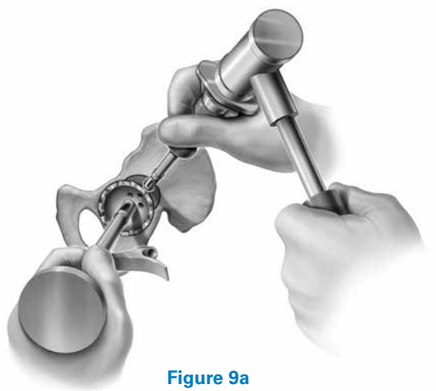


Figure 9a
Augment Insertion

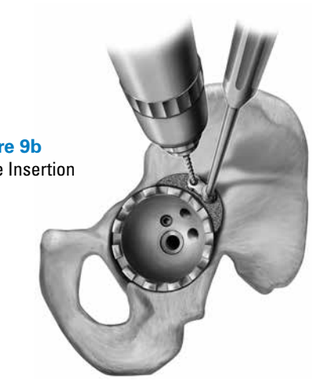


Figure 9b
Drill Guide Insertion

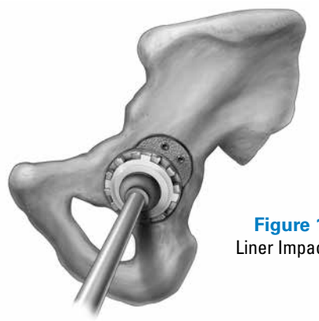


Figure 10
Liner Impaction

SURGICAL TIPS

Avoid placing cement in areas the augment does not interface with the shell, potentially preventing biological fixation.

Tighten screws prior to cement fully curing.

SYSTEM SPECIFICATIONS

AUGMENT COMPATIBILITY

Acetabular Shell Size (mm)	Group	Size	Size (mm)	Item Number
48	1	Small	8	186-01-08
		Medium	11	186-01-11
50		Large	13	186-01-13
52	2	Small	8	186-02-08
		Medium	11	186-02-11
54		Large	13	186-02-13
56	3	Small	8	186-03-08
		Medium	11	186-03-11
58		Large	13	186-03-13
60	4	Small	8	186-04-08
		Medium	11	186-04-11
62		Large	13	186-04-13
64	5	Small	8	186-05-08
66		Medium	11	186-05-11
68		Large	13	186-05-13

ACETABULAR SHELL CONFIGURATIONS

		Item Number	
Size	Group	Cluster Hole Crown Cup with InteGrip	Multi-Hole InteGrip
48mm	1 (Brown)	186-01-48	186-03-48
50mm		186-01-50	186-03-50
52mm	2 (Blue)	186-01-52	186-03-52
54mm		186-01-54	186-03-54
56mm	3 (Gray)	186-01-56	186-03-56
58mm		186-01-58	186-03-58
60mm	4 (Purple)	186-01-60	186-03-60
62mm		186-01-62	186-03-62
64mm	5 (Green)	186-01-64	186-03-64
66mm		186-01-66	186-03-66
68mm		186-01-68	186-03-68

EXACTECH BONE SCREWS

Length (mm)	4.5mm Peripheral Rim Screws	MBA 6.5mm Bone Screws (Pointed Tip)	6.5mm Bone Screws (Full Radius Tip)	ALTEON™ 6.5mm Bone Screws
15	N/A	122-65-15	120-65-15	180-65-15
20	N/A	122-65-20	120-65-20	180-65-20
25	SC45-25	122-65-25	120-65-25	180-65-25
30	SC45-30	122-65-30	120-65-30	180-65-30
35	SC45-35	122-65-35	120-65-35	180-65-35
40	SC45-40	122-65-40	120-65-40	180-65-40
45	SC45-45	122-65-45	120-65-45	180-65-45
50	SC45-50	122-65-50	120-65-50	180-65-50
55	SC45-55	122-65-55	120-65-55	180-65-55
60	SC45-60	122-65-60	120-65-60	180-65-60
65	SC45-65	N/A	N/A	N/A
70	SC45-70	N/A	120-65-70	180-65-70
80	N/A	N/A	N/A	180-65-80

Note: Crown Cup with InteGrip and Multi-Hole InteGrip have the same system specifications as the Crown Cup with Plasma Spray.

INSTRUMENT LISTING

Catalog Number	Part Description
187-01-48/68	Finned Shell Trials, 48mm – 68mm (2mm increments)
187-00-00	Rasp Handle
187-00-01	Augment Inserter
187-00-02	Augment Drill Guide
187-01-00	Augment Starter Rasp
181-45-01	4.5mm Screw Standard Hex Driver
187-01-08	Augment Rasp, Group 1, Small
187-01-11	Augment Rasp, Group 1, Medium
187-01-13	Augment Rasp, Group 1, Large
187-02-08	Augment Rasp, Group 2, Small
187-02-11	Augment Rasp, Group 2, Medium
187-02-13	Augment Rasp, Group 2, Large
187-03-08	Augment Rasp, Group 3, Small
187-03-11	Augment Rasp, Group 3, Medium
187-03-13	Augment Rasp, Group 3, Large
187-04-08	Augment Rasp, Group 4, Small
187-04-11	Augment Rasp, Group 4, Medium
187-04-13	Augment Rasp, Group 4, Large
187-05-08	Augment Rasp, Group 5, Small
187-05-11	Augment Rasp, Group 5, Medium
187-05-13	Augment Rasp, Group 5, Large

INDICATIONS FOR USE

INTEGRIP ACETABULAR CUPS

All Exactech Hip Systems are indicated for use in skeletally mature individuals undergoing primary surgery for hip replacement due to osteoarthritis, rheumatoid arthritis, osteonecrosis, post-traumatic degenerative problems of the hip, and for treatment of proximal femoral fractures where prosthetic replacement is determined by the surgeon as the preferred treatment. Components of Exactech Hip Systems are also potentially indicated for any losing spondylitis, congenital hip dysplasia, revision of failed previous reconstructions where sufficient bone stock is present, and to restore mobility resulting from previous fusion.

- Cemented femoral stems and cemented acetabular cups are intended for cemented fixation only.
- Press-fit femoral stems and acetabular cups are intended for press-fit fixation.
- Femoral heads and endoprostheses are intended for use in cemented and press-fit applications.

INTEGRIP ACETABULAR AUGMENTS

The Exactech InteGrip Acetabular Augments are indicated for use in skeletally mature individuals undergoing primary or revision surgery for hip replacement and whose orthopedic surgeon desires a prosthetic alternative to structural allograft in cases of segmental acetabular deficiencies. The assembled construct is intended for press-fit fixation.

CONTRAINDICATIONS FOR USE

Use of the Exactech Hip Systems is contraindicated in the following situations:

- Patients with suspected or confirmed systemic infection or a secondary remote infection.
- Patients with inadequate or malformed bone that precludes adequate insertion or fixation of the prosthesis.
- Patients with neuromuscular disorders that do not allow control of the joint.
- Patient's age, weight, or activity level would cause the surgeon to expect early failure of the system.

REFERENCES

1. **Paprosky WG, Perona PG, Lawrence JM.** Acetabular defect classification and surgical reconstruction in revision arthroplasty. A 6-year follow-up evaluation. J Arthroplasty. 1994 Feb;9(1):33-44.

Exactech is proud to have offices and distributors around the globe.
For more information about Exactech products available in your country, please visit www.exac.com

---

For additional device information, refer to the Exactech Hip System–Instructions for Use for a device description, indications, contraindications, precautions and warnings. For further product information, please contact Customer Service, Exactech, 2320 NW 66th Court, Gainesville, Florida 32653-1630, USA. (352) 377-1140, (800) 392-2832 or FAX (352) 378-2617.

Exactech, as the manufacturer of this device, does not practice medicine, and is not responsible for recommending the appropriate surgical technique for use on a particular patient. These guidelines are intended to be solely informational and each surgeon must evaluate the appropriateness of these guidelines based on his or her personal medical training and experience. Prior to use of this system, the surgeon should refer to the product package insert for comprehensive warnings, precautions, indications for use, contraindications and adverse effects.

352-377-1140
1-800-EXACTECH
www.exac.com

Exactech®

711-69-30 Rev. B
Revision Acetabular Op. Tech. 0814

A Great Day in the O.R.™