GLOBAL | CAP™
CONSERVATIVE ANATOMIC PROSTHESIS

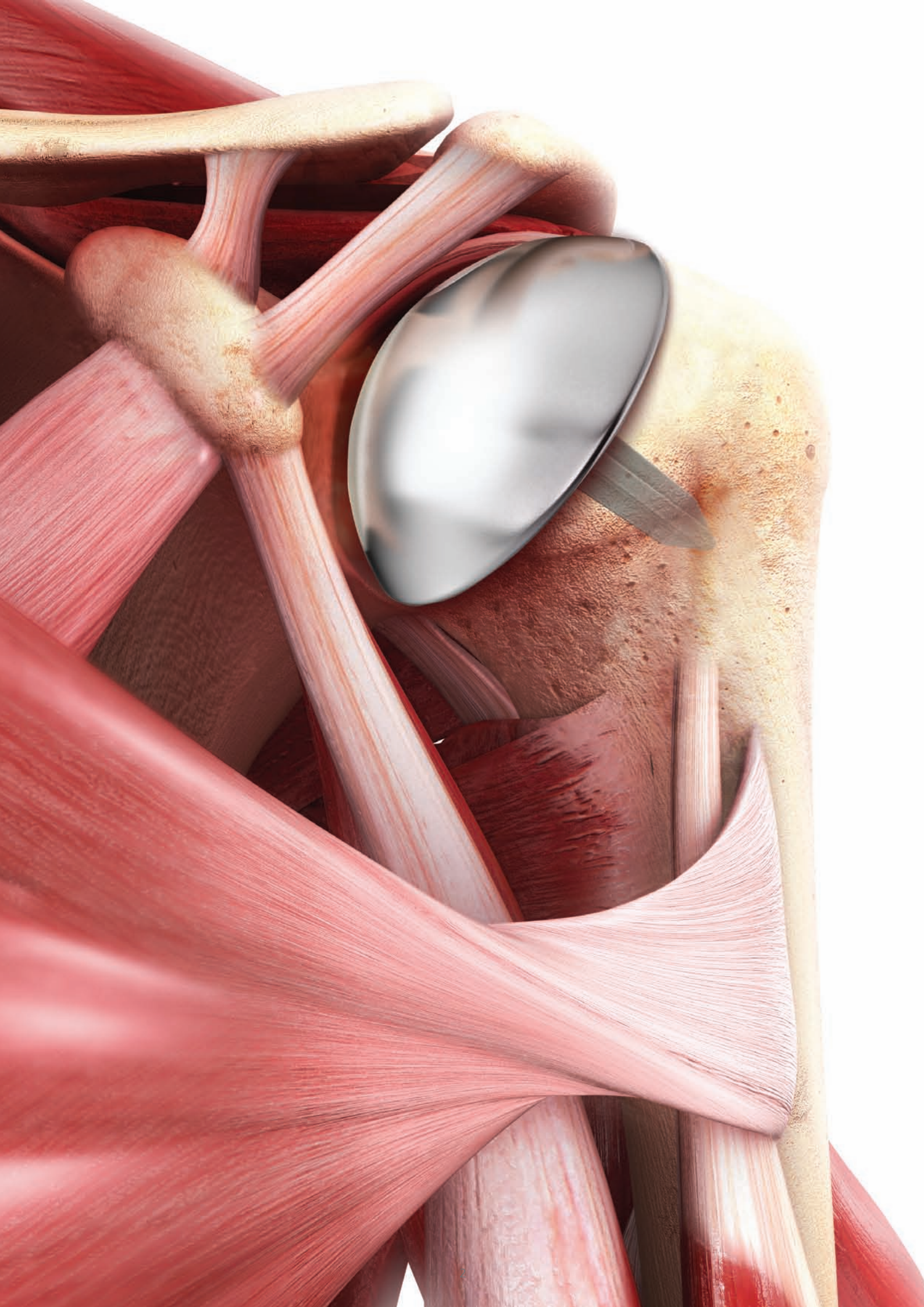
GLOBAL | CAP™ | CTA
CONSERVATIVE ANATOMIC PROSTHESIS

Product Rationale &
Surgical Technique

never stop moving™

DePuy
companies of Johnson & Johnson

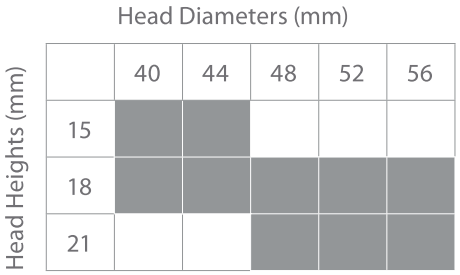
Contents



Conservative Anatomic Prosthesis

GLOBAL | CAP™
CONSERVATIVE ANATOMIC PROSTHESIS

Indicated for **Primary Arthritis**

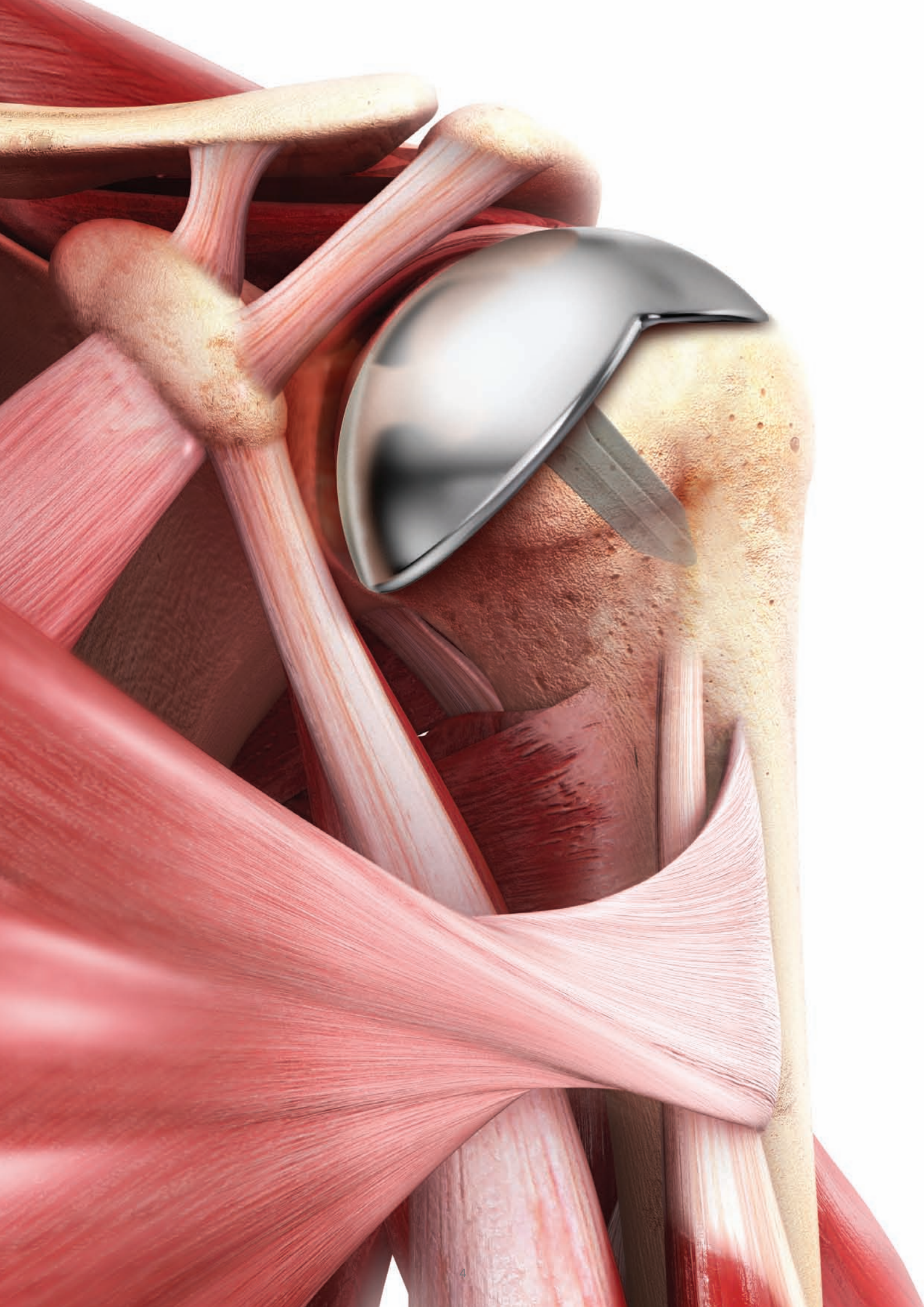


The Global CAP™ Resurfacing Humeral Head Implant is indicated for osteoarthritic or rheumatoid arthritic patients in need of a bone-preserving implant.

Designed to articulate either with a DePuy Glenoid Solutions component from the Global Advantage™ system (total arthroplasty) or without a glenoid (hemiarthroplasty).

The Global CAP™ design draws upon advanced research and design philosophies of the Global® Anatomic Shoulder Solutions system.

Design philosophies derived from detailed investigations of the structure and mechanics of normal and prosthetic glenohumeral joints, conducted at the University of Texas at San Antonio, University of Washington, The Cleveland Clinic Foundation, University of Pennsylvania and DePuy Orthopaedics, Inc., Warsaw, Indiana.



GLOBAL | CAP™ | CTA
CONSERVATIVE ANATOMIC PROSTHESIS

Indicated for **Cuff Tear Arthropathy**

The Global CAP™ CTA Resurfacing Humeral Head is indicated for patients with substantial irreparable cuff tear in need of a bone-preserving implant.

The extended superior lateral head is designed to stabilise the joint and produce a low coefficient of friction at the interface with the acromion, potentially reducing pain and increasing in range of motion, particularly abduction and external rotation.

The Global CAP™ CTA design draws upon the advanced research and design philosophies of the Global Anatomic Shoulder Solutions portfolio.

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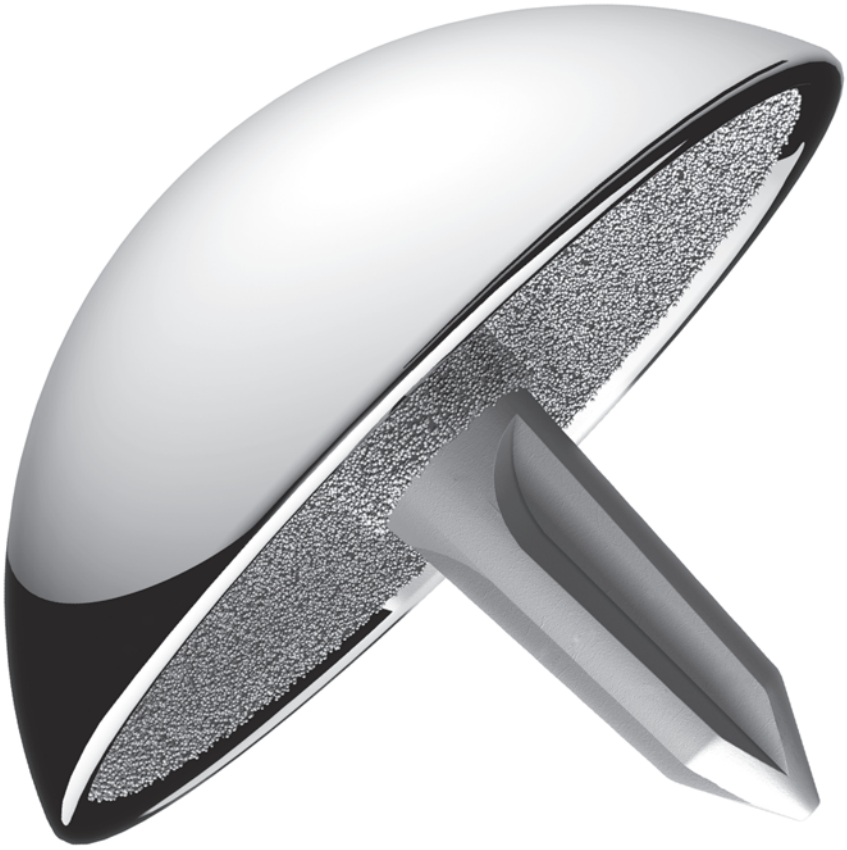
Indicated for **Primary Arthritis**

The sizing of the Global CAP™ implant is based upon the observed variability in humeral head size in normal shoulders.[1] Normal shoulders exhibit a range of humeral head diameters and humeral head heights. The variable sizing options of the Global CAP™ system permit superior anatomic reconstruction of the humeral head.



Optimal Stability and Fixation

- Apical flat on undersurface of implant allows for better fit and intimate bony contact.
- Secure implant design with a cruciate stem.
- Undersurface of the head and the proximal portion of the central stem are surface-treated in either Porocoat® Porous Coating or DuoFix™ Hydroxyapatite on Porous Coating for secure bone ingrowth fixation.

Simple and Efficient Instrumentation

- 3 in 1 reamers accurately reshape humeral head wear typically seen in arthritic patients with flattened humeral heads.
- Cannulated instrumentation (head sizers, reamers, trials and stem punch) allows the surgeon to move from one step to the next.
- Centring technique allows the surgeon to position the implant accurately.

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CONSERVATIVE ANATOMIC PROSTHESIS

Indicated for **Cuff Tear Arthropathy**

In addition to all of the features and design benefits offered in Global CAP™, Global CAP™ CTA also offers:

Increased Area of Superolateral Articulation

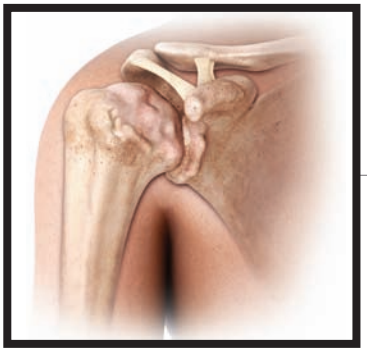
- Based on the Global Advantage™ and Global CAP™ CTA humeral head, the Global CAP™ CTA has an increased area of superolateral articulation and internal contouring assists fixation to minimise creep from implant micromotion.

Restored Stability and ROM

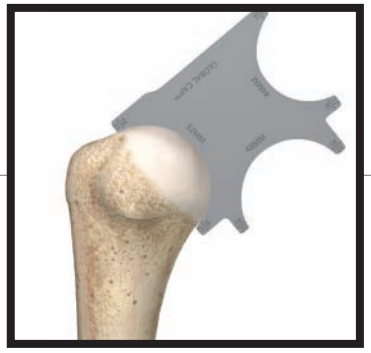
- Global CAP™ CTA implant geometry compensates for superior humeral head migration to help restore joint stability and range of motion.

Key Surgical Steps Summary

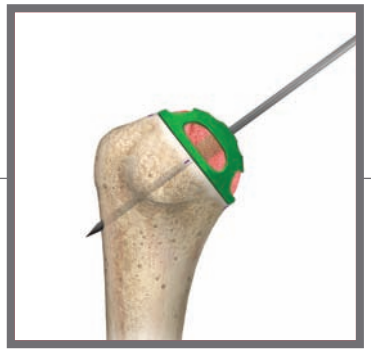
Black = Global CAP™ and Global CAP™ CTA
Grey = Global CAP™
Red = Global CAP™ CTA



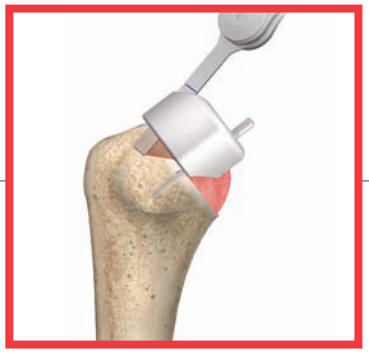
Incision and Exposure



Head Sizing

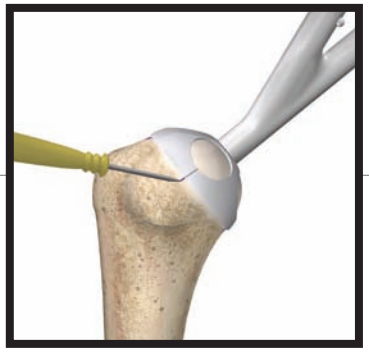


Implant Trialing

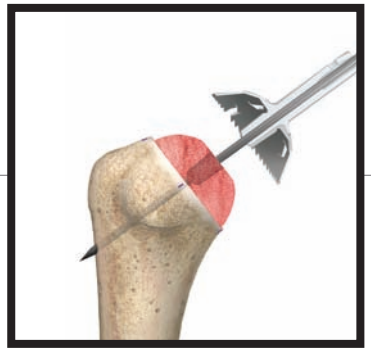


Superior Lateral Humeral Resection

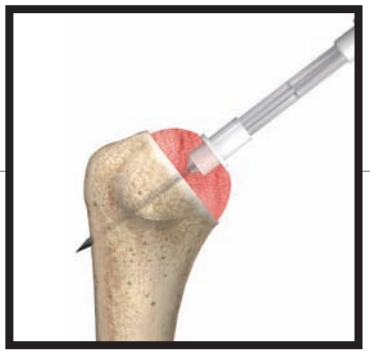
Implant Trialing



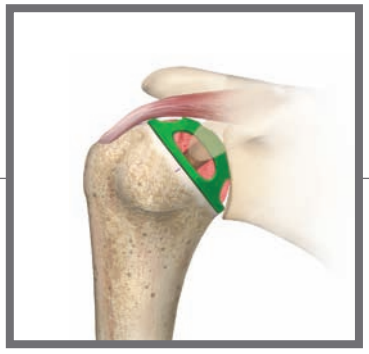
Identifying the Centre of the Humeral Head



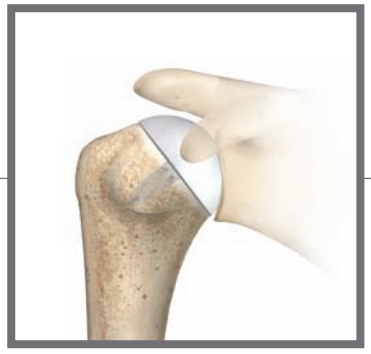
3 in 1 Humeral Head Shaping



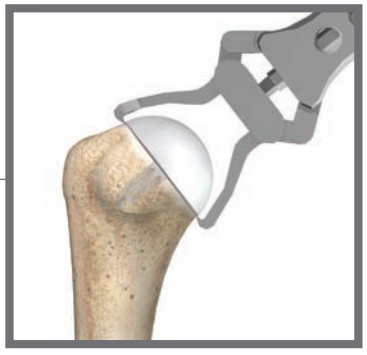
Stem Preparation



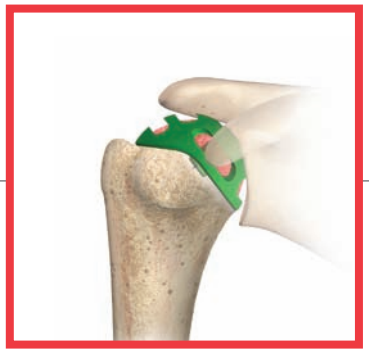
Soft Tissue Balancing



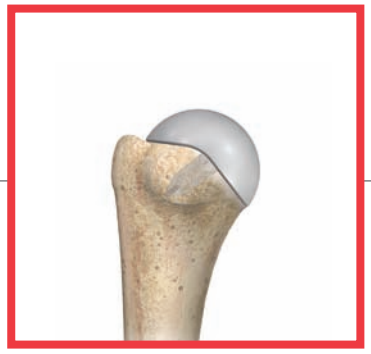
Final Implantation



Extraction / Revision

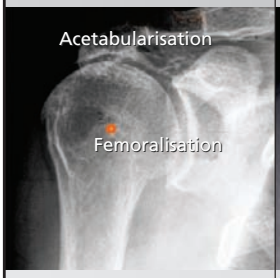
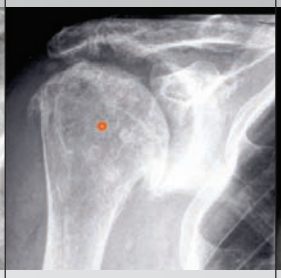
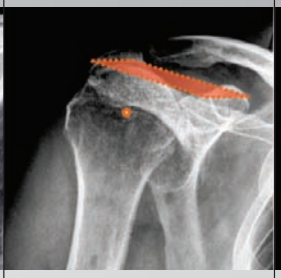
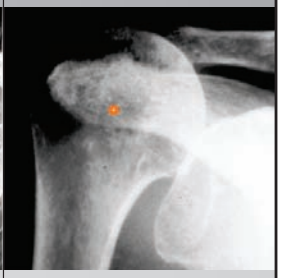


Soft Tissue Balancing



Final Implantation

Extraction / Revision

TYPE 1A CENTRED STABLE	TYPE 1B CENTRED MEDIALISED	TYPE 2A DECENTRED LIMITED STABLE	TYPE 2B CENTRED UNSTABLE
			
• Intact Anterior Restraints	• Intact Anterior Restraints	• Intact Anterior Restraints	• Intact Anterior Restraints
• Minimal Superior Migration	• Minimal Superior Migration	• Superior Translation	• Anterior Superior Escape
• Dynamic Joint Stabilisation	• Compromised Dynamic Joint Stabilisation	• Insufficient Dynamic Joint Stabilisation	• Absent Dynamic Joint Stabilisation
• Acetabularisation of CA Arch and Femoralisation of Humeral Head	• Medial Erosion of the Glenoid, Acetabularisation of CA Arch, and Femoralisation of Humeral Head	• Minimum Stabilisation by CA Arch, Superior-medial Erosion and Extensive Acetabularisation of CA Arch and Femoralisation of Humeral Head	• No Stabilisation by CA Arch Deficient Anterior Structures

Seebauer Classification[2] of Cuff Tear Arthropathy (CA = Coracoacromial)

Pre-Operative Templating

Pre-operative templating of radiographs is important for predicting the humeral head size that will be needed during surgery. The head size can be further verified intraoperatively by measuring the head after osteophyte removal. Begin preparation of the humerus by using the template to approximate the size of the humeral head (for the appropriate head size) over the pre-operative radiograph (Figures 1 and 2).

Depending on surgeon preference, either the Deltopectoral or the Superior Approach (commonly known as McKenzie's) can be used.

The advantages of the Deltopectoral Approach include preservation of the deltoid origin and insertion, utilisation of an internervous plane (extensile), and facilitation of subscapularis lengthening.

The advantage of the Superior Approach is that the subscapularis is retained. However, as the Deltopectoral Approach is the most typical approach for this procedure, the surgical technique will highlight this approach only.

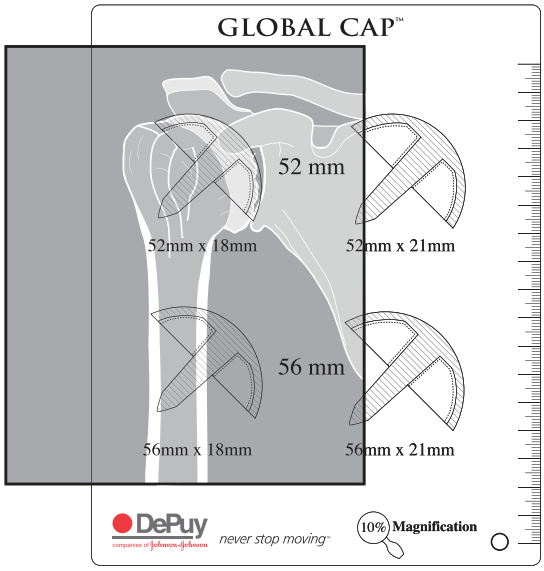


Figure 1

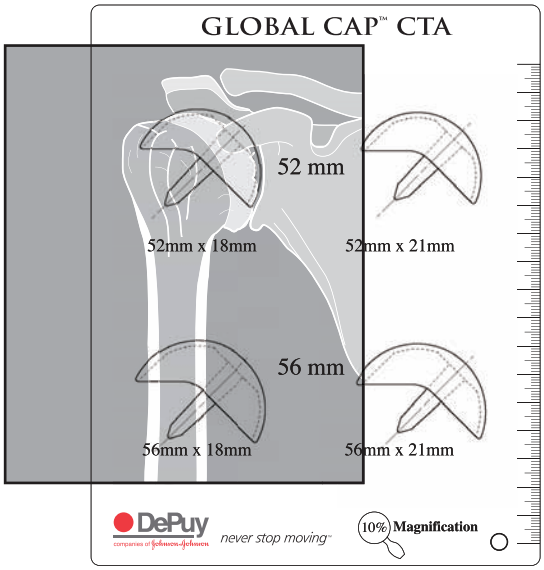


Figure 2

Implant Indications

Global CAP™ Indications

- Patients disabled by arthritic pain from either non-inflammatory or inflammatory degenerative joint disease (i.e. rheumatoid arthritis, osteoarthritis and avascular necrosis).
- Mild or moderate deformity of the humeral head.
- Fractures of the humeral head.
- Post-traumatic arthritis.

Global CAP™ CTA Indications

The DePuy Global CAP™ CTA Resurfacing Shoulder is indicated for hemi-shoulder replacement in patients with rotator cuff tears and arthritis. Specific indications include:

- Rotator cuff tear arthropathy.
- Difficult clinical management problems where other methods of treatment may not be suitable or may be inadequate.

CAUTION: The DePuy Global CAP™ CTA Resurfacing Shoulder is intended for cementless use only.

Anesthesia and Patient Positioning

Proximal humeral replacement using the Global CAP™ or Global CAP™ CTA implant can be performed using general anesthesia, regional anesthesia (i.e. interscalene block), or a combination of general anesthesia and regional anesthesia. Place the patient in a supine position, with the hips flexed approximately 30 degrees, knees bent approximately 30 degrees and back elevated approximately 30 degrees (i.e. the beach chair position) (Figure 3).

Figure 3

Complete access to the top and back of the shoulder can be achieved through the use of specialised headrests or operating tables with break-away side panels (Figure 4).

Figure 4

Incision and Exposure

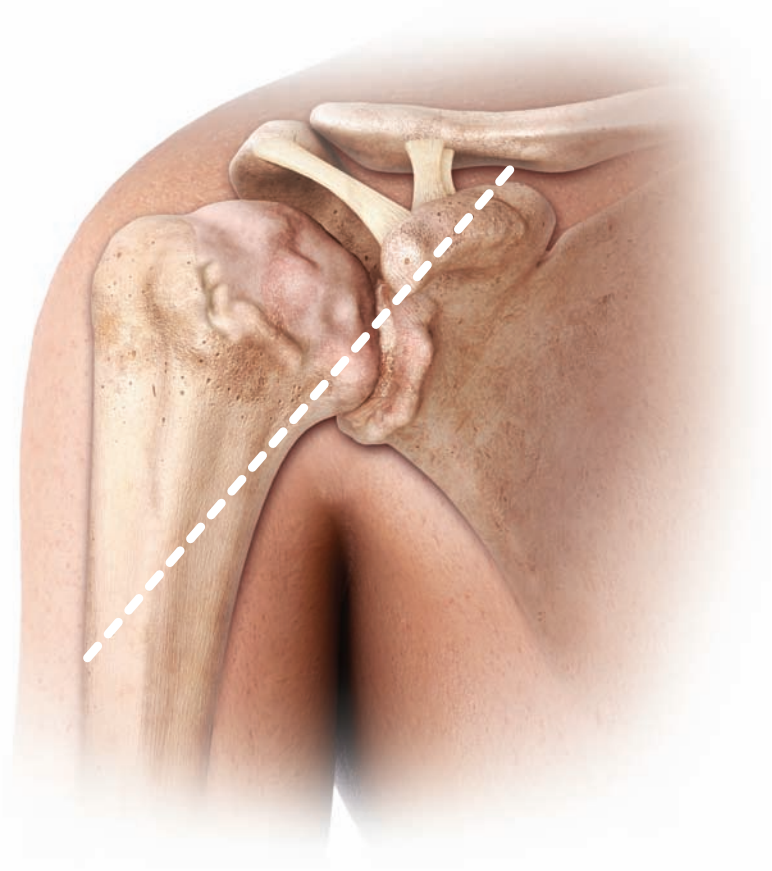


Figure 5

Deltopectoral Approach

Obtain exposure through a deltopectoral incision extending 10-15 cm inferolaterally from approximately the mid-shaft of the clavicle toward the deltoid insertion.

Identify the cephalic vein within the deltopectoral groove. Dissect it away from the pectoralis major, and mobilise it laterally with the deltoid. The superior 1.0-1.5 cm of the pectoralis major insertion may be released from the humerus to improve exposure of the inferior aspect of the joint.

Place a self-retaining retractor to retract the deltoid and cephalic vein laterally and the pectoralis major medially.

Deltopectoral Incision

Identify the conjoined tendon of the coracobrachialis and short head of the biceps. Make an incision in the clavipectoral fascia at the lateral-most extent of the conjoined tendon. Carry this incision superiorly to the coracoacromial ligament (Figure 5). Adequate exposure is usually obtained without sacrifice of any portion of the coracoacromial ligament.

Damage to the coracoacromial ligament may precipitate anterior instability and as such this ligament should be preserved.

Therefore, preservation of the coracoacromial ligament may be performed in all arthroplasty cases, especially those with poor quality rotator cuff tissue (i.e. rheumatoid arthritis).

The axillary and musculocutaneous nerves may be injured in any deltopectoral approach. Thus, care should be taken to identify and protect them whenever possible. Routinely identify the axillary nerve at the inferior aspect of the glenohumeral joint, either by digital palpation or direct visualisation. The musculocutaneous nerve has a more variable course, particularly with reference to the distance from the tip of the coracoid to its passage into the posterior surface of the conjoined tendon. Because of this variability, it may not always be easily palpable within the surgical field. However, an attempt should always be made to palpate it. This will help ensure that the nerve can be protected throughout the procedure.

Exposure

Deep Dissection

With the conjoined tendon retracted medially and the deltoid retracted laterally, the subscapularis muscle and tendon and the anterior humeral circumflex vessels can be easily identified. Clamp and coagulate or ligate the anterior circumflex vessels to prevent excessive bleeding throughout the procedure. Identify the superior and inferior extents of the subscapularis.

Superiorly, the subscapularis forms a well-defined tendon that inserts into the lesser tuberosity. Inferiorly, the subscapularis consists of laterally extending muscle fibres with a less well demarcated tendon that inserts directly into the humerus. Place stay sutures within the tendon in anticipation of its later release (Figure 6).

There are different methods of taking down the subscapularis. Some surgeons prefer to perform a tenotomy while others prefer a lesser tuberosity osteotomy. Typically, a z-plasty is only performed in the event that the subscapularis was shortened by prior surgery.

When performing a lesser tuberosity osteotomy, first move the arm into internal rotation to improve access to the lesser tuberosity. Introduce the sawblade or a sharp curved 1/2 inch osteotome at the interval created at the insertion side of the subscapularis and resect approximately 4-5 cm of the lesser tuberosity.

When performing a release of the subscapularis tendon without an osteotomy, the tendon is removed from its insertion with a cautery or scalpel. Using a blunt dissection (Cobb) separate the capsule from the subscapularis, inferiorly and medially, using a scalpel. Release the rest of the anterior capsule from the subscapularis to the glenoid rim. Release the coracohumeral ligament from the base of the corocoid.

After the subscapularis and capsule have been released by the method that is appropriate for the degree of contracture present, deliver the humerus out of the wound using simultaneous adduction, external rotation and extension of the arm. This requires a complete inferior capsular release from the humeral neck to its posterior inferior attachment (Figure 7).

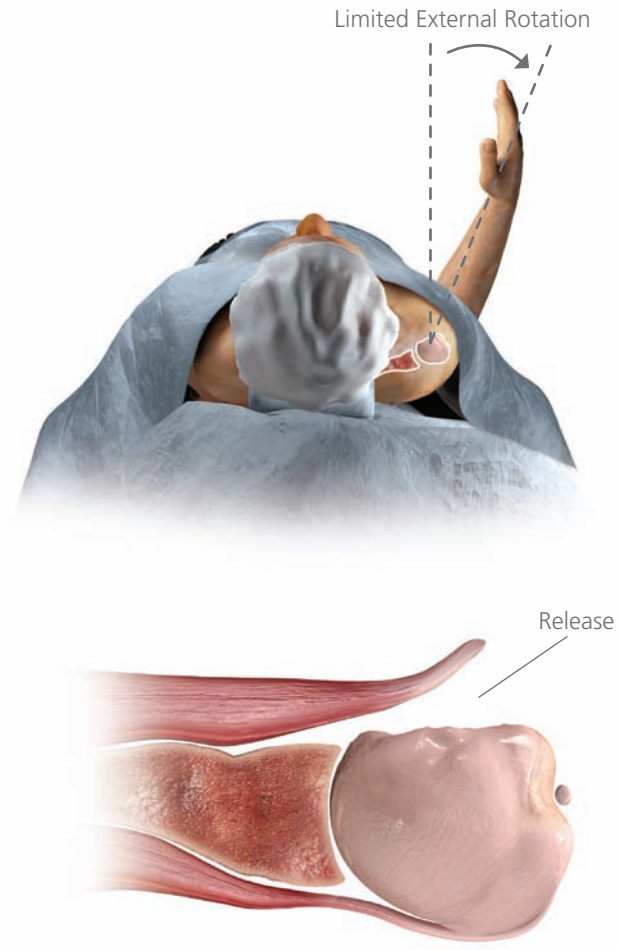


Figure 6

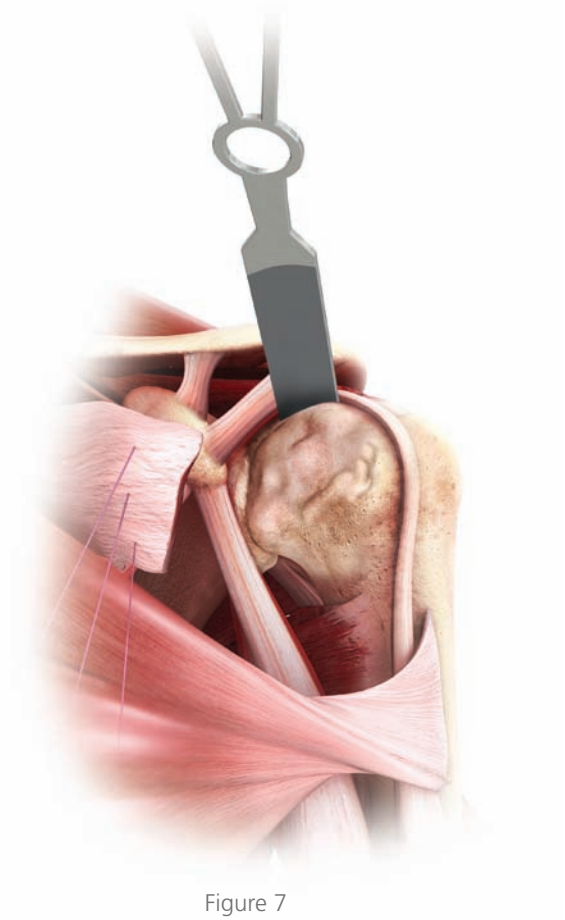


Figure 7

Exposure

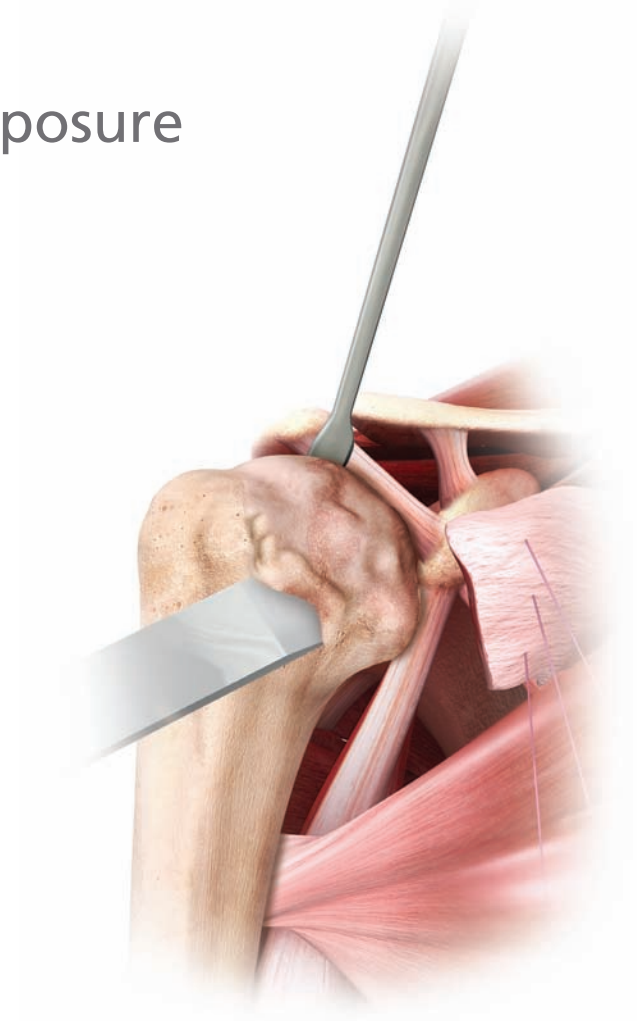


Figure 8

Step 1

With the humeral head exposed, remove all humeral osteophytes (Figure 8). This is a particularly important step, since the anatomic neck must be visualised to guide humeral preparation.

Place a curved Crego or reverse Hohmann retractor along the anatomic neck superiorly to protect and retract the long head of the biceps and postero-superior rotator cuff.

Step 2

Mark the most superior point of the articular margin or anatomic neck with electrocautery or marking pen (Figure 9).

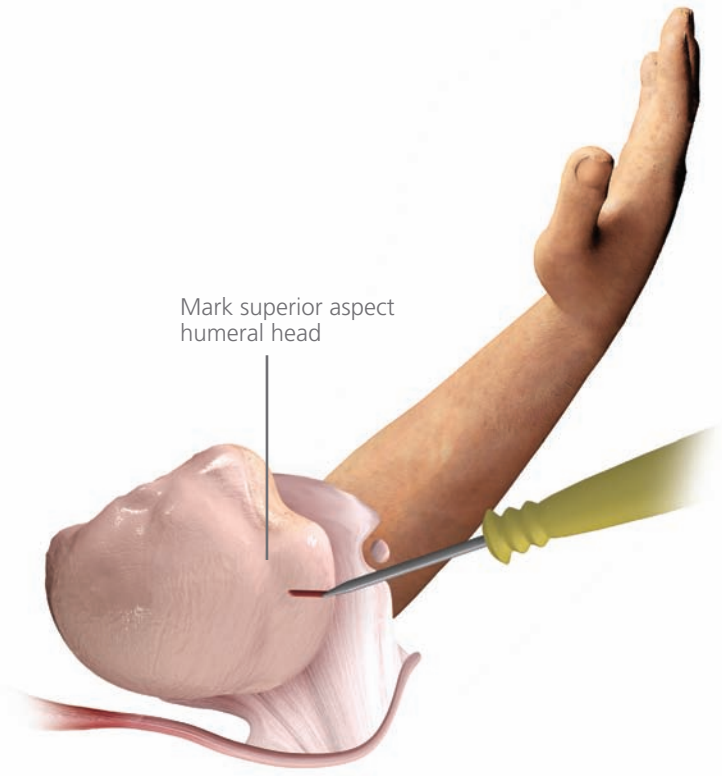


Figure 9

Head Sizing

Step 3

Head sizing is confirmed intraoperatively using the humeral head sizers or humeral head gauge (Figure 10).

Assemble the appropriate humeral head sizer to the sizer / drill guide handle. Place the sizer over the humeral articular surface, such that its superior mark is aligned with the previously placed mark on the humeral head and the plane of the head sizer rim is parallel with the plane of the anatomic neck of the native humerus.

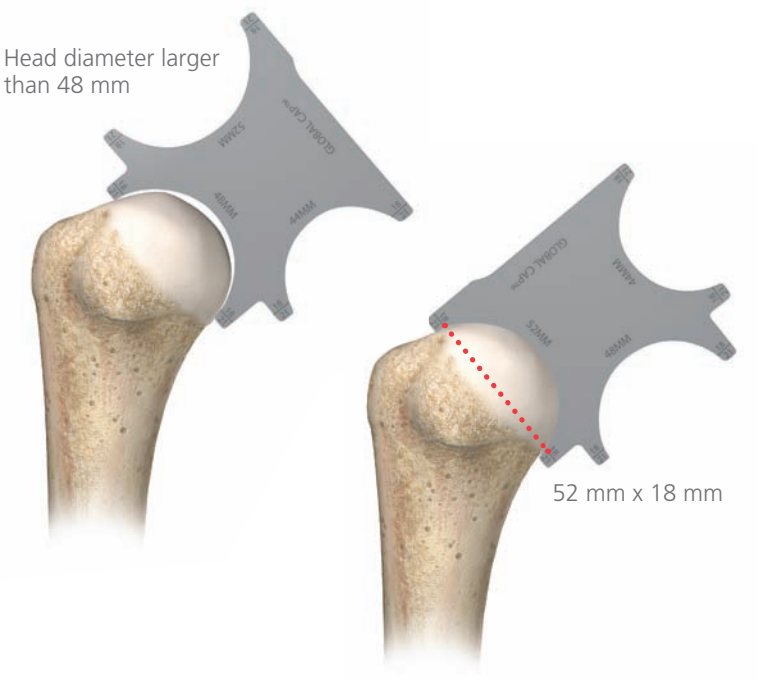


Figure 10

Step 4

The appropriate head sizer is determined by identifying the articular margin of the humerus in relation to the inferior edge of the sizer. If the inferior margin is 3 mm below the inferior edge of the sizer, a deeper head height is necessary (Figure 11). Also, note that the interior of the sizer represents the outermost diameter of the definitive implant. If the sizer looks too small or too large, a smaller or larger head sizer can be used.

		Humeral Head Size (mm)				
Humeral Head Height Reading (mm)		40	44	48	52	56
	Laser Etch	15	15	18	18	18
	Bottom Edge	18	18	21	21	21

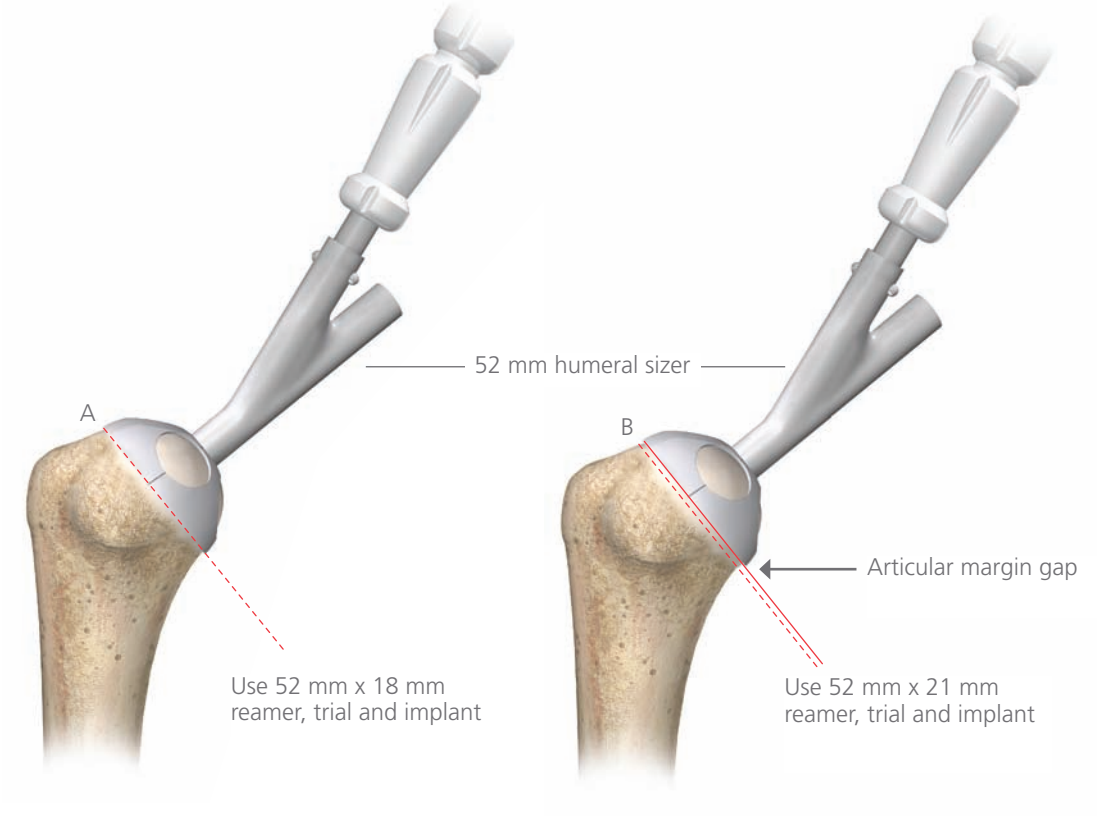


Figure 11

Identifying the Centre of the Humeral Head

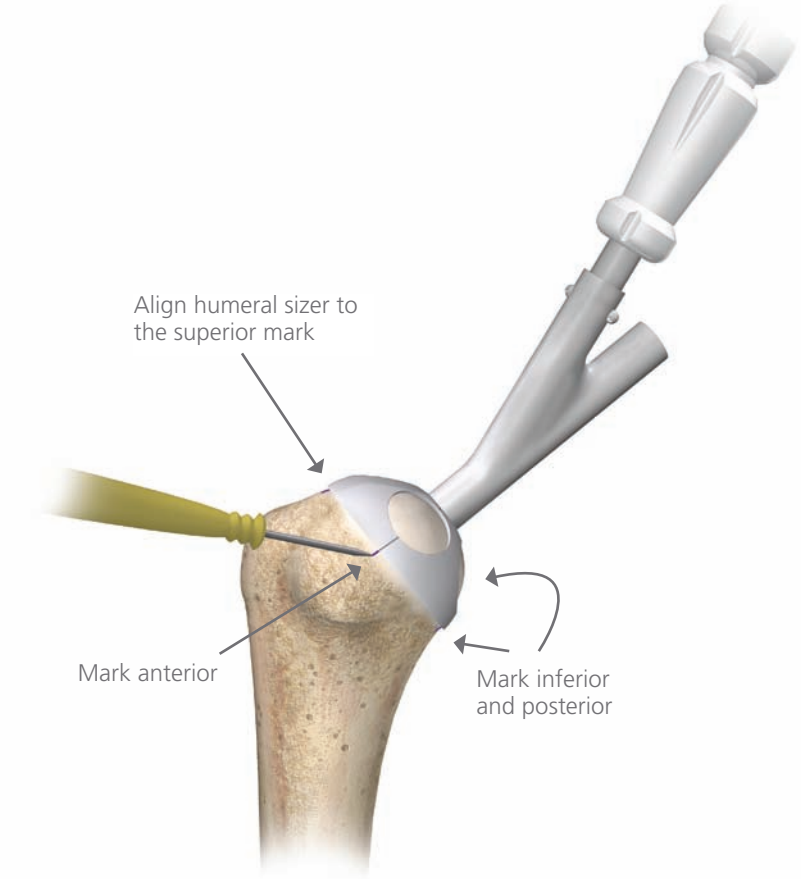


Figure 12

Step 5

Further mark the humerus at the most anterior, posterior and inferior aspects of the sizer (Figure 12).

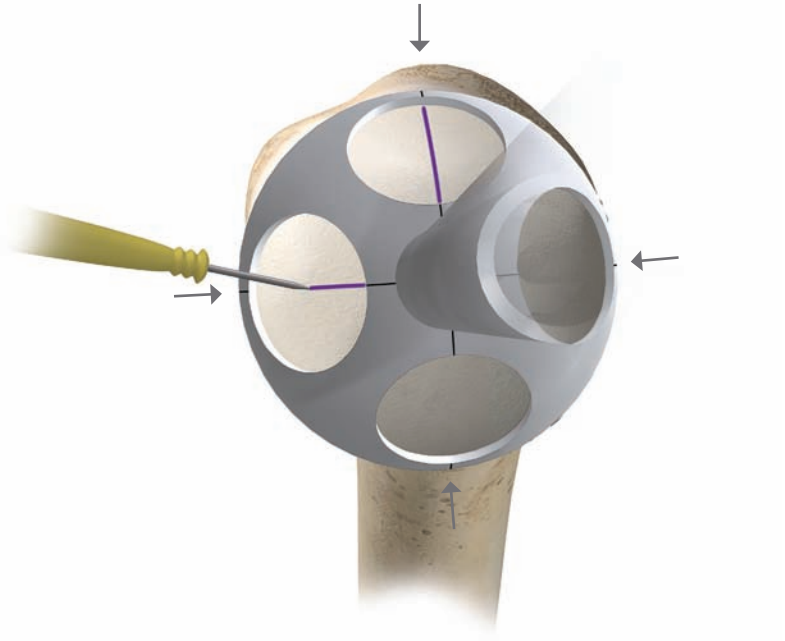


Figure 13

Step 6

Next, mark the surface of the humeral head along the determined superior-inferior and anterior-posterior axes using electrocautery or marking pen through the round fenestrations in the sizer (Figure 13).

Identifying the Centre of the Humeral Head

Step 7
Remove the sizer and visualise the marked surface of the humeral head.

Note: It is important to check that the centre of the sizer / intersecting marks on the corresponding humeral head identify the centre of the humeral head. Identification of the centre will ensure proper guide pin and definitive implant placement.

Complete the interrupted superior-inferior and anterior-posterior lines using the humeral head gauge as a template (Figure 14). If the lines do not intersect at what appears to be the centre of the humeral head, repeat the previous steps until the centre of the humeral head has correctly been identified.

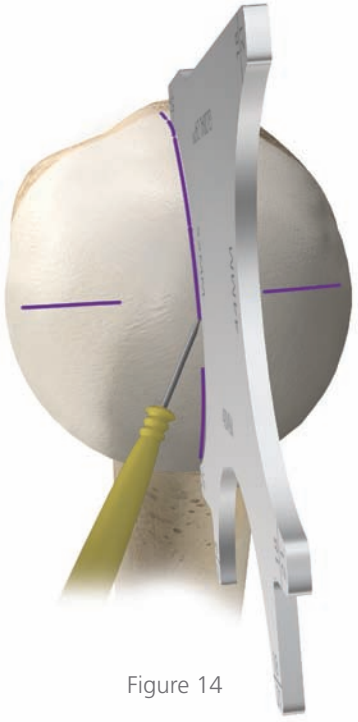


Figure 14

Step 8
Using the head gauge, confirm the humeral head diameter and thickness.

Replace the humeral sizer over the humeral head in the previously determined centre position. Drill the threaded guide pin through the centre of the cannulated sizer, the centre of the humeral articular surface and into the humeral head (Figure 15). The tip of the guide wire should penetrate the lateral cortex of the humerus.

Note: Full penetration of lateral cortex will prevent guide pin from migrating in cancellous bone.

Remove the humeral sizer.

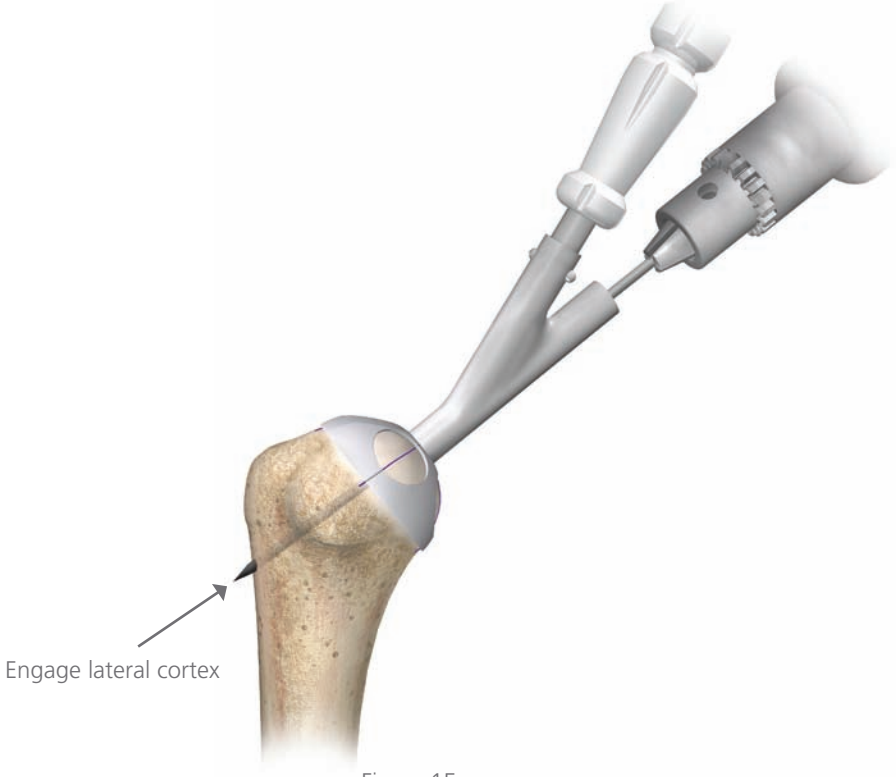
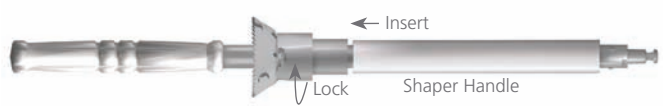


Figure 15

3 in 1 Humeral Head Shaping

1. Assemble the Global CAP™ Humeral Head Shaper Inserter onto the Humeral Head Shaper



2. Engage the J-slot of the Humeral Head Shaper with the Shaper Handle

3. Lock the Shaper Handle to the Humeral Head Shaper and remove the Shaper Inserter

Figure 16

Assemble the appropriate reamer to the shaper / drill guide handle and tighten using the assembling tool (Figure 16).

Based on previously determined head size, perform humeral shaping with the appropriate size reamer (Figure 17).

Note: When inserting the reamer to the humeral head shaper handle, the J-slot of the reamer must be engaged with the shaper handle before the neck can be locked. Turn the neck counterclockwise to lock handle.

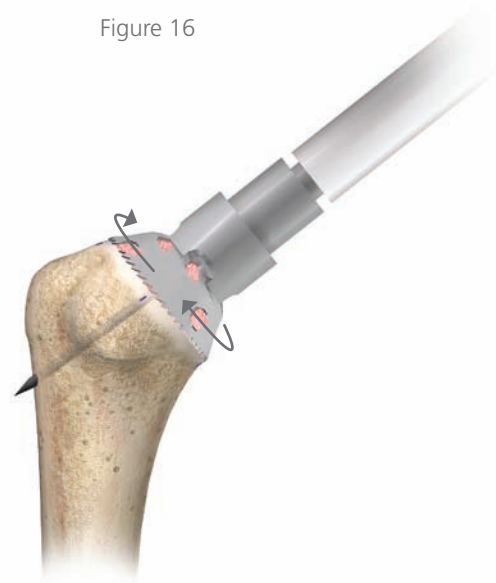


Figure 17

Connect the reamer to power. Pass the assembled reamer over the guide wire onto the humeral head. Ream until bone chips are seen to exit from the most superior holes in the peripheral surface of the reamer (Figure 18). Reaming depth can also be checked by observing the distance between the advancing reamer and the rotator cuff attachment site.

Note: Reaming should cease before the sharp-toothed edge of the reamer damages the rotator cuff attachment.

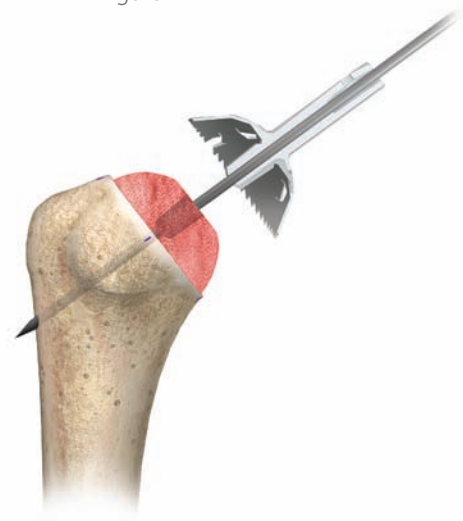


Figure 18

Step 9

There may be some apparent cancellous bone at the superior shelf of the reamed humeral head. The humeral bone fragments generated from the reaming process can be saved for bone graft between the implant and humerus if needed. The reaming process creates a shelf, equal in width to the thickness of the eventual implant at the base of the humeral head in the anatomic neck region. Any attached fragments of bone that might interfere with complete seating of the trial or implant should be excised with a rongeur. Remove all remaining osteophytes so that the implant forms a smooth transition to the peripheral rim of the humeral head.

Central Stem Preparation

Step 10

The shape of the definitive implant's stem is a cruciform. This shape improves implant rotational stability. The cannulated cruciform stem punch is used to create a path for the implant stem in the unreamed cancellous bone in the base of the central hole and ensure correct stem seating of the implant (Figure 19).

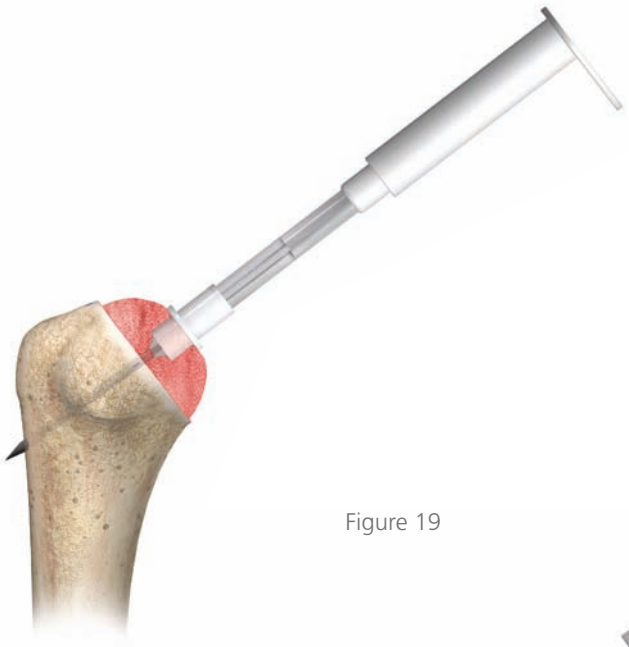


Figure 19

Pass the stem punch over the guide pin and into the central hole in the humeral head. Place the centring sleeve into the locked position by turning it clockwise one-quarter turn. Advance the stem punch shaft into the reamed central hole. Rotate the centring sleeve one counterclockwise turn to unlock the punch and then impact the stem punch with a mallet into the cancellous bone of the humerus. The depth of penetration is controlled by the centring sleeve. Remove the central guide pin.

Note: When impacting the stem punch, avoid impacting the mallet over drill pin hole to avoid striking the pin (Figure 20).

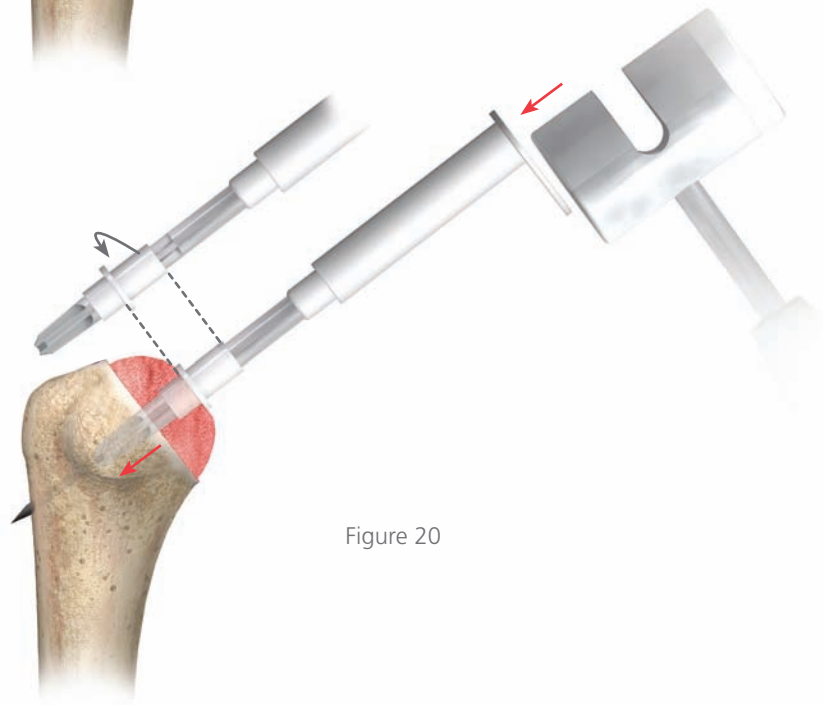


Figure 20

Step 11

The stem punch ensures that the axes of the punch and the eventual implant stem are collinear (Figure 21). If these two axes are divergent, the implant may not be completely seated.

Note: The pin has been removed in Figure 21 to illustrate that the cruciform shaped hole matches the shape of the stem on the implant.

Note: When implanting the Global CAP™ CTA, the cannulated cruciform punch must be aligned so that the cruciate stem axis line up with the 12, 3, 6 and 9 o'clock positions. The superolateral flange of the Global CAP™ CTA is positioned directly over the 12 o'clock cruciate stem axis.

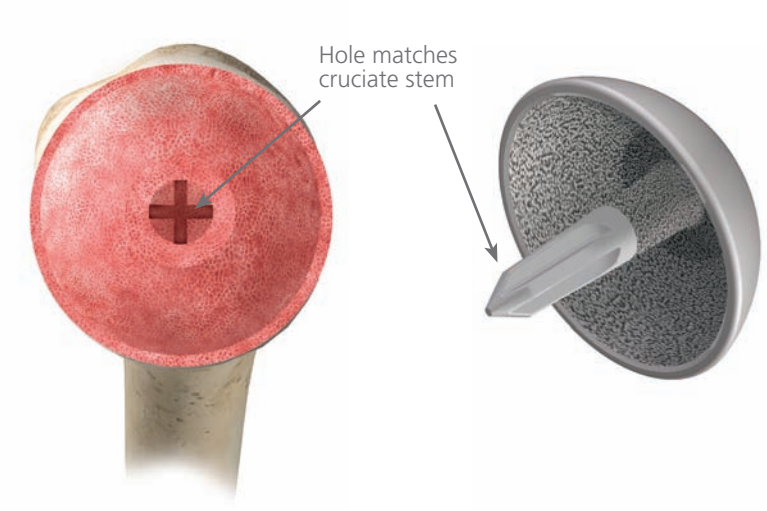


Figure 21

If performing a Global CAP™ CTA, please proceed to page 23.

Global CAP™ Implant Trialing

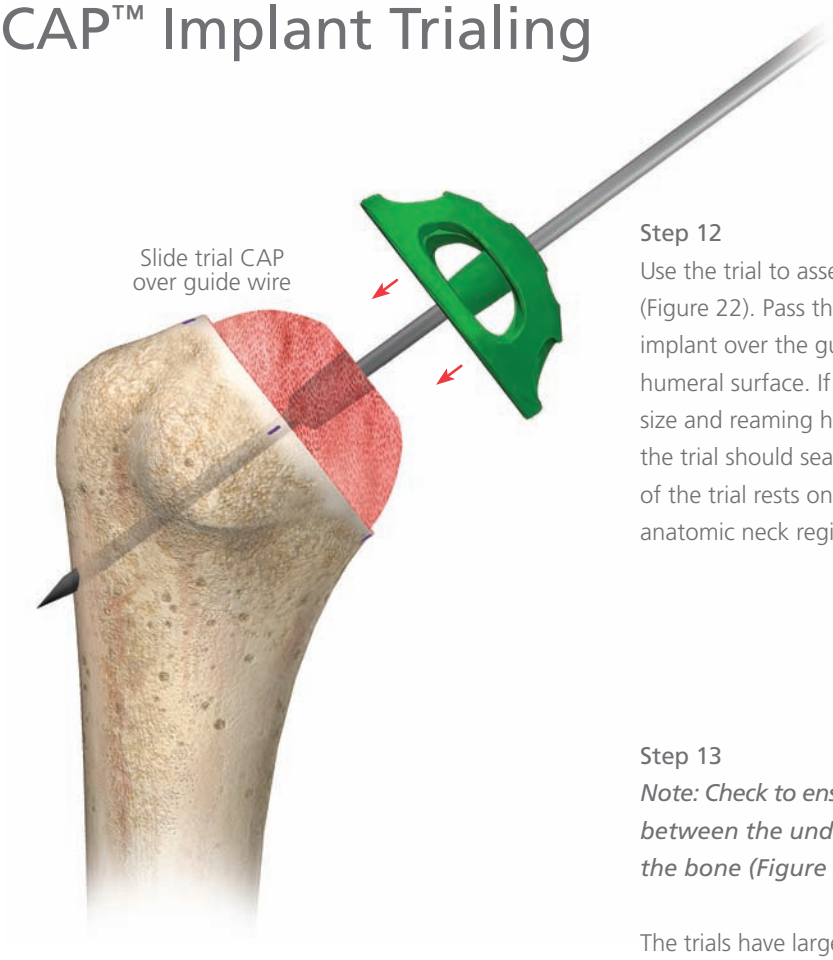


Figure 22

Step 12

Use the trial to assess final implant size and fit (Figure 22). Pass the appropriate cannulated trial implant over the guide wire onto the reamed humeral surface. If the trial is the appropriate size and reaming has been adequately performed, the trial should seat completely so that the edge of the trial rests on the shelf created at the anatomic neck region.

Step 13

Note: Check to ensure there is uniform contact between the undersurface of the trial and the bone (Figure 23).

The trials have large viewing windows to aid in this visualisation. Remove the trial using the trial grasping tool.

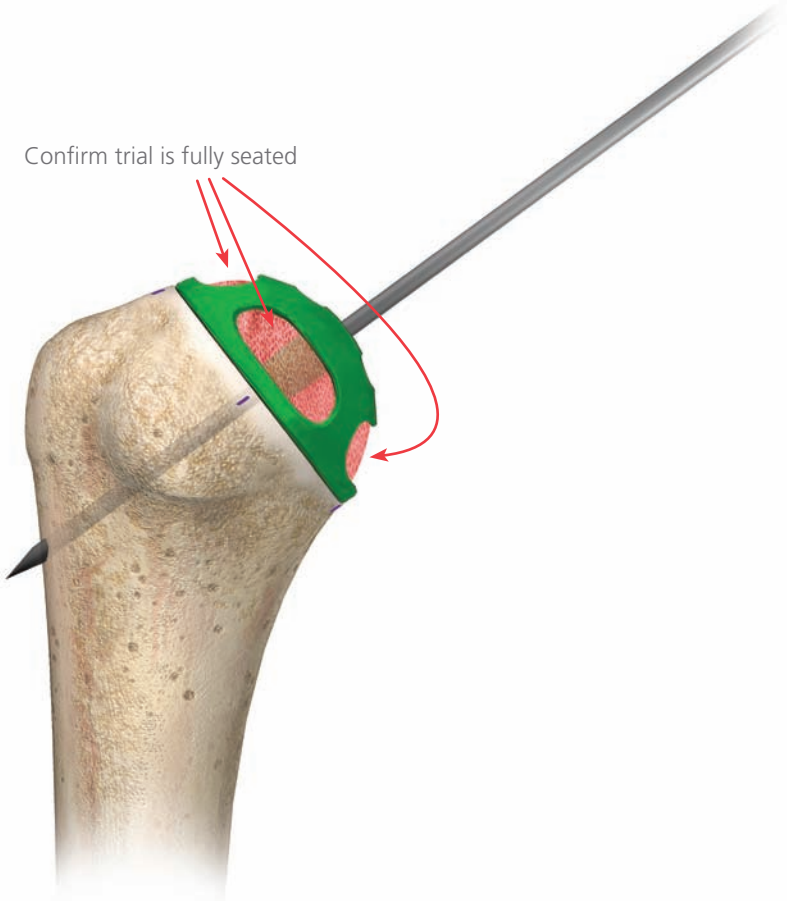


Figure 23

Global CAP™ Soft Tissue Balancing

Step 14

Regardless of whether or not a glenoid component will be used in combination with this implant, soft tissue releases are required to maximise post-operative range of motion. A ring retractor may be used to retract the humeral head posteriorly. However, extreme care must be observed so that the retractor does not damage the reamed humeral surface. The humeral head trial may be re-inserted to aid in protection of the reamed bone (Figure 24).

Circumferential release of the glenohumeral joint capsule may then be accomplished. In cases where the anteroinferior capsule is pathologically thickened, it can be excised. Glenoid preparation may also be performed if necessary.

After appropriate soft-tissue releases have been performed, evaluate soft-tissue tension. Re-insert the humeral head trial and reduce the humerus into the glenoid fossa. As a general rule, with the humerus in neutral rotation and the arm in 0-20 degrees of scapular plane abduction, a posteriorly directed subluxating force should cause posterior translation of 50 percent of the humeral head. In addition, the subscapularis should be long enough to reattach to its insertion site, allowing the arm to go to at least 30 degrees of external rotation.

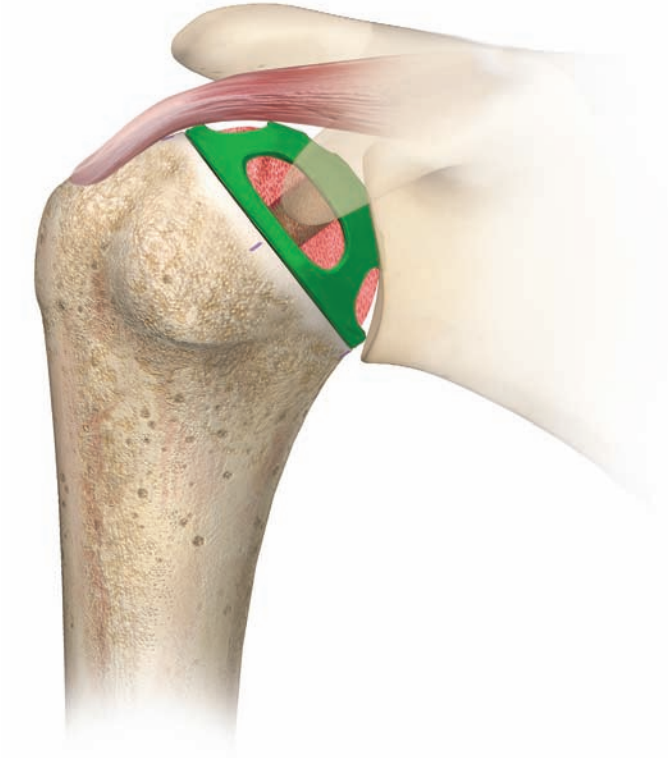


Figure 24

Global CAP™ Final Implantation

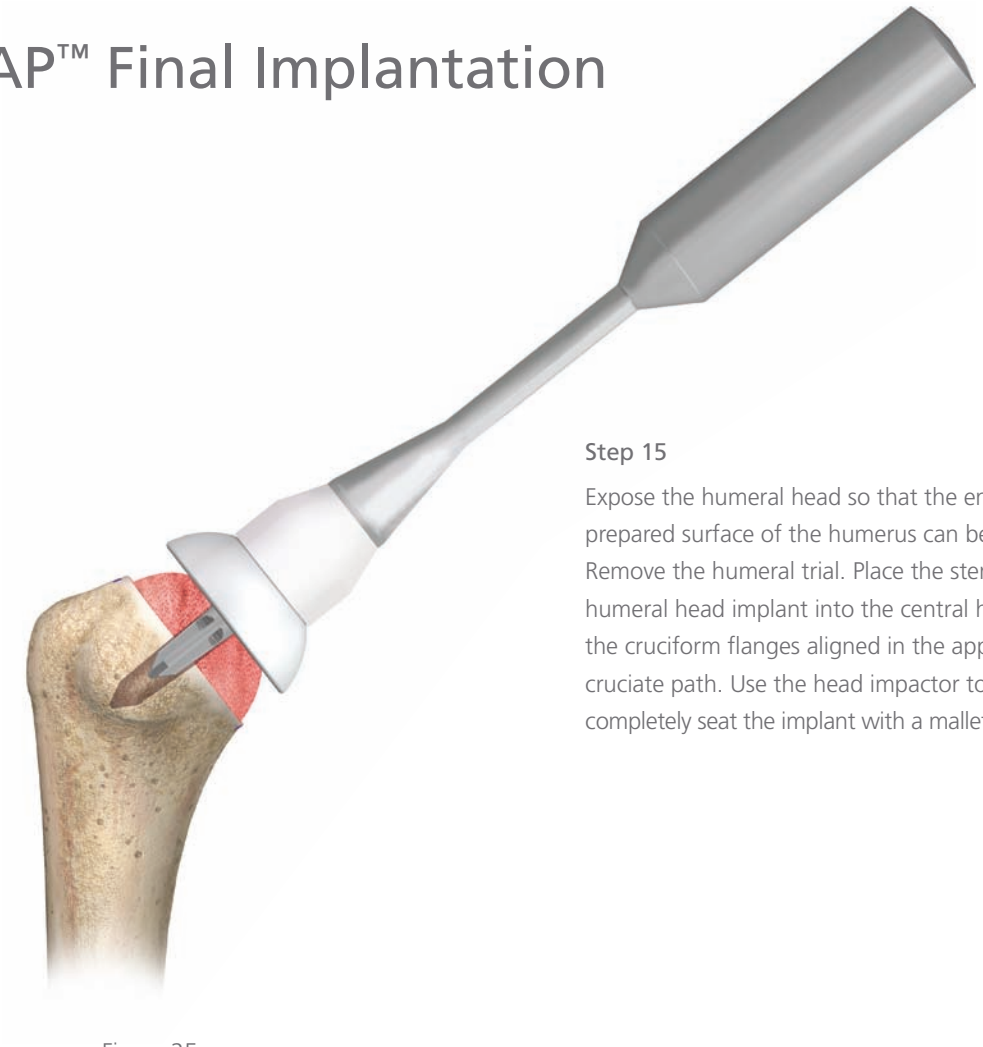


Figure 25

Step 15

Expose the humeral head so that the entire prepared surface of the humerus can be seen. Remove the humeral trial. Place the stem of the humeral head implant into the central hole with the cruciform flanges aligned in the appropriate cruciate path. Use the head impactor tool to completely seat the implant with a mallet (Figure 25).

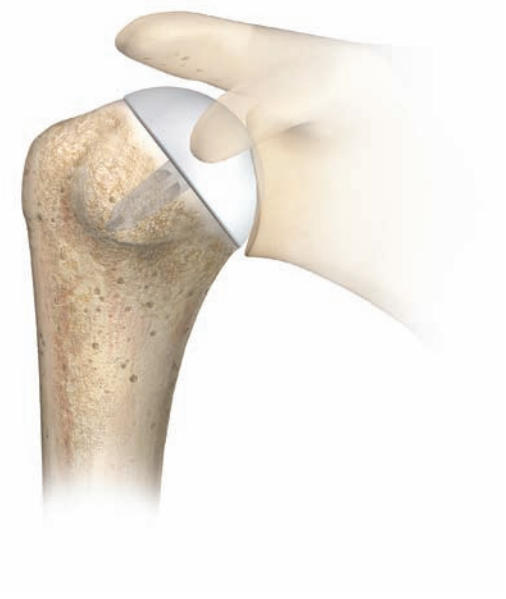


Figure 26

Verify that the implant has been fully seated. There should be no gap from the periphery of the implant and reamed margin of the humerus. Reduce the humerus into the glenoid fossa. After joint reduction, verify that the shoulder has the desired amount of laxity (Figure 26).

For information on Closure and Aftercare proceed to page 28.

Global CAP™ CTA Superior Lateral Humeral Resection

Small Bone Power Saw Requirements

The Global CAP™ CTA superior lateral humeral resection guide is designed to be used with a small bone power system and the sawblades listed in the back of the surgical technique. Stryker, Linvatech and Desoutter all distribute small bone power systems that can be used with the sawblades listed in this technique. Failure to use a small bone power system to make the superior later humeral resection may compromise the final fit between the implant and the prepared humeral surface.

Mark the most superior point of the greater tuberosity using electrocautery or marking pen (Figure 27).

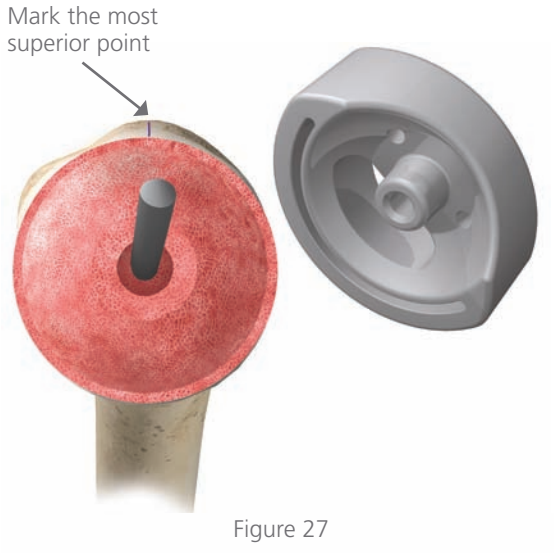


Figure 27

Based on previously determined head size, perform the humeral resection with the appropriate size cutting block.

Slide the cutting block over the guide wire onto the prepared humeral surface aligning the mark on the greater tuberosity with the black line on the cutting block (Figure 28).

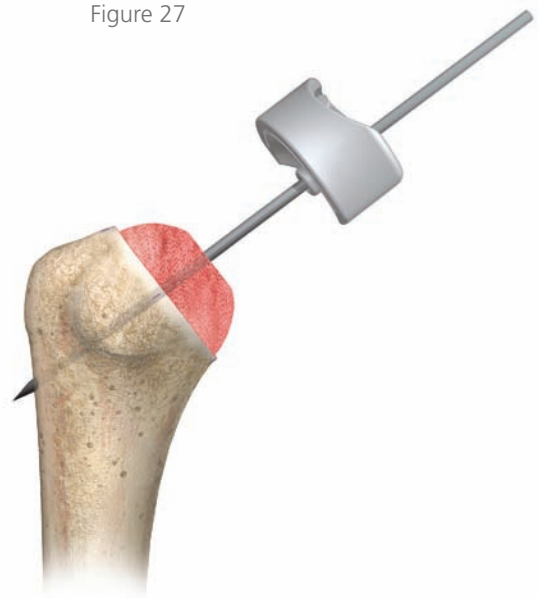


Figure 28

Secure the cutting block with two fixator pins (Figure 29).

Figure 29

Global CAP™ CTA Superior Lateral Humeral Resection

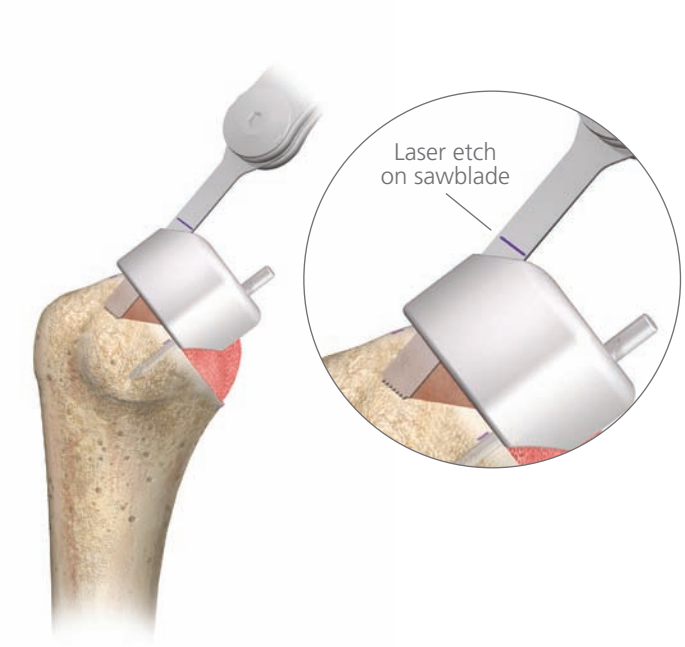


Figure 30

To allow greater sawblade access remove the guide wire.

Use a 2.5 mm sawblade to resect the humeral surface.

Note: Resection depth is guided by a laser etch mark on the blade that should not be inserted past the cutting block blade capture entrance (Figure 30).

Figure 31

Remove the fixator pins and cutting block. Use a rongeur to remove the bone lateral to the resection (Figure 31).

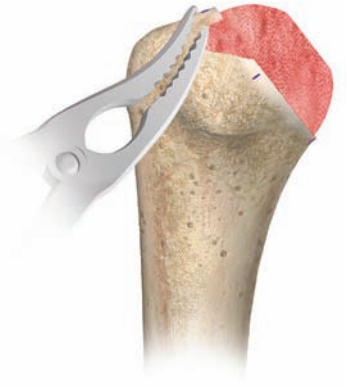


Figure 32

Any attached fragments of bone that might interfere with complete seating of the trial or implant should be excised with a rongeur. Remove all remaining osteophytes so that the implant forms a smooth transition to the greater tuberosity (Figure 32).

Note: The sawblade intended for use with the Global CAP™ CTA cutting guide has a laser etching (Figure 30) to mark the deepest resection that should be made to properly seat the Global CAP™ CTA implant. Further resection may lead to excess bone resection.

Global CAP™ CTA Implant Trialing

Use the trial to assess final implant size and fit (Figure 32). Place the appropriate trial implant onto the resected humeral surface. If the trial is the appropriate size and the resection has been adequately performed, the trial should seat completely on the shelves created at both the anatomic neck and the greater tuberosity regions.

Note: Check to ensure there is uniform contact between the undersurface of the trial and the bone.

The trials have large viewing windows to aid in this visualisation. Remove the trial using the trial grasping tool.

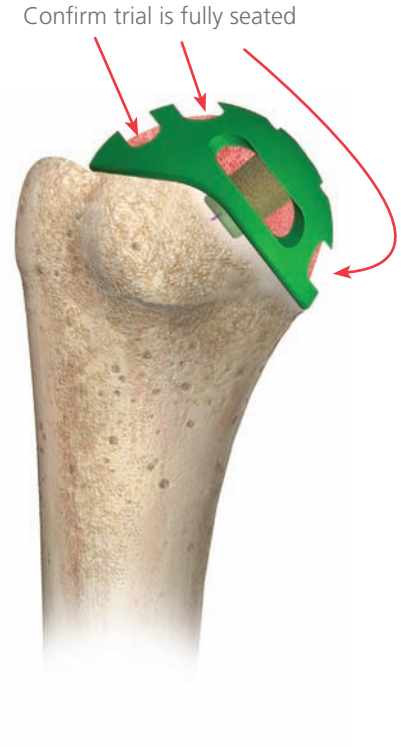


Figure 33

Global CAP™ CTA Soft Tissue Balancing

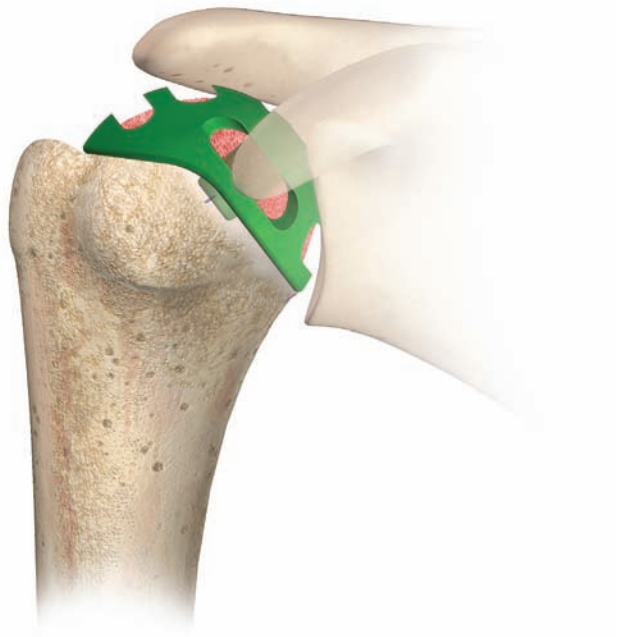


Figure 33

Soft tissue releases are required to maximise postoperative range of motion. A ring retractor may be used to retract the humeral head posteriorly. However, extreme care must be observed so that the retractor does not damage the reamed humeral surface. The humeral head trial may be re-inserted to aid in protection of the reamed bone (Figure 33).

Circumferential release of the glenohumeral joint capsule may then be accomplished. In cases where the anteroinferior capsule is pathologically thickened, it can be excised. Glenoid preparation may also be performed if necessary. ***Note: It would be inappropriate to use a glenoid component with a Global CAP™ CTA.***

After appropriate soft-tissue releases have been performed, evaluate soft-tissue tension. Re-insert the humeral head trial and reduce the humerus into the glenoid fossa. As a general rule, with the humerus in neutral rotation and the arm in 0-20 degrees of scapular plane abduction, a posteriorly directed subluxating force should cause posterior translation of 50 percent of the humeral head. In addition, the subscapularis should be long enough to reattach to its insertion site, allowing the arm to go to at least 30 degrees of external rotation.

Global CAP™ CTA Final Implantation

Expose the humeral head so that the entire prepared surface of the humerus can be seen. Remove the humeral trial. Place the stem of the humeral head implant into the central hole with the cruciform flanges aligned in the appropriate cruciate path. Use the head impactor tool to completely seat the implant with a mallet (Figure 34).

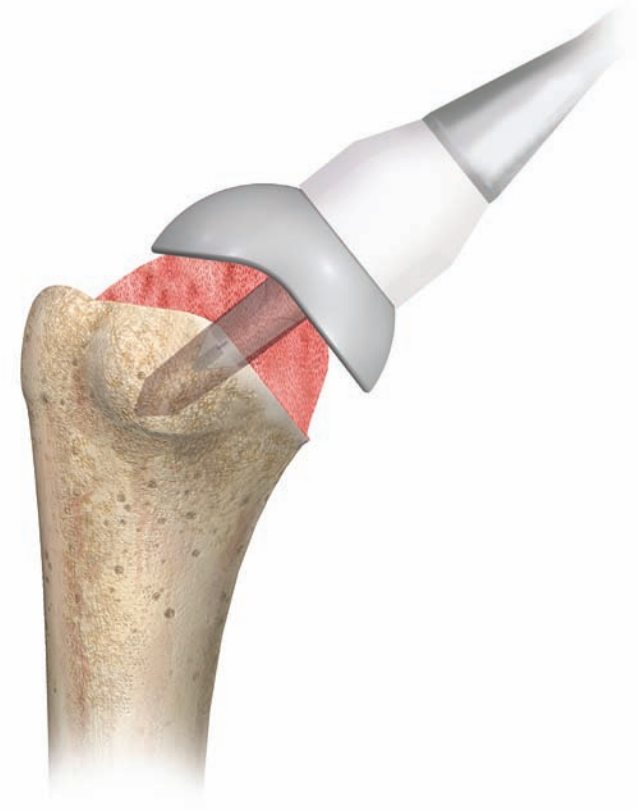


Figure 35

Verify that the implant has been fully seated. There should be no gap from the periphery of the implant and reamed margin of the humerus (Figure 35). Reduce the humerus into the glenoid fossa. After joint reduction, verify that the shoulder has the desired amount of laxity.

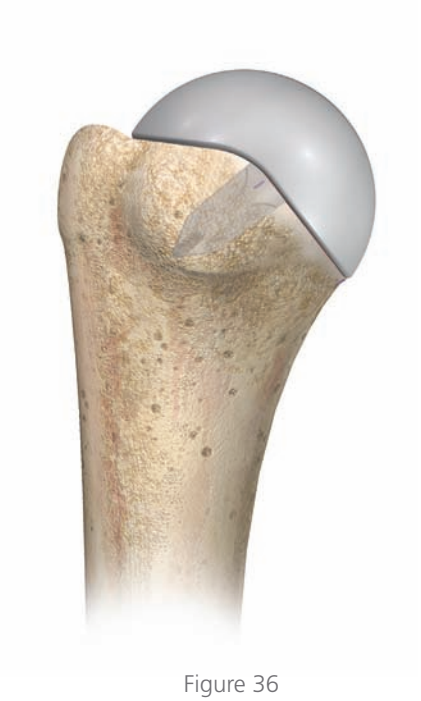


Figure 36

Closure and Aftercare

Repair the subscapularis according to the method of detachment. If the subscapularis was released intratendinously, repair it anatomically, tendon-to tendon.

If it was released from the lesser tuberosity with maximum length, it is most often advanced medially to the implant-bone junction and repaired to bone. On rare occasions, a z-lengthening is performed using the medially based subscapularis tendon and the laterally based anterior capsule.

Following subscapularis closure, passive external rotation with the arm at the side should be at least 30 degrees. Close the deltopectoral interval. In a routine fashion, close the subcutaneous tissue and skin. Radiographs should be taken to verify implant positioning and seating.

Begin pendulum exercises and passive range of motion within 24 hours of surgery. There are no limits to the passive range of motion performed, except that external rotation should not exceed the safe zone of rotation observed at surgery after subscapularis closure. A sling may be used for comfort and protection. An overhead pulley is added at four to six weeks. Passive stretching and strengthening exercises of the rotator cuff, deltoid and scapular muscles should commence at six weeks postoperatively. These exercises are progressed as tolerated over the next three to six months. Complete recovery from surgery occurs at 9-12 months.

Extraction of the Implant

Indications for revision may include infection, glenoid wear, implant loosening or dislocation. Additionally, in rare cases, removal of the implant may be required during revision surgery. Attain exposure as described above. Attach the extractor tool to the implant that is to be removed (Figure 37).

This may require removal of a small amount of bone at the edge of the implant to allow the extraction tool to be attached to the edge of the implant. Extract the implant using a slotted mallet. If the implant is well-fixed, a saw can be used to cut the periphery of the humerus at the bone-implant junction. The implant and the contained humeral bone can then be removed together. The surface of the remaining humerus can then be prepared for conversion to a Global Advantage™ stem (Global Advantage™ Surgical Technique, Cat. No. 0601-69-050).

Note: When removing the Global CAP™ CTA, the jaws of the extraction tool are placed over the implant at the 3 and 9 o'clock position.

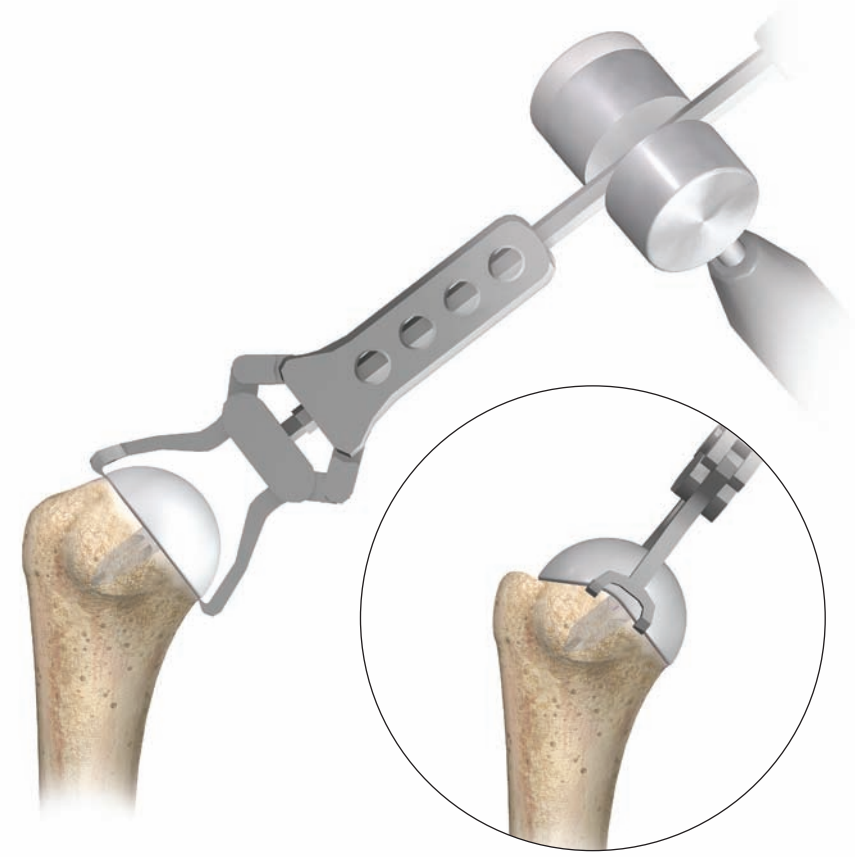


Figure 37

Ordering Information

Global CAP™ Implants - Porocoat® Porous Coated

Order Code	Description
1230-40-000	Global CAP™ Head Porocoat® Porous Coated 40 mm x 15 mm
1230-40-010	Global CAP™ Head Porocoat® Porous Coated 40 mm x 18 mm
1230-44-000	Global CAP™ Head Porocoat® Porous Coated 44 mm x 15 mm
1230-44-010	Global CAP™ Head Porocoat® Porous Coated 44 mm x 18 mm
1230-48-010	Global CAP™ Head Porocoat® Porous Coated 48 mm x 18 mm
1230-48-020	Global CAP™ Head Porocoat® Porous Coated 48 mm x 21 mm
1230-52-010	Global CAP™ Head Porocoat® Porous Coated 52 mm x 18 mm
1230-52-020	Global CAP™ Head Porocoat® Porous Coated 52 mm x 21 mm
1230-56-010	Global CAP™ Head Porocoat® Porous Coated 56 mm x 18 mm
1230-56-020	Global CAP™ Head Porocoat® Porous Coated 56 mm x 21 mm

Global CAP™ CTA Implants - DuoFix™ HA on Porous Coating

Order Code	Description
1235-40-005	Global CAP™ CTA Head DuoFix™ HA 40 mm x 15 mm
1235-40-015	Global CAP™ CTA Head DuoFix™ HA 40 mm x 18 mm
1235-44-005	Global CAP™ CTA Head DuoFix™ HA 44 mm x 15 mm
1235-44-015	Global CAP™ CTA Head DuoFix™ HA 44 mm x 18 mm
1235-48-015	Global CAP™ CTA Head DuoFix™ HA 48 mm x 18 mm
1235-48-025	Global CAP™ CTA Head DuoFix™ HA 48 mm x 21 mm
1235-52-015	Global CAP™ CTA Head DuoFix™ HA 52 mm x 18 mm
1235-52-025	Global CAP™ CTA Head DuoFix™ HA 52 mm x 21 mm
1235-56-015	Global CAP™ CTA Head DuoFix™ HA 56 mm x 18 mm
1235-56-025	Global CAP™ CTA Head DuoFix™ HA 56 mm x 21 mm

Ordering Information

Instrumentation

Order Code	Description
14012-9	Threaded Guide Pin
2001-65-000	Head Impactor
2001-66-000	Impactor Tip
2128-61-017	Glenoid Graspers
2230-40-000	Global CAP™ Humeral Head Trial 40 mm x 15 mm
2230-40-010	Global CAP™ Humeral Head Trial 40 mm x 18 mm
2230-44-000	Global CAP™ Humeral Head Trial 44 mm x 15 mm
2230-44-010	Global CAP™ Humeral Head Trial 44 mm x 18 mm
2230-48-010	Global CAP™ Humeral Head Trial 48 mm x 18 mm
2230-48-020	Global CAP™ Humeral Head Trial 48 mm x 21 mm
2230-52-010	Global CAP™ Humeral Head Trial 52 mm x 18 mm
2230-52-020	Global CAP™ Humeral Head Trial 52 mm x 21 mm
2230-56-010	Global CAP™ Humeral Head Trial 56 mm x 18 mm
2230-56-020	Global CAP™ Humeral Head Trial 56 mm x 21 mm
2230-80-010	Global CAP™ Humeral Head Sizer / Drill Guide 40 mm
2230-80-020	Global CAP™ Humeral Head Sizer / Drill Guide 44 mm
2230-80-030	Global CAP™ Humeral Head Sizer / Drill Guide 48 mm
2230-80-040	Global CAP™ Humeral Head Sizer / Drill Guide 52 mm
2230-80-050	Global CAP™ Humeral Head Sizer / Drill Guide 56 mm
2230-80-060	Global CAP™ Humeral Head Sizer / Drill Guide Handle
2230-81-010	Global CAP™ Humeral Head Shaper 40 mm x 15 mm
2230-81-020	Global CAP™ Humeral Head Shaper 40 mm x 18 mm
2230-81-030	Global CAP™ Humeral Head Shaper 44 mm x 15 mm
2230-81-040	Global CAP™ Humeral Head Shaper 44 mm x 18 mm
2230-81-050	Global CAP™ Humeral Head Shaper 48 mm x 18 mm
2230-81-060	Global CAP™ Humeral Head Shaper 48 mm x 21 mm
2230-81-070	Global CAP™ Humeral Head Shaper 52 mm x 18 mm
2230-81-080	Global CAP™ Humeral Head Shaper 52 mm x 21 mm
2230-81-090	Global CAP™ Humeral Head Shaper 56 mm x 18 mm
2230-81-100	Global CAP™ Humeral Head Shaper 56 mm x 21 mm
2230-81-110	Global CAP™ Humeral Head Shaper Handle
2230-81-120	Global CAP™ Humeral Head Shaper Inserter
2230-82-000	Global CAP™ Implant Stem Punch
2230-83-000	Head Extractor
2230-84-000	Global CAP™ Template
2230-84-010	Humeral Head Gauge 40 mm, 56 mm
2230-84-020	Humeral Head Gauge 44 mm, 48 mm, 52 mm
2230-90-000	Global CAP™ Instrument Case
2421-22-000	Slotted Mallet*

*This code has been removed from the set definition and should be sourced by the hospital

Ordering Information

Global CAP™ CTA Implants and Instruments

Order Code	Description
2235-40-005	Global CAP™ CTA Head Trial 40 mm x 15 mm
2235-40-015	Global CAP™ CTA Head Trial 40 mm x 18 mm
2235-44-005	Global CAP™ CTA Head Trial 44 mm x 15 mm
2235-44-015	Global CAP™ CTA Head Trial 44 mm x 18 mm
2235-48-015	Global CAP™ CTA Head Trial 48 mm x 18 mm
2235-48-025	Global CAP™ CTA Head Trial 48 mm x 21 mm
2235-52-015	Global CAP™ CTA Head Trial 52 mm x 18 mm
2235-52-025	Global CAP™ CTA Head Trial 52 mm x 21 mm
2235-56-015	Global CAP™ CTA Head Trial 56 mm x 18 mm
2235-56-025	Global CAP™ CTA Head Trial 56 mm x 21 mm
2235-40-110	Global CAP™ CTA Cutting Block Size 40 mm
2235-44-110	Global CAP™ CTA Cutting Block Size 44 mm
2235-48-110	Global CAP™ CTA Cutting Block Size 48 mm
2235-52-110	Global CAP™ CTA Cutting Block Size 52 mm
2235-56-110	Global CAP™ CTA Cutting Block Size 56 mm
2235-90-005	Global CAP™ CTA Pin 2.4 mm x 42 mm
2235-97-001	Global CAP™ CTA 152 mm Threaded Pin
2235-99-001	Global CAP™ CTA Instrument Tray
2490-91-000	Pin Extractor 3 mm
2235-99-005	Global CAP™ CTA X-Ray Template
2235-99-999	Global CAP™ CTA DNI

Disposables

2235-00-120	Global CAP™ CTA Sawblade - Linvatec
2235-01-120	Global CAP™ CTA Sawblade - Stryker
2235-02-120	Global CAP™ CTA Sawblade - Desoutter

Notes

Notes

References:

1. Iannotti JP, Gabriel JP, Schneck SL, Evans BG and Misra S. The normal glenohumeral relationships. An anatomical study of one hundred and forty shoulders. *Journal of Bone and Joint Surgery* April 1992: pp. 491-500.
2. Visotsky JL, Basamania C, Seebauer L, Rockwood CA and Jensen KL. Cuff Tear Arthropathy: Pathogenesis, Classification, and Algorithm for Treatment. *J Bone Joint Surg Am.* 2004;86: pp. 35-40.

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