INTEGRATED™
SHOULDER SYSTEM

BIOMET INC

HUMERAL STEMS

- Ream and trial surgical technique
- Cobalt chrome (with proximal porous coating available)
- Fixed head (Neer II™ and K-II-C) and modular options (Mod-II-C, Mod II Plus-C, Atlas,® and Atlas®-C)
- Standard Morse taper
- Tapered geometry
- Anterior, posterior and lateral (with suture holes) fins
- 50˚ neck resection angle
- One set of instruments for all stem options
- 25 years of excellent clinical results[1]

MODULAR HEADS

- Cobalt chrome alloy
- Seven head heights: 15, 17, 20, 22, 24, 28, and 32mm

GLENOIDS

- All-poly keeled and pegged and porous screw fixed option
- Direct compression molded ArCom® polyethylene
- Sizes: standard, small, and x-small (pegged; small and standard only)
- Conforming geometry (radius of curvature of the glenoid and head are equal)
- Any head can be used with any glenoid

FRACTURE PROXIMAL COMPONENT

- Useful in two- and three-part fracture cases
- Through-holes for screw fixation
- Suture holes

This is a fracture extension for the distal stems of the Atlas® total shoulder. The surgical technique is an open reduction internal fixation (ORIF). The unique feature is its modularity and interchangeability from a fracture extension to a hemi-replacement.

It has a proximal body with holes for screw placement in multiple directions along with suture holes. It is a cobalt chrome material with 9.5, 11.1, and 12.7mm diameters.

[1]On file at Biomet, Inc.

Neer II™ was designed in conjunction with Charles S. Neer II, M.D.

Modular II-C and Atlas® were developed in conjunction with Edward V. Craig, M.D., and Richard F. Kyle, M.D.

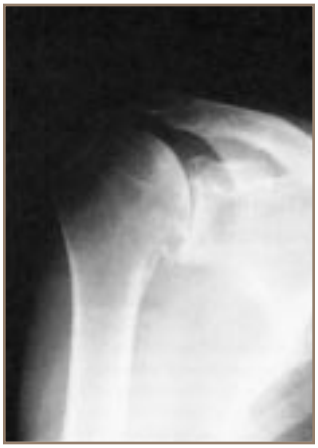
INTERCHANGEABLE COMPONENTS WITH ONE UNIFIED SET OF INSTRUMENTS

INTEGRATED™ SHOULDER SYSTEM

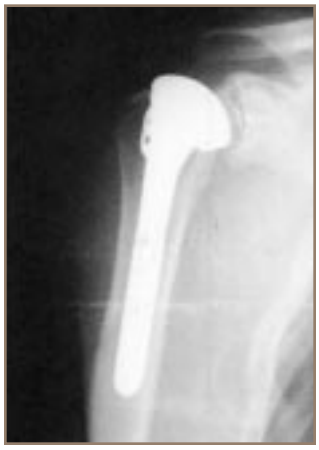
This summary represents the surgical technique of Edward V. Craig, M.D. Biomet, Inc., as the manufacturer of this device, does not practice medicine and does not recommend any particular surgical technique for use on a specific patient. The surgeon who performs any implant procedure is responsible for determining and utilizing the appropriate techniques for implanting the prosthesis in each individual patient. Biomet is not responsible for selection of the appropriate surgical technique to be utilized on an individual patient.

CASE HISTORY

The patient is a right-handed 57-year-old male. On examination, he had hard grating and crepitus on range of motion of the shoulder, and mildly restricted forward elevation, external rotation and internal rotation. He had quite good strength testing of internal and external rotation.



This AP radiograph shows changes typical of primary osteoarthritis of the shoulder, with sclerosis in the area of the glenoid and humeral head, as well as a characteristic inferior osteophyte, which is, in fact, circumferential.



The patient underwent a total shoulder replacement with a Modular-II-C humeral prosthesis and a standard all-polyethylene glenoid component. The post-operative radiograph is shown. He began early postoperative rehabilitation and, when seen four months postoperatively, had no pain. Normal active and passive range of motion was achieved, and the patient was satisfied with the early results.

PATIENT POSITIONING

The patient should be in a semi-sitting or beach-chair position of about 30 degrees, close to the table edge to permit hyperextension of the arm when the humeral component is inserted. An arm board is secured to the operating table that can easily be moved into or out of the operating field, as support of the arm will permit more effective posterior retraction of the humerus, aiding exposure and insertion of the glenoid (Figure 1).

Place a towel under the medial border of the body of the scapula to stabilize it and ease exposure of the glenoid. Then secure the rest of the torso.

SURGICAL APPROACH

The surgical approach for shoulder arthroplasty is through a long deltopectoral incision. Begin the skin incision at the clavicle, between the coracoid process and the acromioclavicular joint, and extend distally to the lateral insertion of the deltoid muscle (about 17cm) (Figure 2).

Place retractors and obtain hemostasis. Incise the fascia over the deltoid and pectoralis. Develop the plane between the subcutaneous tissue and deltoid laterally and the pectoralis medially. The deltopectoral interval is found by identifying the "fat" over the cephalic vein in the infraclavicular triangle. If the cephalic vein is not identified or is absent, the coracoid process may provide proximal identification of the deltopectoral interval, while the tendon of the pectoralis can be used as a guide to the deltopectoral interval distally.

Incise the clavipectoral fascia superiorly until the coracoacromial ligament is identified. Then bluntly free the subscapularis from the coracoid muscles, which should remain attached to the coracoid process to protect the brachial plexus and the musculocutaneous nerve from injury by retraction. Cauterize the acromial branch of the thoracoacromial artery and, under most circumstances, divide the coracoacromial ligament. Free the subacromial bursa from any tissue to which it is adhering before excision, such as the undersurface of the acromion. This is more accessible if an assistant places slight traction on the operated arm. Place a blunt retractor, instrument, or finger between the rotator cuff and bursa so the bursa can be well defined before its removal.

INTEGRATED™ SHOULDER SYSTEM

Figure 1

Figure 2

ARTHROTOMY AND HUMERAL HEAD DISLOCATION

Assess the integrity of the rotator cuff. Abduction and external rotation enables the subscapularis to be identified and its thickness and integrity assessed. Hyperextension and internal rotation will bring the supraspinatus, infraspinatus, and teres minor tendons into the operative field.

Divide the subscapularis 1.5cm from its insertion on the lesser tuberosity, a structure identified, as it lies adjacent to the bicipital groove. Divide the subscapularis in its entirety, placing a curved clamp under the substance of the subscapularis to help with identification of the most superior and inferior margins during division.

Place several nonabsorbable sutures in the subscapularis for ease of identification, reattachment, and for retraction.

Dislocate the humeral head by gently extending and externally rotating the arm and placing a blunt elevator between the humeral head and the glenoid. Take care with osteopenic bone, as in rheumatoid arthritis, because the shaft can be fractured during dislocation of the head. The humeral head is then ready for osteotomy.

OSTEOTOMY AND PREPARATION OF THE HUMERUS

Before osteotomy of the humeral head, assess the osteophytes, particularly inferiorly, which are common with osteoarthritis. These can mislead the surgeon into excessive removal of the neck of the humerus, which can jeopardize the axillary nerve. To remove osteophytes, position flat retractors between the humeral head and superior rotator cuff. Remove the osteophytes with an osteotome or rongeur. This will better define the normal anatomy of the humeral head.

The humeral head is usually in 30–40 degrees of retroversion in relation to the shaft of the humerus. In addition, it is ordinarily at an angle of approximately 45–50 degrees to the shaft of the humerus. An attempt should be made to recreate the similar position of the humeral head, including retroversion (Figure 3).

The humeral head osteotomy may either be done free hand, or with the use of an intramedullary resection guide.

INTRAMEDULLARY RESECTION GUIDE

The resection guide is attached to one of the humeral canal reamers. To begin, use a quarter inch drill and drill through the head and into the medullary canal of the humerus. Sequential ratchet T-handled reamers are inserted and the humeral canal reamed (Figure 4). When there is no toggle in the intramedullary T-handled reamer, attach the humeral head resection guide and cutting block. The block can be adjusted upward or downward, and this will determine the amount of humeral head to resect. Since care must be taken not to cut into the rotator cuff or the greater tuberosity, a tissue probe may be slid through the superior slot of the cutting block (Figure 5). The cutting block may then be slid toward the humerus. The retroversion alignment rod determines the amount of retroversion of the humeral cut. The usual position of the humeral head resection will be between 30–40 degrees of retroversion. Determine this by inserting the rod into the appropriate hole (either 30 or 40) and aligning the version rod exactly parallel to the forearm (Figure 6).

When the amount of bone resection has been decided, the block is fixed in place with at least two 1/8 inch drill bits. Once the cutting block is secured in place, the guide should be detached from the block, and the intramedullary reamer removed. The osteotomy is then performed using an oscillating saw through the slot of the cutting block. Once the osteotomy has been made, the cutting block may be removed and, if necessary, the osteotomy completed (Figure 7).

FREE-HAND OSTEOTOMY

Hold the neck resection template against the humerus to gauge the appropriate amount of retroversion and flex the elbow to 90 degrees and use the forearm as one limb of the goniometer. Since the usual angle of cut is between 30–40 degrees of retroversion and approximately 50 degrees to the longitudinal axis of the humerus, the angle for osteotomy may be marked with an electrocautery and the osteotomy done with an osteotome or oscillating saw. Care must be taken that the cut is not directed too inferiorly or posteriorly, as cutting of the rotator cuff insertion or detachment of the greater tuberosity may occur.

Sequential ratchet T-Handled reamers are inserted and the humeral canal reamed. The reamers are marked for increasing sizes of humeral canal diameter and are designed to protect the soft tissue from maceration during shaft preparation. The depth of penetration in the humeral canal is marked on the reamers so the proper total humeral length implant can be determined.

INTEGRATED™
SHOULDER SYSTEM

Figure 3

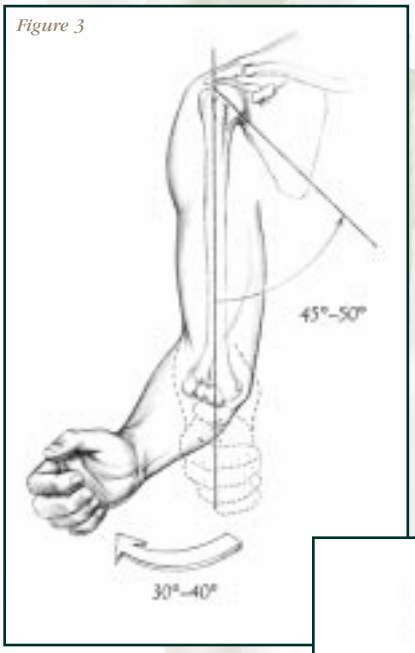


Figure 4

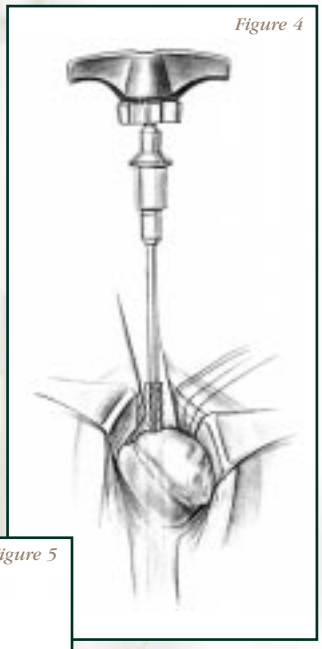


Figure 5

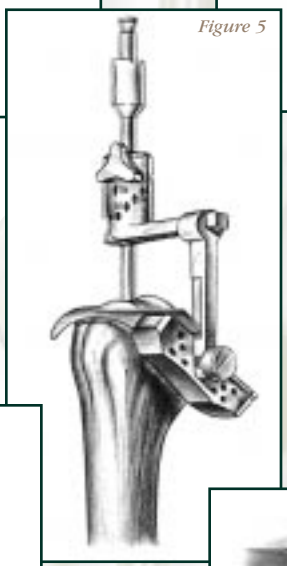


Figure 6

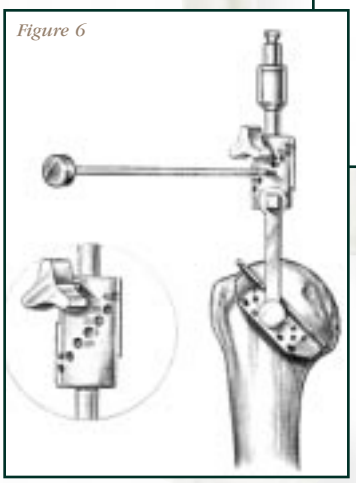
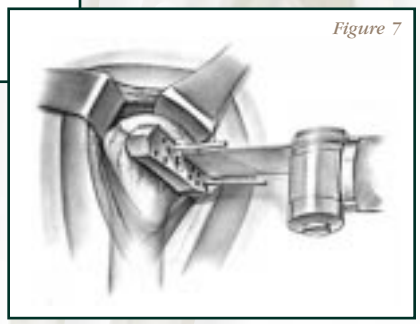


Figure 7



TRIALING THE HUMERAL COMPONENT

Once the humeral canal has been appropriately sized with sequential reaming, it is ready for insertion of the trial prosthesis. The humeral trial inserter/extractor is marked with various degrees of retroversion so that during the entire process of humeral sizing the precise degree of retroversion that has been chosen can be maintained.

The trial prosthesis is connected to the inserter/extractor and inserted into the humeral canal. While inserting the humeral trial stem, the amount of retroversion can be precisely maintained using the retroversion rod (Figure 8). During insertion, keep the arm hyperextended off the side of the table and protect the biceps tendon and supraspinatus with retractors. If the humeral prosthesis is correctly oriented in the appropriate amount of retroversion, the articular surface of the implant should face directly toward the glenoid with the arm in neutral rotation.

With either the fixed head Neer II™ prosthesis or any of the modular options, the depth of the stem implantation should permit the humeral head to extend slightly above the most superior portion of the greater tuberosity.

HUMERAL HEAD SELECTION

Selection of the appropriate humeral head is critical. The correct head size is determined from the osteotomized humeral head, as well as from critical assessment of whether the rotator cuff around the implant can be repaired. With the modular design, several humeral head sizes may be tried. The largest humeral head that will permit closure of the rotator cuff around the implant should be used (Figure 9).

A trial reduction of the humeral head will enable the surgeon to assess the tension of the rotator cuff. This helps determine whether a larger or smaller humeral head size should be chosen.

GLENOID PREPARATION

After the trial humeral prosthesis has been removed, use the arm board for support during joint inspection and glenoid preparation. Carefully retract the osteotomized humeral head with the attached rotator cuff posteriorly; placing a ring retractor behind the posterior glenoid facilitates this.

To facilitate accurate placement of the keel slot, the slotted glenoid-marking template is placed on the arthritic glenoid (Figure 10) and a central hole is drilled in the center of the glenoid. With the template outlining the area for the slot, the slot is marked with either a burr or a cautery.

The glenoid-contouring device is used to precisely reproduce the same posterior contour as that of any Integrated Shoulder System glenoid component selected, whether it is the polyethylene or screw fixed design. The glenoid subchondral bone must be reamed very carefully, avoiding removal of too much bone. Care must be taken that the glenoid is contoured perpendicular to the cancellous neck. This will even any asymmetric wears that may have occurred as a result of the arthritic process (Figure 11).

GLENOID TRIALING

When the keel slot has been prepared and proper orientation of the glenoid neck has been found, undermine the slot superiorly into cancellous portion of the base of the coracoid and inferiorly into the inferior glenoid neck. Before final glenoid insertion, the slot should correspond exactly to the size of the keel. A broach corresponding to the correct size keel is inserted into the slot to better size the glenoid. Drill several holes in the subchondral bone for better anchoring of the bone cement, and place a trial glenoid in the slot (Figure 12). The exposed face of the glenoid should be contoured so that the prosthesis seats securely, both on the anterior and posterior surface (Figure 13).

GLENOID IMPLANTATION

Irrigate the wound and meticulously dry the slot. Use a syringe to ensure penetration of cement into the depths of the prepared glenoid. Insert the glenoid component (all polyethylene) by hand and hold it until the cement hardens. Remove excess cement from around the component (Figure 14).

The Integrated Shoulder System also includes a screw fixed plasma-sprayed glenoid. The only difference in glenoid preparation from the standard all polyethylene glenoid is in preparation for placement of the 4.5mm screws to provide additional component fixation.

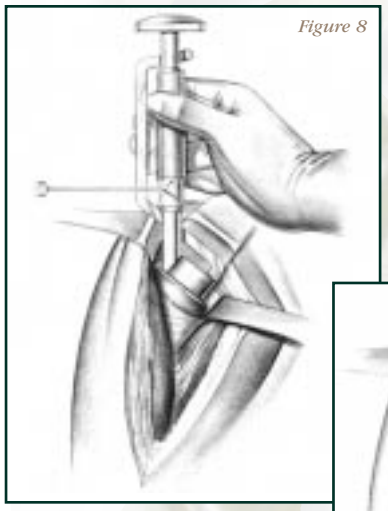


Figure 8

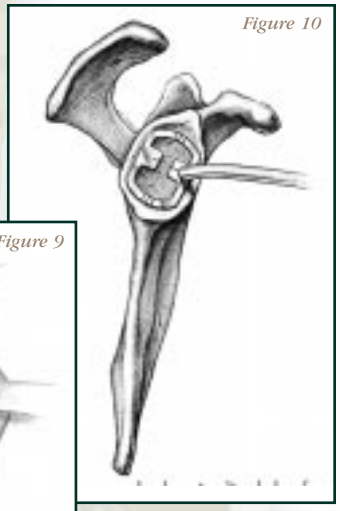


Figure 10


Figure 9

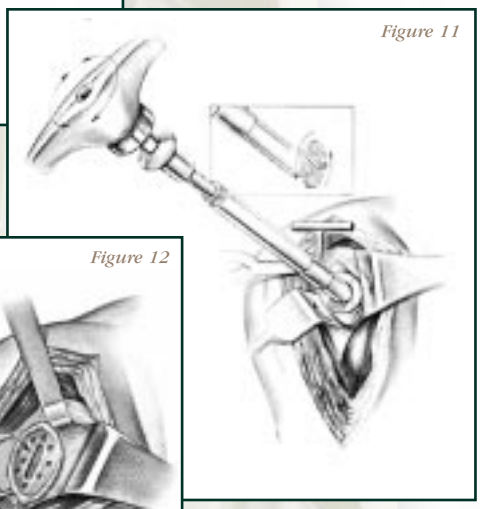


Figure 11

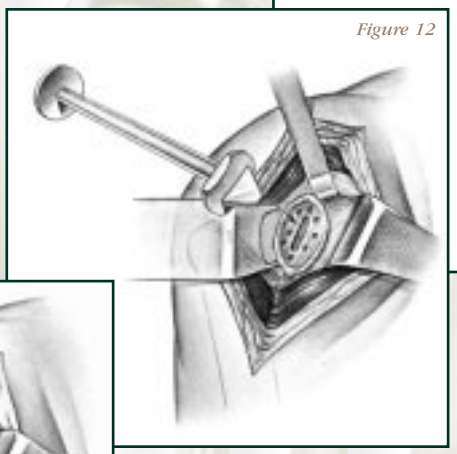


Figure 12

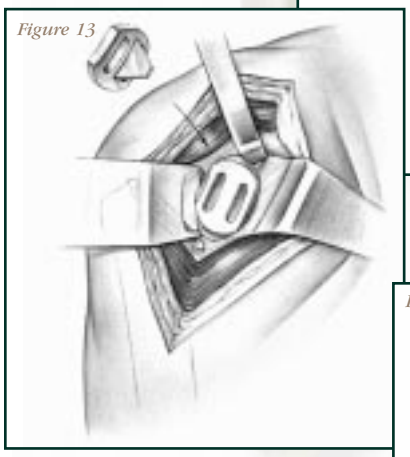


Figure 13

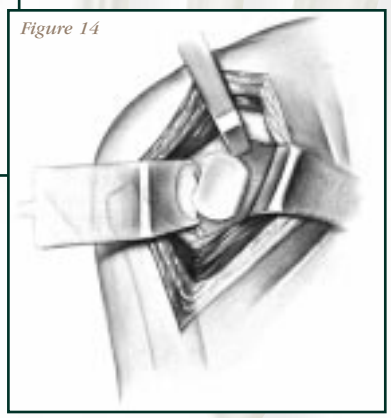


Figure 14

SIZING THE PEGGED GLENOID

Select the pegged glenoid drill guide that corresponds in size to both the glenoid template guide and the surface rasp as explained earlier. The drill guides are modular and correspond to the right or left shoulder respectfully.

The correct size pegged glenoid drill guide is placed against the glenoid fossa (with the 2 drill holes in the inferior direction and the single drill hole in the superior direction). The medial side of the drill guide has a peg that is to be placed into the hole used for reaming. Take the 1/4 inch stop drill assembled to the flexible drill shaft or the 1/4 inch straight drill to drill the superior hole (Figure 15). The drill is to be inserted into the drill guide until the base of the drill bit touches the drill guide. The drill bit is designed to provide a uniform 1mm cement mantle around the peg of the glenoid component including the distal tip of the peg. Therefore, insertion depth is critical.

It is important to note that the drill guides and pegs are size specific and cannot be interchanged after drilling the holes. The peg profile changes as the components increase in size. For instance, after drilling peg holes with the small pegged glenoid drill guide, it is not possible to implant a standard pegged glenoid component.

INSERTING THE ANTI-ROTATION PEG

After drilling the superior hole, an optional anti-rotation peg can be placed within the superior hole to prevent rotation of the pegged glenoid drill guide during drilling of the two inferior peg holes (Figure 16). The other option may be to leave the stop drill bit in the superior drill hole and utilize a second stop drill bit to drill the two inferior holes.

DRILLING INFERIOR PEG HOLES

Drilling of the two inferior holes is then completed. Remember the drill bit is inserted until the base touches the drill guide. It is designed to provide a 1mm cement mantle.

TRIALING

The drill template is removed. Pegged glenoid trial components can then be utilized to ensure proper peg location, component sizing, determination of range of motion, and proper joint alignment after humeral preparation.

IMPLANTING THE COMPONENT

Prior to cementing the pegged glenoid into place, a high speed irrigation lavage system should be utilized to cleanse the prepared glenoid surface. Pack bone cement into the three prepared peg holes using finger pressure. The component is now introduced into the bone cement with finger pressure. All excess cement is then carefully removed (Figure 17).

HUMERAL COMPONENT INSERTION

Before inserting the humeral component, make a final check to ensure that the soft tissue is completely mobilized, especially if the rotator cuff has been torn and retracted.

The retroversion can still be maintained by placing the retroversion rod in holes of the implant inserter and referencing off the forearm. The fins of the humeral implant should line up with the previous cut fins from the trial prosthesis (Figure 18). The humeral component should face directly toward the glenoid with the arm in neutral rotation. The top of the humeral head should be superior to the top of the greater tuberosity to prevent impingement. The fin of the prosthesis should be lateral to the bicipital groove (Figure 19).

Check the height of the head to ensure that soft tissue closure can be performed (Figure 20).

Figure 15

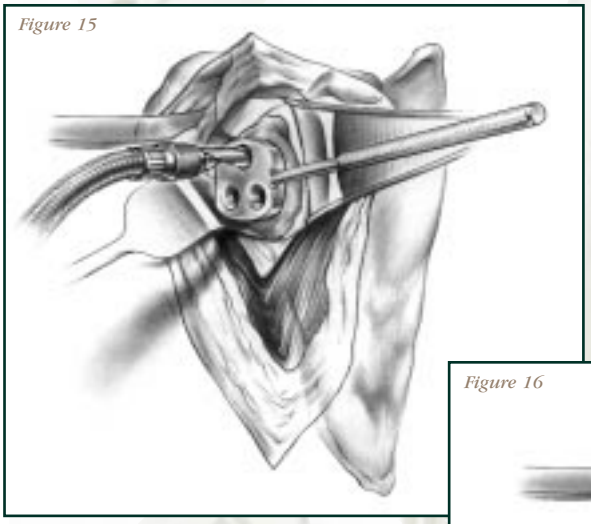


Figure 16

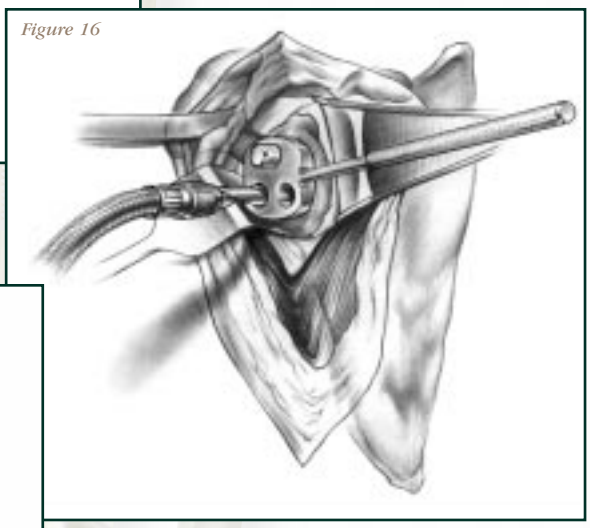


Figure 17

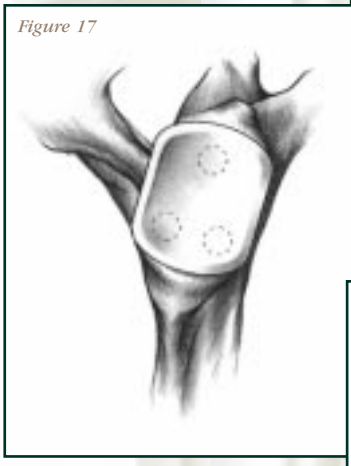


Figure 18

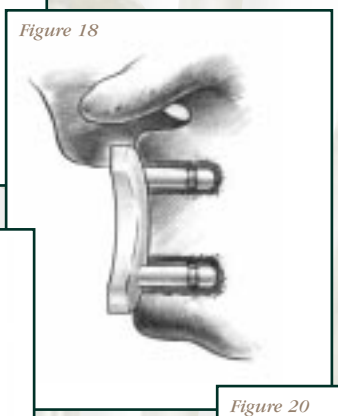
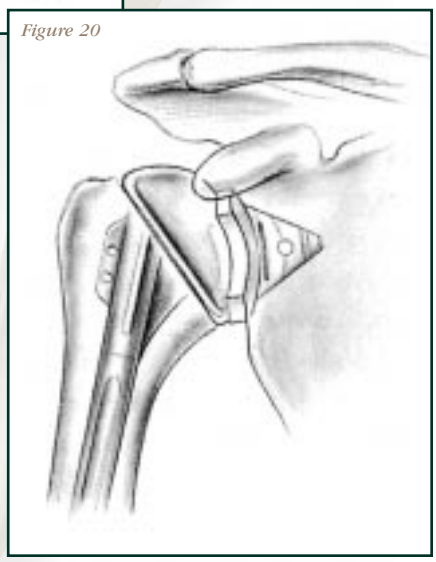


Figure 19

Figure 20



REHABILITATION

Success of total shoulder replacement is ultimately related to postoperative rehabilitation. The unique character of the shoulder—where stability and function are so dependent on surrounding soft tissue—makes it essential that the postoperative focus be on the soft tissues and, in particular, on the rotator cuff.

The chance of a successful outcome following total shoulder replacement is maximized before arthroplasty by patient selection. A patient who is unable or unwilling to undergo vigorous postoperative rehabilitation is probably not a suitable candidate for total shoulder replacement.

In the first phase after surgery, range of motion is established by a series of exercises aimed at restoring forward elevation in the plane of the scapula, external rotation, and internal rotation. A typical rehabilitation program is performed five times daily for 15 to 20 minutes each session. The patient begins with a brief warm-up of Codman gravity-assisted exercise, bending at the waist and making circles with the operated arm (Figures 21 & 22). This is followed by assistive forward elevation, standing and using an overhead pulley, with the unoperated arm acting to raise and lower the operated arm (Figure 23). External rotation is performed with the patient supine, the arm at the side and the elbow flexed to 90°, with the arm pushed into external rotation by a stick or cane (Figure 24). Internal rotation is initiated by stretching both arms into extension and cephalad toward the scapula (Figure 25).

Rehabilitation following total shoulder replacement continues for at least one year, with more resistive exercises added as strength improves. This may be done with weights or their equivalent.

Following is a typical rehabilitation program for a patient with osteoarthritis, in which the deltoid and rotator cuff are normal and the only muscle detached and repaired is the subscapularis:

1: **Day of Surgery**
   Passive flexion and extension of the elbow and passive motion begun by physical therapist or passive motion machine, concentrating on forward elevation and external rotation.

2: **Postoperative Day 1**
   Passive forward elevation and external rotation continued.

3: **Postoperative Day 2**
   Patient-assisted range of motion with Codman pendulum exercises, forward elevation using pulley, and supine external rotation with cane.

4: **Postoperative Day 3**
   Assisted extension begun.

5: **Days 10–14**
   Isometric external rotation and deltoid exercise begun (Figure 26).

6: **Postoperative Week 4**
   Resistive exercises for anterior and middle deltoid. Supraspinatus, infraspinatus, and teres minor begun.

7: **Postoperative Week 6**
   Active internal rotation begun; initially isometric, followed by added resistance (Figure 27).

8: **Postoperative 3 Months**
   Late stretching for forward elevation, external rotation, internal rotation, and further resistive exercises (Figures 28 & 29).

Figure 21

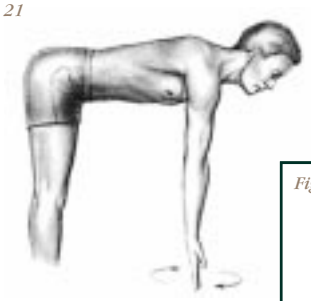


Figure 22

Figure 23

Figure 24

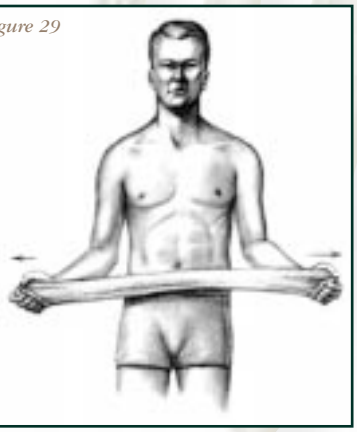
Figure 25

Figure 26

Figure 27

Figure 28

Figure 29



In a patient with severe soft-tissue deficit, such as cuff tear arthropathy or some rheumatoid arthritis, the program might be modified as follows:

1: **Day of Surgery**
Elbow passive range of motion.

2: **Postoperative Day 1**
Continue elbow, wrist, and hand range of motion.

3: **Postoperative Day 5**
Gentle therapist-initiated passive forward elevation, external rotation begun. A family member may be instructed in passive range-of-motion techniques before hospital discharge, so this protected rehabilitation can be continued at home. Occasionally, the soft tissue may need to be rehabilitated from a brace postoperative.

4: **Postoperative Week 4**
Transition to patient-initiated assistive forward elevation with a pulley, supine external rotation with a cane, and internal rotation.

5: **Postoperative Week 6**
Isometric deltoid, external, and internal rotation strengthening.

6: **Postoperative Week 12**
Resistive external exercises added.

Atlas® Modular Stem Extensions		
Implant Part No.	Provisional Part No.	Diameter/Length
460007075	T460007075	7.9mm,9.5mm x 75
460009125	T460009125	9.5mm x 125
460009150	T460009150	9.5mm x 150
460109175	T460009175	9.5mm x 175
460109200	T460009200	9.5mm x 200
460011125	T460011125	11.1mm x 125
460011150	T460011150	11.1mm x 150
460111175	T460011175	11.1mm x 175
460111200	T460011200	11.1mm x 200
460012125	T460012125	12.7mm x 125
460012150	T460012150	12.7mm x 150
460112175	T460012175	12.7mm x 175
460112200	T460012200	12.7mm x 200
460014125	T460014125	14.3mm x 125
460014150	T460014150	14.3mm x 150
460114175	T460014175	14.3mm x 175
460015125	T460015125	15.9mm x 125
460015150	T460015150	15.9mm x 150

Atlas® Modular Stem Extensions with Distal Holes		
Implant Part No.	Provisional Part No.	Diameter/Length
460009175	T460009175	9.5mm x 175
460009200	T460009200	9.5mm x 200
460011175	T460011175	11.1mm x 175
460011200	T460011200	11.1mm x 200
460012175	T460012175	12.7mm x 175
460012200	T460012200	12.7mm x 200
460014175	T460014175	14.3mm x 175

Atlas® Modular Proximal Humerals Non-Porous		
Implant Part No.	Provisional Part No.	Diameter
470900000	T460900000	9.5mm
471100000	T461100000	11.1mm
471200000	T461200000	12.7mm
471400000	T461400000	14.3mm
471500000	T461500000	15.9mm

Atlas®-C Modular Proximal Humerals Porous		
Implant Part No.	Provisional Part No.	Diameter
460900000	T460900000	9.5mm
461100000	T461100000	11.1mm
461200000	T461200000	12.7mm
461400000	T461400000	14.3mm
461500000	T461500000	15.9mm

ORDERING INFORMATION

Neer II™ Humerals			
Implant Part No.	Provisional Part No.	Stem Diameter/Length	Head Height
10801	20801	6.3mm/125mm	22mm
10802	20802	9.5mm/150mm	22mm
10803	20803	12.7mm/150mm	22mm
10804	20804	6.3mm/125mm	15mm
10805	20805	9.5mm/125mm	15mm
10806	20806	12.7mm/125mm	15mm
10807	20807	6.3mm/63mm	15mm
10831	20831†	6.3mm/125mm	12.5mm
10832	20832†	9.5mm/63mm	22mm
10833	20805†	9.5mm/252mm	15mm
10834	20802	9.5mm/252mm	22mm
10835	20806	12.7mm/252mm	15mm
10836	20803	12.7mm/252mm	22mm

Kirschner II-C™ Humerals (Porous)			
Implant Part No.	Provisional Part No.	Stem Diameter/Length	Head Height
432263125	20801	6.3mm/125mm	22mm
432295150	20802	9.5mm/150mm	22mm
432212150	20803	12.7mm/150mm	22mm
431563125	20804	6.3mm/125mm	15mm
431595125	20805	9.5mm/125mm	15mm
431512125	20806	12.7mm/125mm	15mm

Modular II-C™ Stems (Porous)		
Implant Part No.	Provisional Part No.	Diameter/Length
480106125	T450106125	6.3mm/125mm
480207125	T450207125	7.9mm/125mm
480309125	T450309125	9.5mm/125mm
480411125	T450411125	11.1mm/125mm
480512125	T450512125	12.7mm/125mm
480614125	T450614125	14.3mm/125mm
480715125	T450715125	15.9mm/125mm

Modular Humeral Heads*		
Implant Part No.	Provisional Part No.	Height/Diameter
450115038	T450115038	15mm/38mm
450217041	T450217041	17mm/41mm
450320043	T450320043	20mm/43mm
450422045	T450422045	22mm/45mm
450524047	T450524047	24mm/47mm
450628049	T450628049	28mm/49mm
450732051	T450732051	32mm/51mm

Modular II Plus-C Stems (Porous)	
Implant Part No.	Diameter/Length
490106125	6.3mm/125mm
490207125	7.9mm/125mm
490309125	9.5mm/125mm
490411125	11.1mm/125mm
490512125	12.7mm/125mm
490614125	14.3mm/125mm
490715125	15.9mm/125mm

ISS Fracture Proximal	
Implant Part No.	Height/Diameter
490009038	9.5mm x +38mm
490011038	11.1mm x +38mm
490012038	12.7mm x +38mm

†Included in modular instrument trays
*For use with Atlas® and Modular II-C Stems

ORDERING INFORMATION

HUMERAL INSTRUMENTATION*

Humeral Resection Guide
994501100

Cutting Block for Humeral Resection Guide
994500102

Tissue Probe for Humeral Resection Guide
994500111

1/4" Twist Drill
3510711

Twist Drill, 1/8" x 2.5" (Set of 2)
990402032

Twist Drill, 1/8" x 4" (Set of 2)
990404032

Ratchet T-Handle, Hudson Adapter
994500600

Humeral Reamers

994501063	6.3mm
994502079	7.9mm
994503095	9.5mm
994504111	11.1mm
994505127	12.7mm
994506143	14.3mm
994507159	15.9mm

Neck Resection Template
994500120

Fin Marking Guide
994500800

Trial Stem Inserter/Extractor with Retroversion Guide
994500220

Modular Stem Impactor with Retroversion Guide
994500410

Modular Stem Assembly Wrench
994500900

Humeral Impactor
990401000

Head Disassembly Wedge
994500300

Twist Drill, 3.0mm x 5" (Set of 2)
3510611

Drill Guide
994500650

Depth Gauge
3590300

Bone Tap
994500550

2.5mm Straight Hex Driver (For 3.5mm or 4.5mm Screws)
990055073

Ratcheting Screwdriver Handle (Use with Hex Drivers)
990054075

Norris Humeral Extractor Hook
994500500

Slide Hammer for Extractor Hook
DI03

Humeral Instrument Case I
990030500

Humeral Instrument Case II (Atlas® Trials—Proximals and Distals)
990040500

ISS Inserter Adapter
994500411

ISS Fracture Proximal Target Arm
990099000

*Instrument cases also include implant trials

INTEGRATED™ SHOULDER SYSTEM

MODULAR HEADS AND GLENOIDS

Glenoids		
Implant Part No.	**Provisional Part No.**	**Description**
10810	**20810**	Standard, Polyethylene
441000022	**T441000022**	Small, Polyethylene
10811	**20811**	Extra-Small, Polyethylene
441010010	**T441010010**	Modular, Standard, Plasma Sprayed
441000010		Polyethylene Insert for 441010010
441020020	**T441020020**	Pegged, Small
441020030	**T441020030**	Pegged, Standard

4.0mm CoCr Cortical Bone Screws*	
Part No.	**Length**
2600144	14mm
2600164	16mm
2600184	18mm
2600204	20mm
2600224	22mm
2600244	24mm
2600264	26mm
2600284	28mm
2600304	30mm
2600324	32mm
2600344	34mm
2600364	36mm
2600384	38mm
2600404	40mm

Titanium Cancellous Bone Screws 4.5mm Self-Tapping**	
Part No.	**Length**
7500125B	12mm
7500155B	15mm
7500205B	20mm
7500255B	25mm
7500305B	30mm
7500355B	35mm
7500405B	40mm
7500455B	45mm
7500505B	50mm

* Used for Atlas® Fracture Proximal and Atlas® Distal extensions with cross holes
**Used with modular glenoid

ORDERING INFORMATION

GLENOID INSTRUMENTATION

Glenoid Contouring Device with Peg
994502700

Angled Driver for Glenoid Contouring Device with Peg
994500700

Angled Driver Handle
994503700

Straight Glenoid Contouring Device with Keel and Peg
994500710 Standard
994500720 X-Small

Fukuda Ring Retractor
30850 Small
30860 Large

Ring Retractor with Angled Tip, Small
994500850

Glenoid Marking Template/Drill Guide
990417010

Glenoid Broach for 10810
30810

Glenoid Broach for 441010010
990416000

Glenoid Polyethylene Impactor
990416012

Flexible Drill Shaft, Long (Use with Modular Drill Bit)
990500021

Modular Drill Bit, 2.7mm x 45mm (Use with Flexible Drill Shaft)
990527020

2.7mm Straight Drill
990053010

Universal Hex Driver (For 3.5mm or 4.5mm Screws)
990055074

Screw Holding Forceps
990055035

Glenoid Instrument Case
990030600

PEGGED GLENOID ADDITIONAL INSTRUMENTATION

Pegged Glenoid Drill Guides
994520721 Left, Small
994520722 Right, Small
994520723 Left, Standard
994520724 Right, Standard
994520725 Handle

Straight Pegged Glenoid Drill 1/4"
994520700

Pegged Glenoid Trials
T441020020 Small
T441020030 STD

Anti-Rotation Peg
406631

Stop Drill Bit 1/4"
406630

INTEGRATED™ SHOULDER SYSTEM

The Kirschner II-C, Modular II-C, Atlas® Modular and Atlas-C Modular are marketed in the U.S. for use with bone cement.

Modular Atlas® stem extensions with distal cross screw holes are marketed in the U.S. for use with the fracture proximal component only.

The screws in this system are not approved for screw attachment or fixation to the posterior elements (pedicles) of the cervicle, thoracic or lumbar spine.

INTEGRATED™
SHOULDER SYSTEM TECHNIQUE

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