

Policy #: 161

**Original policy date: 3/1/2010
Revised date: 7/12/2011**

Page: 1 of 4

Title

Reverse Shoulder Arthroplasty

Description

Reverse shoulder arthroplasty is conducted with a prosthesis that reverses the “ball-and-socket” configuration of the glenohumeral joint. With the reverse shoulder prosthesis (RSP), the spherical “ball” component is attached to the glenoid and the cup-shaped polyethylene “socket” is attached to the humerus. Natural shoulder configuration requires a functioning rotator cuff to balance the anterior-superior pull of the deltoid muscle and stabilize the joint. In the absence of stabilization by the rotator cuff, deltoid muscle contraction may result in superior subluxation of the humeral head. Subsequently, use of conventional total shoulder prostheses in patients with a non-functioning rotator cuff frequently leads to long-term complications and unsatisfactory functional results. Hemiarthroplasty has largely replaced total shoulder arthroplasty for the treatment of patients with a non-functioning rotator cuff, but this procedure is associated with limited functional outcomes. For example, patients may be unable to lift the arm to shoulder level, and a “successful” hemiarthroplasty is typically based on “limited goals criteria.”

The reverse shoulder prosthesis (RSP) was specifically designed to address the limitations of conventional prostheses in patients with a non-functioning irreparable rotator cuff. Biomechanically, the RSP moves the center of rotation of the arm laterally and changes the direction of the pull of the deltoid muscle, allowing the deltoid to elevate the arm without functioning rotator cuff tendons. It is proposed that the RSP may provide a viable surgical solution for salvaging function in patients with irreparable non-functioning rotator cuffs. The primary indication is painful and symptomatic rotator-cuff tear arthropathy, characterized by superior subluxation of the humeral head in conjunction with glenohumeral arthrosis. Also being investigated are failed shoulder arthroplasty (total shoulder or hemiarthroplasty) where a non-functioning rotator cuff results in superior subluxation of the conventional prosthesis; rheumatoid arthritis where there is associated rotator-cuff arthropathy; and post-traumatic arthritis with rotator-cuff dysfunction. Implantation of the RSP is considered to be a technically challenging surgical procedure that may be associated with a high complication rate. Device-specific complications include notching of the inferior scapula, baseplate fixation failures, and dislocation of the prosthesis.

The first RSP (Delta) was developed in France in 1985; it is frequently described by the name of its designer as the Grammont reverse shoulder prosthesis. The redesigned Delta III prosthesis, marketed by DePuy, has been used in Europe since 1991. DePuy received marketing clearance for the Delta III Reverse Shoulder prosthesis in the United States through the U.S. Food and Drug Administration (FDA) 510(k) process in 2003 and for the Delta Xtend™ Reverse Shoulder System in 2007. The Tournier Aequalis Reverse Shoulder prosthesis received 510(k) clearance for marketing in 2004. The Trabecular Metal™ Reverse Shoulder System (Zimmer) and the Encore® Reverse® Shoulder Prosthesis (Encore Medical) received 510(k) marketing clearance in 2005.

A number of device modifications and indications have been reviewed through the FDA’s 510(k) process. Representative indications (K052086) are “for use in patients with a grossly rotator cuff deficient shoulder joint with severe arthropathy or a previously failed joint replacement with a grossly rotator cuff deficient shoulder joint. The patient’s joint must be anatomically and structurally suited to receive the selected implant(s), and a

functional deltoid muscle is necessary to use the device. During primary surgery, after the humerus is prepared for the reverse SP humeral stem, if the glenoid bone stock appears “insufficient” to bear the load of the glenoid baseplate, a reverse SP humeral stem adapter can be used to convert the reverse SP humeral stem to a hemiarthroplasty prosthesis.”

When services are covered for commercial products and Medicare HMO Blue and Medicare PPO Blue ¹

We cover reverse shoulder arthroplasty in patients with one of the following indications when no alternative treatment would be expected to provide an acceptable clinical outcome:

- Failed hemiarthroplasty or failed total shoulder arthroplasty with irreparable rotator cuff deficiency;
- Comminuted fractures (3 or 4 part) of the proximal humerus in an older population (e.g., 65 years of age or older);
- Non-functioning irreparable rotator cuff and glenohumeral arthropathy.
- Patients should have adequate deltoid function and adequate passive range of motion (e.g., elevation of at least 90 degrees) to obtain a functional benefit from the prosthesis.

In addition, patients must meet both of the following criteria:

- The procedure must be performed by an experienced shoulder surgeon;
- The procedure should be used only in cases where the residual bone permits firm fixation of the implant.

When services are not covered for commercial products or for Medicare HMO Blue and Medicare PPO Blue ¹

We do not cover reverse shoulder arthroplasty for all other conditions.

Individual consideration

All our medical policies are written for the majority of people with a given condition. Each policy is based on medical science. For many of our medical policies, each individual’s unique clinical circumstances may be considered in light of current scientific literature. For consideration of an individual patient, physicians may send relevant clinical information to:

For services already billed

Blue Cross Blue Shield of Massachusetts
 Provider Appeals
 PO Box 986065
 Boston, MA 02298

Prior to performance of service

Blue Cross Blue Shield of Massachusetts
 Case Creation/Medical Policy
 One Enterprise Drive
 Quincy, MA 02171
 Tel: 1-800-327-6716
 Fax: 1-888-641-5330

Authorization Information

For Managed Care members:

- Authorization is required for this service; *see Managed Care Guidelines for additional requirements.*

For Indemnity and PPO members:

- Authorization is required for this service; *see Indemnity and PPO Guidelines for additional requirements.*

Managed Care Guidelines

All authorization requirements are determined by the individual’s subscriber certificate, explanation of coverage, or summary plan description, however;

- **For Medicare HMO Blue members:** The service must meet the criteria for coverage noted in this policy, be medically necessary, prescribed by a plan physician and provided by a network provider.

- **For Medicare HMO Blue members:** Referrals are required for all visits to a specialist.
- For all other Managed Care plans, any specialist visit requires a referral, except for visits performed by OB/GYN specialists.
- Authorization is required for an inpatient admission.

Indemnity and PPO Guidelines

All authorization requirements are determined by the individual's subscriber certificate, explanation of coverage, or summary plan description, however;

- Authorization is required for an inpatient admission.
- Authorizations are not required for most outpatient services as determined by the individual's subscriber certificate.
- Referrals to a specialist are not required.

Coding information

Procedure codes are from current CPT, HCPCS Level II, Revenue Code, and/or ICD-9-CM manuals, as recommended by the American Medical Association, Centers for Medicare and Medicaid Services and American Hospital Associations. Blue Cross Blue Shield Association national codes may be developed when appropriate.

The following codes are included below for informational purposes. Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

- There is no specific CPT code for reverse shoulder arthroplasty. The procedure should be billed using standard billing practices.

Policy update history

New policy, effective 3/01/2010 Reviewed 7/2010 MPG – Orthopedics, Rehabilitation Medicine and Rheumatology, no changes in coverage were made. Reviewed 6/2011 MPG – Orthopedics, Rehabilitation and Rheumatology, no changes in coverage were made.

References

References for footnote 1:

1. American Academy of Orthopaedic Surgeons Department of Research and Scientific Affairs. Available at <http://orthoinfo.aaos.org/topic.cfm?topic=A00094> Last viewed April 2008
2. Ecklund KJ, Lee TQ, Tibone J et al. Rotator cuff tear arthroplasty. J Am Acad Orthop Surg 2007; 15(6):340-9.
3. Neer CS 2nd, Watson KC, Stanton FJ. Recent experience in total shoulder replacement. J Bone Joint Surg Am 1982 Mar; 64(3):319-37.
4. Sanchez-Sotelo J, Cofield RH, Rowland CM. Shoulder hemiarthroplasty for glenohumeral arthritis associated with severe rotator cuff deficiency. J Bone Joint Surg Am 2001; 83-A(12):1814-22.
5. Hettrich CM, Weldon E 3rd, Boorman RS et al. Preoperative factors associated with improvements in shoulder function after humeral hemiarthroplasty. J Bone Joint Surg Am 2004; 86-A(7):1446-51.
6. Goldberg SS, Bell JE, Kim HJ et al. Hemiarthroplasty for the rotator cuff-deficient shoulder. J Bone Joint Surg Am 2008; 90(3):554-9.
7. Sirveaux F, Favard L, Oudet D et al. Grammont inverted total shoulder arthroplasty in the treatment of glenohumeral osteoarthritis with massive rupture of the cuff. Results of a multicentre study of 80 shoulders. J Bone Joint Surg Br 2004; 86(3):388-95.
8. Guery J, Favard L, Sirveaux F et al. Reverse total shoulder arthroplasty. Survivorship analysis of eighty replacements followed for five to ten years. J Bone Joint Surg Am 2006; 88(8):1742-7.

9. Wall B, Nové-Josserand L, O'Connor DP et al. Reverse total shoulder arthroplasty: a review of results according to etiology. *J Bone Joint Surg Am* 2007; 89(7):1476-85.
10. Boileau P, Watkinson D, Hatzidakis AM et al. Neer Award 2005: the Grammont reverse shoulder prosthesis: results in cuff tear arthritis, fracture sequelae, and revision arthroplasty. *J Shoulder Elbow Surg* 2006; 15(5):527-40.
11. Klein M, Juschka M, Hinkenjann B et al. Treatment of comminuted fractures of the proximal humerus in elderly patients with the Delta III reverse shoulder prosthesis. *J Orthop Trauma* 2008; 22(10):698-704.
12. McFarland EG, Sanguanjit P, Tasaki A et al. The reverse shoulder prosthesis: A review of imaging features and complications. *Skeletal Radiol* 2006; 35(7):488-96.
13. Werner CM, Steinmann PA, Gilbert M et al. Treatment of painful pseudoparesis due to irreparable rotator cuff dysfunction with the Delta III reverse-ball-and-socket total shoulder prosthesis. *J Bone Joint Surg Am* 2005; 87(7):1476-86.
14. Frankle M, Siegal S, Pupello D et al. The Reverse Shoulder Prosthesis for glenohumeral arthritis associated with severe rotator cuff deficiency. A minimum two-year follow-up study of sixty patients. *J Bone Joint Surg Am* 2005; 87(8):1697-705.
15. Levy J, Frankle M, Mighell M et al. The use of the reverse shoulder prosthesis for the treatment of failed hemiarthroplasty for proximal humeral fracture. *J Bone Joint Surg Am* 2007; 89(2):292-300.
16. Cuff D, Pupello D, Virani N, et al. Reverse shoulder arthroplasty for the treatment of rotator cuff deficiency. *J Bone Joint Surg Am* 2008; 90(6):1244-51.
17. Edwards TB, Williams MD, Labriola JE et al. Subscapularis insufficiency and the risk of shoulder dislocation after reverse shoulder arthroplasty. *J Shoulder Elbow Surg* 2009 Mar 10. [Epub ahead of print].
18. Wierks C, Skolasky RL, Ji JH et al. Reverse total shoulder replacement: intraoperative and early postoperative complications. *Clin Orthop Relat Res* 2009; 467(1):225-34.
19. Young SW, Everts NM, Ball CM et al. The SMR reverse shoulder prosthesis in the treatment of cuff-deficient shoulder conditions. *J Shoulder Elbow Surg* 2009; 18(4):622-6.

This document is designed for informational purposes only and is not an authorization, or an explanation of benefits, or a contract. Receipt of benefits is subject to satisfaction of all terms and conditions of the coverage. Medical technology is constantly changing, and we reserve the right to review and update our policies periodically.

©2011 Blue Cross and Blue Shield of Massachusetts, Inc. All rights reserved. Blue Cross and Blue Shield of Massachusetts, Inc. is an Independent Licensee of the Blue Cross and Blue Shield Association.

Footnotes

1. Based on BCBSA policy # 7.01.114, Reverse Shoulder Arthroplasty, issued 8/08.