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Original Article

Reverse shoulder arthroplasty: clinical results and quality of life evaluation☆

Arnaldo Amado Ferreira Neto[a], *Eduardo Angeli Malavolta*[a], *Jorge Henrique Assunção*[a,*], *Evelinda Marramon Trindade*[b], *Mauro Emilio Conforto Gracitelli*[a]

[a] *Universidade de São Paulo, Faculdade de Medicina, Instituto de Ortopedia e Traumatologia, São Paulo, SP, Brazil*

[b] *Secretaria da Saúde do Estado de São Paulo, Rede Paulista de Avaliação em Tecnologia de Saúde, São Paulo, SP, Brazil*

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ABSTRACT

Objective: To evaluate the clinical and radiological results and the impact on quality of life of the reverse shoulder arthroplasty.

Methods: Retrospective case series evaluating 13 patients undergoing reverse shoulder arthroplasty with at least two years of clinical follow-up. Clinical evaluation was performed before and after surgery with the ASES and VAS scales and hand-mouth, hand-neck, and hand-head functional tests. Quality of life was measured with the SF-12 questionnaire. The rate of complications and radiographic postoperative findings were recorded.

Results: The patients improved from 23.1 ± 15 to 82.7 ± 15 according to ASES scale ($p < 0.001$). The physical component of the SF-12 increased from 31.7 ± 6.9 to 47.1 ± 8.6 ($p < 0.001$), while the emotional increased from 48 ± 12.3 to 55.5 ± 7.5 ($p = 0.061$). The pain reduced from 7.9 to 1 according to the VAS ($p = 0.002$). The performance on the hand-mouth, hand-neck, and hand-head functional tests showed significant improvement ($p = 0.039$, $p < 0.001$ and $p < 0.001$, respectively). Complications occurred in 15% of patients and notching, in 31%.

Conclusion: Reverse shoulder arthroplasty led to a significant clinical improvement according to the ASES and VAS scales. The quality of life has improved according to the physical aspect of the SF-12, and showed a trend of improvement in the emotional aspect. The complication rate was 15%, and notching occurred in 31%.

☆ Study conducted at the Universidade de São Paulo, Faculdade de Medicina, Instituto de Ortopedia e Traumatologia, Grupo de Ombro e Cotovelo, São Paulo, SP, Brazil.

* *Corresponding author.*
E-mail: drjorgeassuncao@gmail.com (J.H. Assunção).

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Artroplastia reversa do ombro: avaliação dos resultados clínicos e da qualidade de vida

Palavras-chave:
Artroplastia de substituição
Artropatias
Osteoartrose
Manguito rotador

RESUMO

Objetivo: Avaliar os resultados clínicos e radiológicos e o impacto na qualidade de vida da artroplastia reversa do ombro.

Métodos: Série de casos retrospectiva que avaliou 13 pacientes submetidos à artroplastia reversa do ombro com seguimento clínico mínimo de dois anos. Foi feita avaliação clínica antes e após a cirurgia com as escalas da *American Shoulder and Elbow Surgeons* (ASES) e escala visual analógica (EVA) e as manobras funcionais mão-boca, mão-nuca e mão-cabeça. A qualidade de vida foi aferida com o questionário *12-Item Short-Form Health Survey* (SF-12). Registramos o índice de complicações e o aspecto radiográfico pós-operatório.

Resultados: Os pacientes evoluíram de 23,1 ± 15 para 82,7 ± 15 pela escala da ASES (p<0,001). O componente físico do SF-12 passou de 31,7 ± 6,9 para 47,1 ± 8,6 (p < 0,001) enquanto o emocional de 48 ± 12,3 para 55,5 ± 7,5 (p = 0,061). A dor regrediu de 7,9 para 1 de acordo com a EVA (p = 0,002). As manobras funcionais mão-boca, mão-nuca e mão-cabeça apresentaram melhorias significativas (p = 0,039, p < 0,001 e p < 0,001, respectivamente). Complicações ocorreram em 15% dos pacientes e *notching*, em 31%.

Conclusão: Os pacientes submetidos à artroplastia reversa do ombro tiveram melhoria significativa de acordo com as escalas da ASES e EVA. A qualidade de vida melhorou significativamente de acordo com o aspecto físico do SF-12 e demonstrou tendência de melhoria no aspecto emocional. O índice de complicações foi de 15% e *notching* ocorreu em 31%.

Introduction

Reverse shoulder arthroplasty technique was developed by Paul Grammont in 1985 in France[1]; the first case series was published in the following decade.[2,3] Initially developed for the treatment of rotator cuff arthropathy,[4–8] its use extends to cases of primary anatomical arthroplasty revisions,[9,10] complex fractures,[11–13] sequelae of proximal humeral fractures,[14,15] and inflammatory arthroplasties.[16] From its original restriction to European use, it was approved by the Food and Drug Administration in the United States in 2003 and since then has been widely used in that country.[17]

Reverse arthroplasty has biomechanical characteristics that improve function of the deltoid muscle and compensate a dysfunctional rotator cuff.[18] Its clinical results are superior to those of anatomic total shoulder arthroplasties in the treatment of rotator cuff arthropathy.[4]

Currently, reverse arthroplasty has been approved by the Brazilian National Sanitary Surveillance Agency and is part of the therapeutic arsenal of the Supplemental Health System. However, the Brazilian Unified Health System (Sistema Único de Saúde [SUS]) does not list the implant within its procedures, and most public hospitals are unable to adequately treat patients with indication for the use of this implant. The national literature features only two studies on the subject[5,8]; both evidenced clinical improvement with treatment.

After contacting the Health Secretariat of the State of São Paulo and an explaining the issue, the authors were instructed to conduct further studies on the subject in an attempt to objectively expose the problem and, consequently, aid in the provision of reverse arthroplasty in specialized shoulder surgery centers. This is the first in a series of articles to be developed by this group. The goal is to evaluate the clinical and radiological results of reverse shoulder arthroplasty, as well as its impact on quality of life.

Methods

This was a retrospective case series. Patients who underwent reverse shoulder arthroplasty, with a minimum of two years of clinical follow-up, were assessed. The study comprised surgeries performed until December 2013. Patients submitted to other types of arthroplasties were not included. This study was approved by the Institution Review Board under No. 1103.

Indications for reverse arthroplasty were:

- Rotator cuff arthropathy; extensive and irreparable rupture of the rotator cuff; primary or secondary glenohumeral arthrosis, associated with irreparable rupture of the rotator cuff; sequela of proximal fracture of the humerus with pseudoarthrosis or major and/or minor tubercle resorption; sequelae of tumor resection with irreparable rotator cuff lesion; and conventional shoulder arthroplasty with upper subluxation of the humeral component, pseudoarthrosis, or reabsorption of the tuberosities;
- Active elevation below 90°;
- Unsuccessful non-surgical treatment for at least six months.

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