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Original Article

Reverse arthroplasty of the shoulder for treating rotator cuff arthropathy☆,☆☆

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ABSTRACT

Objective: to present a retrospective analysis on the clinical-functional results and complications among patients with rotator cuff arthropathy (RCA) who underwent reverse arthroplasty of the shoulder.
Methods: patients with a diagnosis of RCA associated with pseudoparalysis of anterior elevation who underwent reverse arthroplasty of the shoulder with a minimum follow-up of one year were selected.
Results: preoperative information was gathered from our shoulder and elbow arthroplasty register, comprising age, sex, laterality, history of previous procedures, Constant's functional scores and the preoperative range of motion as described in the protocol of the American Academy of Shoulder and Elbow Surgery (ASES). After a mean follow-up of 44 months, 17 patients (94%) were satisfied with the result from the procedure.
Conclusion: reverse arthroplasty for treating RCA in patients with pseudoparalysis of the shoulder was shown to be effective in achieving a statistically significant improvement in range of motion regarding anterior flexion and abduction. However, in this series, there was no improvement in range of motion regarding external and internal rotation. Reverse arthroplasty is a procedure that reestablishes shoulder joint function in patients who previously did not present any therapeutic possibilities.

Artroplastia reversa do ombro no tratamento da artropatia do manguito rotador

Palavras-chave:
Artroplastia
Ombro

RESUMO

Objetivo: apresentar uma análise retrospectiva dos resultados clínico-funcionais e das complicações dos pacientes com artropatia do manguito rotador (AMR) submetidos à artroplastia reversa do ombro.

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Artropatias
Bainha rotadora
Próteses e implantes

Métodos: foram selecionados pacientes com diagnóstico de AMR associada à pseudoparalisia da elevação anterior submetidos à artroplastia reversa do ombro com seguimento mínimo de um ano.
Resultados: foram coletadas informações pré-operatórias, por meio do nosso Registro de Artroplastias do Ombro e Cotovelo, que consistiam em idade, sexo, lateralidade, história de procedimentos prévios, escores funcionais de Constant, além da amplitude de movimentos pré-operatórios, conforme protocolo da American Academy of Shoulder and Elbow Surgery (Ases). Com seguimento médio de 44 meses, 17 pacientes (94%) estavam satisfeitos com o resultado do procedimento.
Conclusão: a artroplastia reversa no tratamento da AMR em pacientes com pseudoparalisia do ombro demonstrou-se efetiva na melhoria, com significância estatística, da amplitude de movimentos de flexão anterior e abdução. Porém, nesta série não houve melhoria da amplitude dos movimentos de rotação externa e interna. A artroplastia reversa é um procedimento que restabelece a função da articulação do ombro em pacientes que previamente não apresentavam possibilidades terapêuticas.

Introduction

In 1985, Paul Grammont developed a semiconstricted prosthesis for treating shoulder arthrosis associated with massive injuries to the rotator cuff for which anatomical prostheses were unable to restore the stability and mobility of the joint.[1,2]

The advantage of the design of this reverse prosthesis was based on two biomechanical principles: inferiorization and medialization of the center of rotation of the shoulder joint. These principles favor stretching of the humerus and retensioning of the deltoid muscle, which increases its strength and function and also diminishes the mechanical torque at the interface between the glenoid component, the metaglene and the bone surface, which reduces the risk of loosening.[3]

The results from using this type of implant that have been published in the orthopedic literature have concentrated on their use in patients with rotator cuff arthropathy (RCA). Good functional results and pain relief have been presented among patients with short and medium-term follow-up.[3–7] In Brazil, use of reverse prostheses of the shoulder started in 2007 and there are no published papers relating to their clinical results in this country.

The objective of this study was to present a retrospective analysis on the clinical-functional results and complications among patients with RCA who underwent reverse arthroplasty of the shoulder at the Shoulder and Elbow Surgery Center (CCOC), National Institute of Traumatology and Orthopedics (INTO), and presented a minimum follow-up of one year.

Materials and methods

CCOC-INTO has a register of arthroplasty procedures in which epidemiological and clinical data and information relating to the surgical procedure and implants used are gathered through specific protocols and stored in a database.

After gaining approval from the institution's Research Ethics Committee, we conducted a retrospective analysis in which, from the register, we identified all the patients with a diagnosis of RCA in association with pseudoparalysis of anterior flexion of the shoulder, with a minimum follow-up of one year. Patients who underwent reverse arthroplasty of the shoulder due to other diagnoses, those who did not present the minimum postoperative follow-up, those with arthropathy who did not present pseudoparalysis and those who underwent other types of shoulder arthroplasty were excluded.

The arthroplasty register provided demographic information, data on previous surgical procedures, the preoperative range of motion according to the protocol of the American Shoulder and Elbow Surgeons (ASES), the Constant functional score and information on the surgical procedure performed, the implants used and the immediate complications.

Following this, the patients were recalled for clinical and functional evaluations, in which the Constant scores, shoulder range of motion (ROM) measurements and subjective satisfaction were used. In this clinical evaluation, the incidence of the following complications was also determined: peripheral nerve injuries, periprosthetic fractures, infection and instability.

Next, radiographic images produced in the immediate postoperative period in true anteroposterior view of the shoulder, lateral view of the scapula and axillary view were evaluated. It was sought to determine the positioning of the implant, the fixation of the components and the degree of stretching of the humerus, in comparison with the contralateral side.[8] Recent images were compared in order to verify occurrences of alterations.[9]

From the Shoulder Arthroplasty Register of CCOC-INTO, 43 patients who underwent reverse arthroplasty of the shoulder between September 2007 and January 2011 were identified. Of these, 21 underwent reverse arthroplasty to treat RCA in association with pseudoparalysis. All of them underwent the standardized surgical technique, with deltopectoral surgical access, adequate exposure of the glenoid, preparation of the joint surface with preservation of the subchondral bone, fixation of the metaglene with screws by means of a mixed stabilization system with bone-implant compression and locking of the screws to the implant. On the humeral side, all the implants were positioned neutrally versed, and orthopedic