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Original Article

Low-term results from non-conventional partial arthroplasty for treating rotator cuff arthroplasthy☆

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ABSTRACT

Objective: To evaluate the evolution of the functional results from CTA® hemiarthroplasty for surgically treating degenerative arthroplathy of the rotator cuff, with a mean follow-up of 5.4 years.

Methods: Eighteen patients who underwent CTA® partial arthroplasty to treat degenerative arthroplathy of the rotator cuff between April 2007 and June 2009 were reevaluated, with minimum and mean follow-ups of 4.6 years and 5.4 years, respectively. Pre and postoperative parameters for functionality and patient satisfaction were used (functional scale of the University of California in Los Angeles, UCLA). All the patients underwent prior conservative treatment for 6 months and underwent surgical treatment because of the absence of satisfactory results. Patients were excluded if they presented any of the following: previous shoulder surgery; pseudoparalysis; insufficiency of the coracoacromial arch (type 2 B in Seebauer's classification); neurological lesions; or insufficiency of the deltoid muscle and the subscapularis muscle.

Results: With a mean follow-up of 5.4 years, 14 patients considered that they were satisfied with the surgery (78%); the mean range of joint motion for active elevation improved from 55.8° before the operation to 82.0° after the operation; the mean external rotation improved from 18.9° before the operation to 27.3° after the operation; and the mean medial rotation remained at the level of the third lumbar vertebra. The mean UCLA score after the mean follow-up of 5.4 years was 23.94 and this was an improvement in comparison with the preoperative mean and the mean 1 year after the operation.

Conclusion: The functional results from CTA® hemiarthroplasty for treating rotator cuff arthroplasty in selected patients remained satisfactory after a mean follow-up of 5.4 years.

☆ Work developed in the Shoulder and Elbow Group, State Public Servants' Hospital, São Paulo, SP, Brazil.

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Resultados em longo prazo da artroplastia parcial não convencional para o tratamento da artroplastia do manguito rotador

Palavras-chave:
Artroplastia de substituição
Ombro
Manguito rotador

RESUMO

Objetivo: Avaliar a evolução do resultado funcional da hemiartroplastia CTA® no tratamento cirúrgico da artropatia degenerativa do manguito rotador com um seguimento médio de 5,4 anos.

Métodos: Foram reavaliados 18 pacientes submetidos à artroplastia parcial CTA® para o tratamento da artropatia degenerativa do manguito rotador entre abril de 2007 e junho de 2009, com seguimento mínimo e médio de 4,6 anos e 5,4 anos, respectivamente. Foram usados parâmetros pré e pós-operatórios de funcionalidade e satisfação dos pacientes (escala funcional da Universidade da Califórnia em Los Angeles [UCLA]). Todos os pacientes fizeram tratamento conservador prévio por seis meses e foram submetidos ao tratamento cirúrgico na ausência de resultado satisfatório. Foram excluídos pacientes com cirurgia prévia no ombro, pseudoparalisia, insuficiência do arco coracoacromial (tipo 2 B da classificação de Seebauer), lesão neurológica ou insuficiência do músculo deltoide e do músculo subescapular.

Resultados: Com um seguimento médio de 5,4 anos, 14 pacientes se consideravam satisfeitos com a cirurgia (78%). A amplitude de movimento articular melhorou na elevação ativa média e variou de 55,8° no pré-operatório para 82° no pós-operatório. A rotação externa média melhorou de em média 18,9° no pré-operatório para 27,3° no pós-operatório. A média da rotação medial manteve-se no nível da terceira vértebra lombar. O escore UCLA médio, após seguimento médio de 5,4 anos, foi de 23,94 e melhorou em comparação com as médias pré-operatória e do primeiro ano pós-operatório.

Conclusão: Os resultados funcionais da hemiartroplastia CTA® no tratamento da artroplastia do manguito rotador em pacientes selecionados mantiveram-se satisfatórios após um seguimento médio de 5,4 anos.

Introduction

The first author to describe the clinical findings from arthropathy of the rotator cuff was Robert Adams, in 1857. In 1981, Halverson et al.[1] described the "Milwaukee shoulder", in which crystals of calcium phosphate such as hydroxyapatite were involved in a cellular reaction with release of collagenases and joint destruction. However, Neer was the first to use the term "arthropathy of the rotator cuff", in 1977, in a study published in 1983.[2] Neer believed that extensive injury to the rotator cuff was the cause of the arthropathy and presented the hypothesis that this pathological condition might be the result of mechanical factors such as anterosuperior instability, and nutritional factors such as loss of the closed joint space, with impairment of nutrient diffusion to the joint surface. Interruption of the bone circulation that is provided by the rotator cuff also contributes toward the metabolic loss at the humeral head. The final result from these mechanical and metabolic alterations, in association with osteopenia through disuse of the glenohumeral joint due to pain, consists of collapse of the glenohumeral joint.[1–4]

More recently, in 1997, Collins and Harryman[5] produced a synthesis from the two theories and formulated the hypothesis that cranial migration of the humeral head, resulting from loss of the stability that the rotator cuff provides, leads to abnormal glenohumeral contact and formation of debris in the joint. Thus, an inflammatory cascade caused by the calcium phosphate crystals that are released is developed.

The incidence of rotator cuff injuries increases with age. They are relatively rare before the age of 40 years, become more frequent in the fifth and sixth decades of life and continue to increase in the seventh decade and beyond. Many cases do not present symptoms and approximately 50% of all individuals over the age of 80 years may have asymptomatic rotator cuff injuries.[6,7]

Arthropathy of the rotator cuff mainly affects elderly women on their dominant side and it triggers chronic symptoms such as progressive pain, which worsens at night and with activities that require use of the shoulder. Other symptoms include weakness and difficulty in raining the arm, and these give rise to functional limitation. Physical examination reveals signs of extensive injury to the rotator cuff, such as atrophy of the supraspinatus and infraspinatus muscles.[2,8–10]

Radiographs show glenohumeral arthrosis, with cranial displacement of the humeral head, which may give rise to abnormal contact between this and the coracoacromial arch and thus lead to "rounding" of the greater tubercle ("femoralization") and to concave erosion of the coracoacromial arch ("acetabulization"). Using radiographs in anteroposterior (AP) view, Hamada et al.[11] described the natural evolution of extensive rotator cuff injuries, with the development of