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Original article

Comparative analysis on arthroscopic sutures of large and extensive rotator cuff injuries in relation to the degree of osteopenia☆

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ABSTRACT

Objective: To analyze the results from arthroscopic suturing of large and extensive rotator cuff injuries, according to the patient's degree of osteopenia.

Method: 138 patients who underwent arthroscopic suturing of large and extensive rotator cuff injuries between 2003 and 2011 were analyzed. Those operated from October 2008 onwards formed a prospective cohort, while the remainder formed a retrospective cohort. Also from October 2008 onwards, bone densitometry evaluation was requested at the time of the surgical treatment. For the patients operated before this date, densitometry examinations performed up to two years before or after the surgical treatment were investigated. The patients were divided into three groups. Those with osteoporosis formed group 1 ($n = 16$); those with osteopenia, group 2 ($n = 33$); and normal individuals, group 3 ($n = 55$).

Results: In analyzing the University of California at Los Angeles (UCLA) scores of group 3 and comparing them with group 2, no statistically significant difference was seen ($p = 0.070$). Analysis on group 3 in comparison with group 1 showed a statistically significant difference ($p = 0.027$).

Conclusion: The results from arthroscopic suturing of large and extensive rotator cuff injuries seem to be influenced by the patient's bone mineral density, as assessed using bone densitometry.

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Análise comparativa da sutura artroscópica de lesões grandes e extensas do manguito rotador com relação ao grau de osteopenia

Palavras-chave:
Densidade óssea
Osteoporose
Bainha rotadora
Ombro

RESUMO

Objetivo: analisar o resultado da sutura artroscópica das lesões grandes e extensas do manguito rotador (MR) de acordo com o grau de osteopenia do paciente.

Método: coorte prospectiva nos pacientes operados a partir de outubro de 2008 e retrospectiva nos demais. Foram analisados 138 pacientes submetidos à sutura artroscópica de lesões grandes e extensas do MR entre 2003 e 2011. Aos pacientes operados a partir de outubro de 2008 era solicitada uma densitometria óssea (DO) por ocasião do tratamento cirúrgico. Nos pacientes operados antes de outubro de 2008, pesquisaram-se densitometrias feitas dois anos antes ou após o tratamento cirúrgico. Os pacientes foram divididos em três grupos. Os com osteoporose formaram o grupo 1 ($n = 16$), os com osteopenia o 2 ($n = 33$) e os normais o 3 ($n = 55$).

Resultados: ao analisar o escore da Universidade da Califórnia em Los Angeles (UCLA) do Grupo 3 e compará-lo com o Grupo 2, não foi verificada uma diferença estatisticamente significativa ($p = 0{,}070$). Ao analisar o Grupo 3 e compará-lo com o Grupo 1, foi verificada uma diferença estatisticamente significativa ($p = 0{,}027$).

Conclusão: o resultado da sutura artroscópica das lesões grandes e extensas do MR parece sofrer influência da densidade mineral óssea do paciente avaliada por meio de DO.

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Introduction

Development and dissemination of arthroscopic suturing techniques for the rotator cuff have made shoulder arthroscopy one of the most frequently performed procedures in orthopedic surgical centers.[1,2] The great challenge is to identify risk factors that might interfere with the postoperative evolution of each patient, especially in the view of large and extensive nature of rotator cuff injuries. Identification of these risk factors has so far been subjective and dependent on professional experience.

Some risk factors have already been described in the literature. The patient's age at the time of the surgical procedure seems to have an influence on healing and on gains relating to range of motion and muscle strength.[3,4] Other variables such as sex,[5] smoking,[6–10] tendon quality shown on magnetic resonance imaging,[11] humerus-acromion distance <7 mm shown on X-rays[12] and impairment of the long head of the biceps have been considered to be deleterious for the final result from the treatment.[13–17]

Some data regarding bone mass losses from the greater tubercle induced by rotator cuff injuries have been published in the literature.[18–20] These data, along with some mechanical studies, suggest that osteopenia may have a deleterious effect on the postoperative healing of the rotator cuff.[11,21,22] We were unable to find any data analyses on the relationship between the bone loss inherent to aging and the results from arthroscopic suturing of the rotator cuff.

The aim of the present study was to comparatively analyze the results from arthroscopic suturing of rotator cuff injuries, according to the patient's degree of osteopenia measured through bone densitometry.

Methods

This was a prospective cohort study on patients operated from October 2008 onwards and a retrospective cohort study on the remainder.

A total of 138 patients who underwent arthroscopic suturing of large and extensive rotator cuff injuries[23] between January 21, 2003, and February 4, 2011, were assessed.

After general anesthesia had been induced, the patient was positioned in lateral decubitus with the upper limb abducted at 30°, flexed at 20° and under traction of 5 kg. The joint distension technique comprised use of physiological serum in suspension for the patients operated up to January 2006 and use of a joint distension pump from this date onwards.[24] Arthroscopic suturing of the rotator cuff injury was always performed by the same surgeon.

All the patients were immobilized while still anesthetized, in the surgical theater, using a sling together with an abduction pad.

For the purposes of analyzing the degree of osteopenia among the patients who were operated from October 2008 onwards, bone densitometry was requested as a preoperative examination. The patients operated before October 2008 were asked about any densitometry examinations that had been performed up to two years before or after the surgical treatment on the shoulder.

All patients who underwent complete arthroscopic closure of the rotator cuff injury and whose operations were not more than 12 months before the assessment data were evaluated. All of these patients had a bone densitometry examination that was considered to be valid, which was performed not more than two years before or after the date of the surgical treatment.

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