



## Original article

# Long-term functional evaluation of videoarthroscopic treatment of partial injuries of the rotator cuff<sup>☆</sup>



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## ABSTRACT

**Objective:** To compare the functional results from high and low-grade isolated partial lesions of the supraspinatus tendon of bursal and articular types, after arthroscopic treatment.

**Methods:** Sixty-four patients with isolated partial lesions of the supraspinatus tendon were evaluated. The mean length of follow-up was 76 months (range: 29–193). The mean age was 59 years (range: 36–82). The dominant side was affected in 44 patients (68.8%). There were 35 bursal lesions (54.7%) and 29 articular lesions (45.3%). We used the Ellman classification and characterized the lesions as low or high-grade according to whether they affected less than or more than 50% of the tendon thickness, respectively. Debridement was performed in 15 patients (23.5%), repair without completing the lesion in 11 (17%) and repair after completing the lesion in 38 (59.5%). The functional assessments on the patients were done using the Constant & Murley and UCLA scores.

**Results:** The mean Constant & Murley score among the patients with bursal lesions was  $82.64 \pm 6.98$  (range: 59.3–99) and among those with articular lesions,  $83.57 \pm 7.58$  (range: 66–95), while the mean UCLA score in the bursal lesions was  $33.37 \pm 2.85$  (range: 21–35) and in the articular lesions,  $32.83 \pm 2.95$  (range: 22–35).

**Conclusion:** Videoarthroscopic treatment of partial lesions of the rotator cuff presents good or excellent results when the low-grade lesions are debrided and the high-grade lesions are completed and repaired. These results are maintained over the long term, with a high satisfaction rate and few complications.

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## Avaliação funcional em longo prazo do tratamento videoartroscópico das lesões parciais do manguito rotador

### R E S U M O

**Palavras-chave:**  
Ombro  
Artroscopia  
Manguito rotador

**Objetivo:** Comparar os resultados funcionais, após o tratamento artroscópico, das lesões parciais isoladas do tendão supra-espinal dos tipos bursal e articular nos graus alto e baixo. **Métodos:** Foram avaliados 64 pacientes com lesões parciais isoladas do tendão supra-espinal. Seguimento médio de 76 meses (29 a 193). A média de idade foi de 59 anos (36 a 82). O lado dominante foi acometido em 44 pacientes (68,8%). Observadas 35 lesões bursais (54,7%) e 29 articulares (45,3%). Usamos a classificação de Ellman e caracterizamos as lesões como baixo e alto grau quando acometiam menos ou mais de 50% de sua espessura, respectivamente. Foi feito desbridamento em 15 pacientes (23,5%), reparo sem completar a lesão em 11 (17%) e reparo após completar a lesão em 38 (59,5%). A avaliação clínica funcional dos pacientes foi feita com o uso dos escores de Constant & Murley e UCLA.

**Resultados:** A média dos escores de Constant dos pacientes com lesão bursal foi de  $82,64 \pm 6,98$  (59,3 a 99) e com lesão articular foi de  $83,57 \pm 7,58$  (66 a 95), enquanto que a média do UCLA nas lesões bursais foi de  $33,37 \pm 2,85$  (21 a 35) e nas lesões articulares foi de  $32,83 \pm 2,95$  (22 a 35).

**Conclusão:** O tratamento videoartroscópico das lesões parciais do manguito rotador apresenta resultados bons/excelentes quando as lesões de baixo grau são desbridadas e as lesões de alto grau são completadas e reparadas. Esses resultados se mantêm em longo prazo, com alto índice de satisfação e poucas complicações.

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## Introduction

Partial lesions of the rotator cuff are a frequent cause of pain and functional limitation of the shoulder. They can occur on either the articular or the bursal side, or may be intrasubstantial.<sup>1</sup> The incidence of articular lesions is three times that of bursal lesions.<sup>2</sup> It has been observed that the footprint of the supraspinatus tendon has a mean thickness of 12 mm.<sup>3</sup> Interfingering of the fibers of the rotator cuff tendons occurs at this location, such that the deepest fibers present oblique orientation, while the superficial fibers are parallel to the axis of the muscle.<sup>4</sup>

Ellman<sup>1</sup> described a classification system for partial lesions based on their locations and depths, as measured during arthroscopy. In this system, articular lesions (A) or bursal lesions (B) are described as grade I if their depth is less than 3 mm, grade II if it is between 3 and 6 mm and grade III if it is more than 6 mm. Grade I and II lesions compromise up to 50% of the tendon surface (low grade), while grade III lesions compromise more than 50% of the thickness (high grade). Intrasubstantial lesions are described as (C).

Some partial lesions of the rotator cuff do not heal, despite conservative treatment with physiotherapy and use of anti-inflammatory drugs, and require surgical treatment.<sup>5-11</sup> Several methods of surgical treatment have been described, including acromioplasty alone,<sup>12,13</sup> debridement of the lesion with or without acromioplasty,<sup>7,14,15</sup> transtendon repair,<sup>16-21</sup> conversion to a complete lesion followed by repair<sup>11,22,23</sup> and transosseous repair.<sup>24</sup> There is still no consensus regarding the best treatment for each type of lesion, but it has been shown in the literature that debridement, with or without associated

acromioplasty, provides satisfactory results in cases of low-grade lesions, while high-grade lesions respond better to repair.<sup>25</sup>

The main objectives of our study were to evaluate the functional results following videoarthroscopic treatment of partial lesions of the rotator cuff and compare the types and grades of lesions. We believed that when low-grade lesions were debrided and high-grade lesions were repaired, the results would remain satisfactory over the long term, with low failure and complication rates.

## Materials and methods

This was a retrospective study with functional evaluations on patients who underwent videoarthroscopic treatment of partial lesions of the rotator cuff. Between January 1995 and December 2010, 704 patients with partial lesions of the rotator cuff were operated by means of videoarthroscopy at the Orthopedic, Belo Horizonte and Lifecenter hospitals, by the BH Orthopedic Surgery Group.

The lesions were diagnosed by means of magnetic resonance imaging (MRI) or arthro-MRI and the diagnoses were confirmed through arthroscopy. The patients included presented partial lesions (articular or bursal) solely of the supraspinatus tendon, with a minimum of 2 years of post-operative follow-up. The patients had failed to respond to conservative treatment over a period of at least 4 months before undergoing surgery. The exclusion criteria comprised previous surgery on the shoulder; sequelae of fractures in the region of the shoulder or the scapular belt; presence of glenohumeral arthrosis with advanced joint degeneration;

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