



## Original article

# Obstetric paralysis: anterior arthroscopic release of the shoulder and transfer of the latissimus dorsi using a homologous graft<sup>☆</sup>



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## ABSTRACT

**Objective:** Description of a new surgical technique for treating the shoulders of patients with sequelae of obstetric paralysis. Preliminary analysis on the results obtained from this technique.

**Methods:** Five consecutive patients underwent the proposed surgical procedure, consisting of arthroscopic anterior joint release followed by transfer of the latissimus dorsi tendon (elongated and reinforced with a homologous tendon graft) to the posterosuperior portion of the greater tubercle, using a single deltopectoral approach. All the patients were reevaluated after a minimum postoperative period of twelve months. The functional assessment was based on the range of motion and the modified Mallet classification system. Statistical analyses were not possible because of the small sample.

**Results:** Overall, passive and active lateral rotations increased, while medial rotation decreased. The other movements (elevation, capacity to place a hand in the mouth and capacity to place a hand behind the neck) had less consistent evolution. The mean modified Mallet score improved by 4.2 points (from 11.4 to 15.6).

**Conclusion:** The latissimus dorsi tendon can be transferred to the posterosuperior portion of the greater tubercle through a single deltopectoral approach when elongated and reinforced with a homologous tendinous graft.

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## Paralisia obstétrica: liberação artroscópica anterior do ombro e transferência do grande dorsal com enxerto homólogo

### R E S U M O

#### Palavras-chave:

Paralisia obstétrica  
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Transferência tendinosa  
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**Objetivos:** Descrição de uma nova técnica cirúrgica para o tratamento de ombro de pacientes com seqüela de paralisia obstétrica. Análise preliminar dos resultados obtidos com essa técnica.

**Métodos:** Cinco pacientes consecutivos foram submetidos ao tratamento cirúrgico proposto, que envolve a liberação artroscópica anterior por via artroscópica, seguida da transferência do tendão do músculo grande dorsal (alongado e reforçado com enxerto tendíneo homólogo) para a porção póstero-superior do tubérculo maior, com o uso de uma única via delto-peitoral. Todos foram reavaliados após um período pós-operatório mínimo de 12 meses. A avaliação da função baseou-se na amplitude de movimento e na classificação modificada de Mallet. A pequena casuística não permitiu análises estatísticas.

**Resultados:** De forma geral, as rotações laterais passiva e ativa melhoraram, enquanto a rotação medial piorou. Os outros movimentos (elevação, capacidade de colocação da mão na boca e capacidade de colocação da mão na nuca) tiveram evolução menos consistente. A média do escore de Mallet modificado melhorou 4,2 pontos (de 11,4 para 15,6).

**Conclusão:** O tendão do músculo grande dorsal pode ser transferido para a porção póstero-superior do tubérculo maior por meio de uma única via delto-peitoral, quando alongado e reforçado com enxerto tendíneo homólogo.

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## Introduction

Most patients with obstetrical brachial plexus palsy (OBPP) sequelae develop spontaneous, complete or nearly complete improvement of shoulder function.<sup>1-5</sup> However, in those with incomplete recovery, medial rotation shoulder contracture is one of the most common sequelae,<sup>4,6-9</sup> due to muscle imbalance secondary to plexus injury (with a predominance of medial rotators over lateral rotators). This sequela occurs early and can be found in advanced stages in patients as young as 2 years.<sup>1,3-6,8-13</sup> If left untreated, it can lead to a very debilitating joint deformity to the shoulder function.<sup>6,11</sup>

In 1918, Sever<sup>14</sup> proposed and described the release of the pectoralis major and subscapularis. L'Episcopo, in 1934 and again in 1939,<sup>15,16</sup> observing the tendency of recurrence of medial rotation contracture after Sever procedure, associated this surgery to the transfer of the insertions of the latissimus dorsi and teres major muscles from the anterior medial portion to the posterolateral humerus. Currently, surgical procedures can be divided into three groups: (1) tendon transfers without anterior shoulder release; (2) anterior release of the shoulder, usually accompanied by tendon transfer; and (3) rescue procedures, such as humeral osteotomy or shoulder arthrodesis, typically for patients with severe joint deformity.<sup>12,17</sup>

The second group of procedures is currently recommended by most authors for the treatment patients that present with pre-existing medial rotation shoulder contracture, but still have a congruent joint.<sup>2-9,11,18-20</sup> The anterior shoulder release may be achieved by open<sup>3,5-7,20-26</sup> or arthroscopic surgical techniques.<sup>3,4,8-10</sup> The tendon transfer most cited in the

literature is that of the latissimus dorsi (whether or not accompanied by the teres major), so that it will act as a lateral shoulder rotator.<sup>2-5,7-9,12,18,19,27</sup> The attachment point of the transferred tendon was initially described as the lateral cortex of the humerus, just below the greater tuberosity, using the deltopectoral approach.<sup>15,16</sup> Later, in order to promote abduction improvement, the transfer was modified to the posterosuperior portion of the greater tuberosity.<sup>18</sup> However, to achieve this, it was necessary to use a posterior approach or multiple access routes. No studies using only an anterior approach to this new topography were retrieved in the literature.

This study aimed to describe and discuss the surgical technique developed and used by our group in five patients with OBPP, which involves: (1) arthroscopic release of the shoulder to gain passive lateral rotation and (2) the transfer of the latissimus dorsi, where its tendon insertion is lengthened and reinforced with a tendon allograft so that it can be transferred to the posterosuperior portion of the greater tuberosity through a single anterior surgical approach.

## Materials and methods

From May 2011 to July 2013, five patients with medial rotation shoulder contracture underwent arthroscopic release and latissimus dorsi tendon transfer performed by the Shoulder and Elbow Surgical Group of our institution. The research project was approved by the Human Research Ethics Committee of the same institution.

The inclusion criteria were: patients with OBPP sequela who presented functional deficit of shoulder lateral rotation, with congruent joint and without humeral head or glenoid

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