Origin of the Tendon of the Long Head of the Biceps Brachii Muscle and its Relationship with Glenoid Labrum in Human Foetuses

Origen del Tendón de la Cabeza Larga del Biceps Braquial y sus Relaciones con el Labro Glenoideo en Fetos Humanos

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SUMMARY: We dissected the shoulders of 20 human foetuses to anatomical study. The purpose of this study was to characterize the anatomical origin of the long head tendon of the muscle biceps brachii (LHBBT) in human foetuses and its relationships with the glenoid labrum of the scapula. The results had shown that in approximately 95% of the cases the tendon of the long head of the biceps brachii inserts in the region of the glenoid labrum. This origin seems to form, together with the glenoid labrum, an anatomical complex. We conclude that the almost totality of the LHBBT was originated in the glenoidal labrum. For us, this furthermore reinforce the importance and necessity of better clarifying the anatomical and clinical implications of the biceps/labrum complex.

KEY WORDS: Anatomy; Biceps brachii muscle; Glenoid labrum.

INTRODUCTION

The descriptions of the origin of the long head of the biceps brachii tendon (LHBBT) in the majority of textbooks texts and in anatomical works show disagreements, in special, as the relationships of the tendon with the glenoid labrum of the scapula. Anatomical variations of the glenoid bicipital/labrum complex and the continuity of the superior labrum with the tendon have been described (Vangsness et al., 1994; Prescher et al., 2000). Arthroscopy studies have admitted that the LHBBT plays an important role in the properly functioning shoulder and in the pathologic mechanism of action in the superior desinsertion of the glenoid labrum (Andrews et al., 1985; Terry et al., 1994; Maffet et al., 1995; Jee et al., 2001). According to Gray (1977), Moore (2001), Di Dio (2002) the LHBBT originates in the supraglenoid tubercle. For Bergman et al. (2004), usually the tendon inserts in the glenoid labrum. Testut & Latarjet (1954) had admitted the origin of the tendon in the external angle of the scapula, immediately above of the glenoidal socket. Most of the authors admits that beyond of the origin to the level of the supraglenoid tubercle, the LHBBT participates or even inserts in glenoid labrum (Cruveilhier, 1844; Poirier et al., 1909; Testut & Latarjet, 1981; Gardner et al., 1988; Sappey, 1989; Williams & Warwick, 1980; Cooper et al., 1992; Vangsness et al.; Demondion et al., 2001).

In arthroscopic examinations, the assessment of the origin of the LHBBT at the supraglenoid tubercle or labrum is important (Vangsness et al.). Snyder et al. (1990) was whom first described the SLAP (superior labial, anterior and posterior) lesions. That may be detected if the stability of the biceps/labrum complex is compromised or if the biceps and labrum are frayed.

Our objective was characterize the anatomical origin of the LHBBT in human foetuses and its relationships with the glenoid labrum of the scapula.
MATERIAL AND METHOD

We studied 20 shoulders from human foetuses of both sexes from the Department of Morphology of Federal University of Sergipe. These foetuses were obtained in accordance with the law number 8501 of 1992 that deals with the use to cadavers for studying and research. The foetuses had been fixed in a solution of formol 10% and were dissected without aid of optic instruments. In the dissection, the capsule of the joint of the shoulder, after displayed, was open, thus allowing accompaniment the trajectory of the LHBBT until its proximal insertion. All the dissected shoulders were photographed after the identification of the proximal insertion of the tendon.

RESULTS

In 19 of the 20 shoulders studied, the origin of the LHBBT occurred in the posterior level of the glenoid labrum (Fig. 1). Starting from this insertion, the tendon followed a anterior direction, crossed the head of the humerus and emerged of the articular capsule. At long of the humerus was covered by intertubercular ridge of this bone and finally arrive the muscular fibres of the long head of the biceps brachii muscle. In two cases it was observed that the tendon crossed a canal formed between the tendon of the pectoralis major muscle and the bicipital fascia. In only one of the cases, the origin of the LHBBT was found in the supraglenoid tubercle of the right scapula of a male foetus (Fig. 2).

In two glenoid labrums occurred a division of the labrum being that where one was related with the tendon and the another with a like ligament structure that seems incorporated the joint capsule (Fig. 3).

DISCUSSION

Our study shows that 95% of the origin of the LHBBT occurred in the glenoidal labrum. This number of the our findings was superior to the describes by authors as Bankart (1938), De Palma et al. (1949), Williams & Warwick, Detrisac & Johnson (1986), Pal et al. (1991), Cooper et al. and Vangsness et al. In disagreement with Hollinshead...
(1958), Hammond et al. (1971). Williams & Warwick and Last (1984), we did not find the LHBBT exclusively inserted in the supraglenoidal tubercle. In only one case the LHBBT was inserted in the supraglenoidal tubercle. 

Healey et al. (2001) emphasized the constitution of the biceps/labrum complex in the anterior shoulder stability. The authors yet claim about the relative few anatomic studies specific to the superior glenoidal labrum and the LHBBT origin. We observe that at least one third of the posterior-superior region of the labrum, macroscopically was indistinguishable of the LHBBT. Histologic (Cooper et al., 1958), Hammond & Warwick and Last (1984), we did not find the LHBBT exclusively inserted in the supraglenoidal tubercle. In only one case the LHBBT was inserted in the supraglenoidal tubercle. Furthermore, Bey et al. (1998), demonstrated the importance of the posterior-superior region of the glenoid labrum in the transmission of forces through the LHBBT during effort and movement of the shoulder.

Demirkan et al. (2003) pointed out that an understanding of the normal anatomy and biomechanics of the shoulder joint is essential for proper interpretation of the MRI infestations of those conditions.

We conclude that the almost totality of the LHBBT was originated in the glenoidal labrum. For us, this furthermore reinforce the importance and necessity of better clarifying the anatomical and clinical implications of the biceps/labrum complex.


RESUMEN: Fueron disecados los hombros de 20 fetos humanos con el propósito de hacer un estudio anatómico. El objetivo de este estudio fue determinar el origen del tendón de la cabeza larga del músculo bíceps braquial y su relación con el labro glenoideo. Los resultados demostraron que, en cerca del 95% de los casos, el tendón de la cabeza larga del músculo bíceps braquial estaba originándose en la región del labro glenoideo. Este origen parece formar junto con el labro glenoideo, un complejo anatómico. Concluimos que casi todos los tendones del músculo bíceps braquial están insertados en el labro glenoideo. Esto es importante conocer para una mejor clarificación de las implicaciones clínico-anatómicas del complejo del biceps/labro.

PALABRAS CLAVE: Anatomía; Músculo esquelético; Articulación humeral.

REFERENCES


