Clinically important unilateral accessory tendinous slip from the short head of biceps brachii muscle merged with medial intermuscular septum: a case report


Abstract

Introduction

Biceps brachii is a muscle of the anterior compartment of arm, which is a flexor and supinator of the forearm, having two heads: short head and long head. The aim of this report is to discuss a rare case of biceps brachii muscle merging with medial intermuscular septum.

Case report

During a routine dissection class held for medical students, we came across an unusual unilateral variation in the right arm of a male cadaver aged about 50 years. A tendinous slip or cord was arising from the medial surface of the proximal part of short head of biceps brachii muscle and its tendon. The accessory tendon emerged from the medial side of right biceps brachii muscle, and after crossing the brachial artery and median nerve it blended with the upper part of medial intermuscular septum. This variant tendon was very thick and was tense enough to compress the structures passing deep into it.

Discussion

During certain arm movements, compression of brachial artery and median nerve may lead to various neurovascular syndromes. Such accessory tendons can also be used for tendon grafts and can be obtained with ease because of its superficial position in the arm.

Conclusion

This case report can be useful for clinicians attending patients of neurovascular compression syndromes in upper limb and surgeons performing tendon grafts.

Introduction

Biceps brachii muscle is a prime supinator of the forearm and a powerful flexor at the elbow joint, supported by musculocutaneous nerve and brachial and anterior circumflex humeral arteries. It has two heads: short head and long head. The long head originates from the supraglenoid tubercle of scapula and the short head from its coracoid process. The two heads distally join to form a muscle belly. The tendon from biceps brachii muscle belly inserts into the radial tuberosity, and bicipital aponeurosis from tendon is fused with the deep fascia of forearm. Muscular anomalies are common in the upper limb and may be due to minor disturbances arising during critical stages of normal development of upper-limb muscles. Numerous studies and case reports are available, which predominantly mention additional heads of biceps brachii muscle. The present study reports on a rare, unusual and clinically important variation associated with biceps brachii muscle.

Case report

During a routine dissection class for medical students, we came across an unusual unilateral variation in the right arm of a male cadaver aged about 50 years. A tendinous slip or cord was arising from the medial surface of the proximal part of the short head of biceps brachii muscle and its tendon. This accessory tendinous slip passed medially and distally towards the medial side of the arm superficially crossing the brachial artery, venae comitantes of brachial artery and the median nerve. When traced distally, we found it was blending with medial intermuscular septum at a distance of 13.6 cm above the medial epicondyle of humerus. Origin, insertion and number of heads of biceps brachii muscle were found to be normal. The superior ulnar collateral artery, which is a branch of brachial artery, passed deep into the distal end of accessory tendon and entered the posterior compartment of the arm after piercing the medial intermuscular septum (Figure 1). This accessory tendon was a thick, cord-like structure, was tensed and was compressing the brachial artery, venae comitantes and the median nerve. Variant tendon emerged from the proximal part of biceps brachii muscle at a distance of about 11 cm from the coracoid process, and, distally, it ended on the medial intermuscular septum at a distance of about 13.6 cm above the medial epicondyle of humerus. Total length of the tendon was about 7.4 cm (Figure 2).

Discussion

Variation in the morphology of biceps brachii muscle is common. A study regarding the variation of this muscle indicates that supernumerary heads of biceps brachii are present in 15% of subjects in the South Indian population. In addition to the supernumerary head, other variations have
Case report

Figure 1: Dissection of right upper arm demonstrating the accessory tendon emerging from the medial side of short head of biceps brachii muscle, passing superfi-cially to the brachial artery, venae comitantes of brachial artery and median nerve. Distal blending of this accessory tendon with medial intermuscu-lar septum is also seen.

BBMS = short head of biceps brachii muscle, DM = deltoid muscle, MN = median nerve, VC = venae comitantes, MIS = medial intermuscular septum, UN = ulnar nerve, TM = triceps muscle, LDM = latissimus dorsi muscle
*Variant anomalous tendon.
**Superior ulnar collateral artery, BV = basilic vein.

Figure 2: Diagrammatic representation of the variant anomalous tendon along with its measurements. The length of variant anomalous tendon is 7.4 cm, distance between the tip of coracoid process and the proximal end of variant tendon is 11 cm and the distance between the distal end of variant tendon and medial epicon-dyle of humerus is 13.6 cm.

SBBM = short head of biceps brachii muscle, ME = medial epicondyle of humerus, CP = tip of coracoid process of scapula.
*Variant anomalous tendon.
**Medial intermuscular septum.

also been mentioned. Some case reports regarding variations of biceps brachii muscle and their implications include the following: (i) biceps brachii arising from the medial intermuscular septum compressing the brachial artery and median nerve, (ii) brachial artery entrapment syndrome caused by supracondylar process during hyperextension of the arm, and (iii) supracondylar spur with Struthers ligament compressing the brachial artery. Median nerve compression or entrapment leads to syndromes such as carpal tunnel syndrome, pronator teres syndrome and anterior interosseous syndrome. In addition to variants of biceps brachii muscle, variable insertion of coracobrachialis into the distal medial border of humerus can also compress median nerve and brachial artery. Thus, numerous types of variant biceps brachii muscle mentioned in the foregoing cases can lead to neurovascular compression syndromes.

The accessory tendinous slip in our case was crossing superficial to the brachial artery, venae comitantes and median nerve. This accessory tendinous slip was a thick, cord-like structure and was tensed enough to compress the structures passing deep into it. As this accessory tendon was emerging from the medial...
surface of the short head of biceps brachii muscle, hyperextension of the arm at the shoulder joint can lead to overstretching of this variant tendon, further compressing the structures passing deep into it. In such cases, compression of brachial artery may lead to ischemia during the hyperextension of upper limb, showing atypical arterial symptoms similar to thoracic outlet syndrome or brachial artery entrapment syndrome in the upper limb. Compression of median nerve may lead to alterations in sensory functions, such as pain, paresthesia and numbness in palm, accompanied by motor dysfunctions such as diminished grip strength or atrophy of muscles of thenar eminence. Signs and symptoms similar to pronator teres syndrome and anterior interosseous syndrome may appear with accessory tendinous slip as mentioned in our present case. Thus, patients with symptoms of neurovascular compression syndrome should be investigated for the presence of anomalies as mentioned in our present case. Such variant anomalous tendons can also be used for tendon grafts.

The accessory tendinous slip from the biceps brachii muscle is said to be a remnant of various muscular or tendinous slips from the distal end of the muscle attached to the lower end of humerus, ulna, fascia or neighbouring muscles during the development of foetus in the fourth month of intrauterine life, and thus, occasionally leading to such variations12.

Conclusion
Variant anomalous tendinous slips from biceps brachii muscle can compress vital structures such as brachial artery and median nerve during hyperextension of the arm at the shoulder joint, which may lead to various neurovascular compression syndromes in the upper limb. This case report can thus be useful for clinicians attending patients of neurovascular compression syndromes in the upper limb and surgeons performing tendon grafts.

References