Original Research Article

Study of incidence of the supracondylar spur of the humerus among south Indians

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Abstract

Background: The supracondylar spur of the humerus is a hook like, bony spine of variable size that projects distally from the antero-medial surface of the humerus. It is about 5 cm proximal to the medial epicondyle. Its length varies from 2- 20 mm. In some cases a fibrous band called Ligament of Struthers may bridge the supracondylar spur to medial epicondyle. the median nerve and the brachial artery may pass beneath the band, hence it is vulnerable for compression. We aimed to study the prevalence of supracondylar spur among south Indian dry humeri, which is useful for differential diagnosis of supracondylar syndrome. **Materials and Methods:** 112 dried humeri were studied in Jan 2016 - June 2017 department of Anatomy at Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bangalore, of which 53 were of right side and 59 were of left side. The bones were examined in detail for presence of supracondylar spur. On finding measurements were taken using a digital calliper. **Results:** Out of 100 dried humeri examined, only one left-sided humerus showed an supracondylar spur triangular in shape projecting from the anteromedial surface and directed forwards and medially. The spur was projecting 0.4 cm from the surface and the base was 1 cm long vertically and 0.8 cm broad. The spur was 5.2 cms proximal to the medial epicondyle. **Conclusion:** The supracondylar spur is a not a pathological condition of the bone but normal anatomical variation. May cause symptoms of median nerve compression and claudication of the brachial artery.

Key Words: Supracondylar Spur, Humerus, Median Nerve, Brachial artery and Supracondylar Syndrome.

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INTRODUCTION

The supracondylar process of the humerus or supra epitrochlear, epicondylar, epicondylic process. It is a hook like bony process observed from anteromedial surface of the humerus. From this process ligaments given insertion to a portion of the abnormal fibres of corocobrachialis muscles and also pronator teres muscle [1]. The median nerve and brachial artery passes beneath this process [2]. The process identified 1818 – 1819 in apes and monkeys and appears in tiedmanns tabulae arterium and incidence is 0.1 % to 5.7 %. Some of the authors are reported this is act has a normal anatomical structure in climbing animals. In another study was reported finding a supracondyloid process in 6 of 515 (1.16%) whites, but only once in 1,000 (0.1%) Negroes [3-4]. The supracondylar spur of the humerus is a hook like, bony spine of variable size that projects distally from the antero-medial surface of the humerus. It is about 5 cm proximal to the medial epicondyle [5]. Its length varies from 2- 20 mm. In some cases a fibrous band called Ligament of Struthers may bridge the supracondylar spur to medial epicondyle. In such cases, the median nerve and the brachial artery may pass beneath the band, hence it is vulnerable for compression[6]. The compression of brachial artery and median nerve beneath the ligament

caused supracondylar process syndrome[7]. Symptoms of this include paraesthesia, weakness and muscle wasting of the compression of median nerve results is ischemic pain and claudication in the forearm [8]. Based on this background the present was carried out prevalence of supracondylar spur among south indian dry humeri, which is useful for differential diagnosis of supracondylar syndrome.

MATERIALS AND METHODS

In the present study, 112 dried humeri were studied from Jan 2016 - June 2017 in the department of Anatomy at Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bengaluru Rural, out of 112, 53 were of right side and 59 were of left side. The bones were examined in detail for presence of supracondylar spur. On finding the supracondylar spur measurements were taken using a digital calliper. We examined for any osseous projection from distal part through bright sunlight.

RESULTS

Out of 100 dried humeri examined, only one left-sided humerus showed an supracondylar spur triangular in shape projecting from the anteromedial surface and directed forwards and medially. The spur was projecting 0.4 cm from the surface and the base was one cm long vertically and 0.8 cm broad. The spur was 5.2 cms proximal to the medial epicondyle. The distance between the tip of the spur and tip of the trochlea was 6.4 cms. The distance between the tip of the spine to medial supracondylar ridge was 0.9 cm. The distance of spine from nutrient foramen was 4.2 cm. The total length of this humerus was 31.5 cm. The incidence of the spur in the present study was 1.1%.

Table 1: Showed the measurements of supracondylar spur of left Humerus

SL. No	Supracondylar spur of Left Humerus	Measurements in cms
1.	Length of spine	0.4
2.	Distance of spine from medial epicondyle	5.2
3.	Breadth at the base of spine	0.8
4.	Distance of spine from nutrient foramen	4.2
5.	Distance between the tip of the spine to medial supracondylar ridge	0.9
6.	Distance between the tip of the spur and tip of the trochlea	6.4

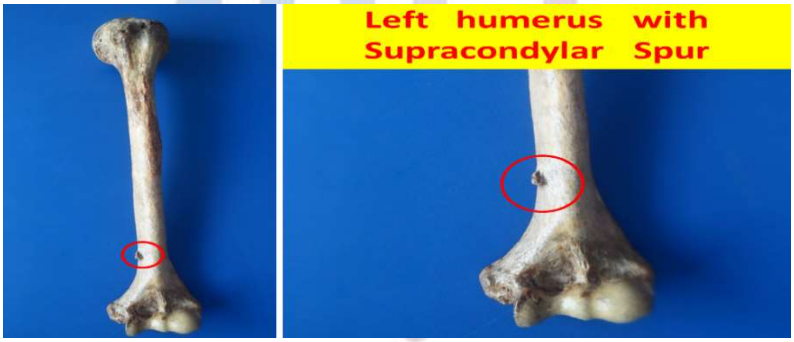

Figure 1: Showed the supracondylar spur of left Humerus

DISCUSSION

The overall incidence of the supracondylar process of the humerus is very low ranging from 0.3 – 2.7% in general population [9]. In the present study the incidence was 1.1% and similar studys incidences of different studies Gruber 2.7%, Danforth 0.5%, Adachi 0.8%, Terry 1.16%, Hrdliýka 1%, Dellon 1.15%, Parkinson 0.4%, Natsis 1.3%, Gupta 0.26%, Oluyemi 2.5%, Prabahita 1.25% [10-19]. Supracondylar spur may cause compression symptoms like severe paraesthesia and hyperesthesia of the hand and fingers, ischemic pain of the forearm. Treatment is by decompression i.e., releasing the ligament of Struthers attached to the spur and removal of the spur with the overlying periosteum [20]. The dimensions of supracondylar process in our study results were slightly varied when compared to other studies. The length of the spine was 0.4 centimetre in our study, similar results was found in the study of Gupta RK (0.3 cm) where as studies of Oluyemi KA and Prabahitha B showed 1.6 cm and 1.1 cm respectively. Distance of spine from median epicondyle was 5.2 centimetre similar results was found in the study of Oluyemi KA (5.5 cm) where as studies of Gupta RK and Prabahitha B showed 6.5 cm and 4.4 cm. Breadth at the base of spine was 0.8 cm in our study where as Gupta RK showed 1.1 cm and Prabahitha B study showed 1.5 cm. distance of spine from nutrient foramen was 4.2 cm in our study where as study conducted by Oluyemi KA observed 5.3 cm and Prabahitha B study observed 6.5 cm. The previous studies reported supracondylar process differentiated from osteochondroma and also spur is placed distally towards the elbow joint and discontinue in the cortex of the humerus. This study suggests that though

supracondylar spur is a normal anatomical variant prevalence ranges from 0.1 % to 2.7 % among various ethnic groups. Supracondylar spur when present can be associated with neurovascular symptoms and also this study suggests to carry out similar study with large sample size among different ethnicity.

CONCLUSION

The supracondylar spur is a not a pathological condition of the bone but normal anatomical variation, but may cause symptoms of median nerve compression and claudication of the brachial artery. Hence a concrete knowledge about this rare anatomical variation is important for Anatomists, Anaesthetists, Radiologists and Orthopedic surgeons.

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