https://doi.org/10.3329/cbmj.v15i1.87556

Anatomical Study of the Lateral Supracondylar Spur of the Humerus in a Bangladeshi Population

*Haque SMA[1], Mehataz T[2], Ahmed M[3], Akter M[4], Biswas TR[5], Khanam SR[6]

Abstract

The lateral supracondylar spur of the humerus bone is a rare anatomical variation. Usually its presence is asymptomatic, but it may cause a variety of symptoms like compression of nerves and arteries that affects the mobility of humans. This cross-sectional, descriptive study was done in the Department of Anatomy, Mymensingh Medical College, Mymensingh, Bangladesh, between July 2021 and June 2022, to observe the lateral supracondylar spur in dry humerus bone in a Bangladeshi population. A non-randomized, convenient sampling technique was adopted. We collected 100 (43 right and 57 left) fully ossified dry human humeri. In this study, only 1 spur of the humerus was found (incidence rate 1%). The spur was found in the anterolateral aspect of the right humerus, 21.24 mm above the lateral epicondyle. It was triangular and measured approximately 14.81 mm in maximum vertical diameter (base), directed upwards and medially. The maximum width of the spur was 10.13 mm, and the maximum thickness was 7.51 mm. Knowledge of such anatomic variation is essential for anatomists, anthropologists, forensic specialists and clinicians like surgeons and radiologists.

CBMJ 2026 January: vol. 15 no. 01 P:46-49

Keywords: Supracondylar spur, humerus, anatomical variation, Bangladeshi population

Introduction

A hook-like supracondylar spur projects from the anteromedial surface about 5-7 cm above the medial epicondyle of the humerus bone.[1] Struthers first reported this spur in 1849.[2] It is also referred to as the epicondyloid, supracondyloid, or supracondylar process by different authors.[3] It can be unilateral or bilateral.[2,3] A fibrous band called Struther's ligament stretches from it to the medial epicondyle, forming the supracondylar foramen through which the median nerve and brachial artery can pass, leading to their compression.[2-4] Climbing mammals such as cats and lower primates normally possess this spur. This spur acts as a roof of the tunnel that contains the artery and nerve of the forearm.[2] The ligament of Struthers, which has its insertion on the tip of the process, acts as a tendon of the latissimus dorsi muscle. This muscle is usually present in climbing mammals. In humans, it is a fibrous band between the tendons of the latissimus dorsi and coracobrachialis.[2,3,5]

Understanding the lateral supracondylar spur of the human humerus is crucial for anatomy, forensic and surgical sciences, as it helps investigators and surgeons to identify skeletal landmark and point of interest. This also help the anthropological researchers to produce evidence to indicate the characteristic features in a specified population.

1. *Dr. Shah Md. Atiqul Haque, Assistant Professor, Department of Anatomy, Mymensingh Medical College, Mymensingh, Bangladesh.
2. Dr. Tasnova Mehataz, Indoor Medical Officer, Department of Anaesthesiology, Community Based Medical College Hospital Bangladesh, Mymensingh.
3. Dr. Muntasir Ahmed, Associate Professor, Department of Anatomy, Netrokona Medical College, Netrokona, Bangladesh.
4. Dr. Mahfuza Akter, Assistant Professor, Department of Radiology and Imaging, Jamalpur Medical College, Jamalpur, Bangladesh.
5. Dr. Tithi Rani Biswas, Assistant Professor, Department of Anatomy, Army Medical College, Jashore, Bangladesh.
6. Dr. Sultana Razia Khanam, Assistant Professor and Head, Department of Orthodontics and Dentofacial Orthopaedics, Community Based Medical College Bangladesh, Mymensingh.

Address of Correspondence:
Email: dr.rony13@gmail.com

Moreover, there might be racial variation based on region and ethnicity around the globe. Therefore, we proposed this study to observe the presence and measure different dimensions of the lateral supracondylar spur of the humerus bone in a Bangladeshi population.

Methods

This cross-sectional, descriptive study was done in the Department of Anatomy, Mymensingh Medical College, Mymensingh, Bangladesh, between July 2021 and June 2022. Samples were collected from the Department of Anatomy of Mymensingh Medical College through a non-randomized, convenient sampling technique. A total of 100 fully ossified dry human humeri were collected for this study. Unossified, developmentally abnormal and broken bones were excluded. All bones were examined for any osseous projection from distal part under daylight. After finding a supracondylar process (Fig. 1), we observed the location, direction, and shape of the spur. Then, the dimensions of the projection were recorded and photographed. The distance between the lateral epicondyle of the humerus and the lowermost point of the base of the spur was measured by placing the jaws of the digital Vernier slide calipers vertically. The fixed jaw of the calipers was placed on the lowermost point of the lateral epicondyle, and the sliding jaw was placed on the lowermost point of the base of the spur. The distance was measured and expressed in mm. The maximum vertical diameter of the lateral supracondylar spur (base) was measured by placing the jaws of the slide calipers vertically. One blade of the slide calipers was placed on the superiormost point of the spur, and the other blade was placed on the inferiormost point of the spur. Then, the distance was measured and expressed in mm. The maximum width of the spur was measured as the jaws of the digital slide calipers were placed along the maximum transverse diameter of the spur. Similarly, the maximum thickness of the spur was also measured by using the same instrument and expressed in mm (Fig. 2-5).

This study was approved by the Institutional Review Board of Mymensingh Medical College, Mymensingh, Bangladesh.

Fig. 1: Lateral supracondylar spur in the right humerus

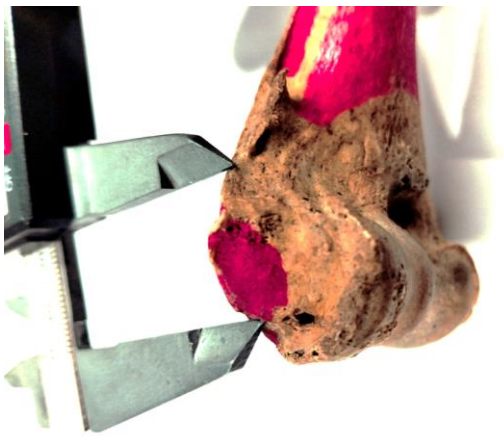

Fig. 2: Photograph showing the measurement of distance between the lateral epicondyle of the humerus and lowermost point of the base of the spur

Fig. 3: Photograph showing measurement of maximum vertical diameter (base) of the spur

Fig. 4: Photograph showing measurement of maximum width of the spur

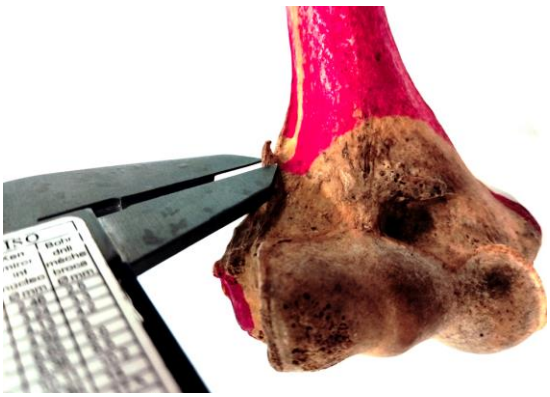

Fig. 5: Photograph showing measurement of maximum thickness of the spur

Results

Among 100 dried human humeri, we found a single right-sided humerus having this kind of spur (Fig. 1). Hence, the incidence calculated in our study was 1%. the spur was projected from the anterolateral surface of the lower end of the humerus. The spur was directed upwards and medially. It was triangular and was 21.24 mm proximal to the lateral epicondyle. The maximum vertical diameter of the lateral supracondylar spur (base) was 14.81 mm and the maximum width of the spur was 10.13 mm, and the maximum thickness of the spur was 7.51 mm.

Discussion

In the present study, only 1 lateral supracondylar spur was found out of 100 human humeri. That means the incidence was 1%. Shivaleela *et al*. reported 0.41% incidence of lateral supracondylar spur in their study.[3] As quoted by Aydinlioglu *et al.*[4], various population-based studies showed a frequency of the variation as follows: Ireland, 1.34% in males and 1.8% in females; United States, 1.03% in males and 1.8% in females; Germany, 0% in both sexes; India, 0% in children and 0.097% in adults; and Italy, 0% in males and 1.72% in females. Oleyumi *et al.* reported 2.5% among Nigerian population[6], while Gupta *et al.* reported 0.26%[7], and Baruah reported 1.25%[8] in two different Indian population. However, there is a high incidence of unilateral supracondylar process of the humerus in 'Cornelia de Lange syndrome', an autosomal recessive trait, occurring in approximately one in every 10,000 live births.[9]

According to the present study, the distance between the lateral epicondyle of the humerus and the lowermost point of the base of the spur was 21.24 mm. The value was nearly similar to the value reported by Bhatnagar *et al*., as they measured it 20

mm.[10] According to the present study, the maximum vertical diameter of the lateral supracondylar spur (base) was 14.81 mm. The value was lower than the finding of Bhatnagar *et al.* as they found 25.00 mm.[10] According to the present study, the maximum width of the spur was 10.13 mm. The value was nearly similar to the value described by Bhatnagar *et al.* as they found 10 mm.[10] According to the present study, the maximum thickness of the spur was 7.51 mm. The value was lower than the finding of Bhatnagar *et al.* as they measured it 1.00 mm.[10]

Conclusion

The lateral supracondylar spur is frequently misjudged as a pathological condition of the bone rather than as a normal anatomical variation. It is usually clinically silent but may become symptomatic. A knowledge of such rare anatomical variation is important for anatomists, anthropologists, orthopaedic and hand surgeons, and radiologists for their practice and research in medicine.

References

1. *Datta AK. Essentials of Human Anatomy. Part-III: Superior and Inferior Extremities. 5th ed. Kolkata: Current Books International; 2017.*
2. *Lambert S. Shoulder girdle and arm. In: Standring S, Anand N, Catani M, Collins P, Crossman AR, Gleeson M, et al. eds. Gray's Anatomy: The Anatomical Basis of Clinical Practice. 42nd ed. New York: Elsevier; 2021.*
3. *Shivaleela C, Suresh BS, Kumar GV, Lakshmiprabha S. Morphological study of the supracondylar process of the humerus and its clinical implications. J Clin Diagn Res. 2014;8(1):1-3.*
4. *Aydinlioglu A, Cirak B, Akpinar F and Tosun N, Dogan A. Bilateral Median Nerve Compression at the Level of Struthers Ligament. J Neurosurg. 2000;92:693-6.*
5. *Singh V. Textbook of Anatomy: Upper Limb and Thorax. Vol. 1. 3rd ed. New Delhi: Elsevier India; 2020.*
6. *Oleyumi KA, Okwuonu UC, Adesanya OA, Akinola OB, Ofusori DA, Ukwenya VO, et al. Supracondylar and infratubercular processes observed in the humeri of Nigerians. Afr J Biotechnol. 2007;6(21):2439-41.*
7. *Gupta RK, Mehta CD. A study of the incidence of supracondylar process of the humerus. J Anat Soc. 2008;57(2):111-15.*
8. *Baruah P, Choudhury PR, Talukdar KL. A study of supracondylar process of humerus. J Evol Med Dent Sci. 2012;1(5):817-22.*
9. *Peeters FL. Radiological manifestations of the Cornelia de Lange syndrome. Pediatr Radiol. 1975;3(1):41-6.*
10. *Bhatnagar S, Iwanaga J, Dumont AS, Tubbs RS. Lateral supracondylar spur process of the humerus. Cureus. 2021;13(2):e13514.*