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MORPHOMETRIC STUDY OF POSTERIOR PROJECTION FROM OLECRANON PROCESS OF ULNA BONE AND ITS CLINICAL IMPORTANCE

Anatomy

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ABSTRACT

Introduction: Ulna is a medial bone in supinated fore arm. The proximal end has olecranon process, coronoid process and trochlea. During examination of ulna in osteology lab in the department of anatomy, Osmania medical college, Koti, Hyderabad, Telangana. We found ulna showing posterior bony projection [spur] from superior part of posterior surface of olecranon process. Its incidence is 6%.The average length, breadth, thickness were 14 mm, 8mm, 3mm respectively. These bony projections may impinge on the Triceps brachi muscle and the structures surrounding it. Causes compression of structures and spasm of muscle leading to pain and impairment of at the joints. Spur may be misleaded in the radiograph. So knowledge of spur is of great importance to clinicians especially, Orthopedic surgeons, Neurologist, radiologist and anatomist.
Aim And Objectives: To observe any bony spur on the posterior surface of olecranon process in 100 normal bones.
Materials And Methodology: 100 dried ulna bones, vernier caliper and measuring scale.
Result: Posterior bony spur is seen in 6 ulna bones. % of bony projection out of 100 ulna bones is 6%
Conclusion: olecranon process of ulna is the major component of elbow joint and related to important structures like triceps brachii, major vessels, and nerves. Probability of presence of a bony spur should be known to the Orthopedics surgeons, neurologist, radiologist, and anatomist.

KEYWORDS

ULNA, OLECRONON PROCEES, BONY PROJECTION, TRICEPS BRACHII.

INTRODUCTION:

Ulna is medial bone in supinated forearm; its proximal end is a massive hook, which is concave forwards. The lateral border of the shaft is a sharp interosseous crest [1].The bone diminishes progressively from its proximal mass throughout its whole length but at its distal end expands in to small rounded head and styloid process.

The proximal end has large olecranon and coronoid process, trochlea and radial notch which articulates with humerus and radius. The olecranon is the most proximal part of the ulna.

An olecranon spur is an extra bony projection on elbow seen in few people. These spurs result from an enthesopathy of triceps tendon where it inserts onto the olecranon process [2].

MATERIALS AND METHODOLOGY:

this study is done during observation in the osteology lab of department of Anatomy, Osmania medical college, Koti, Hyderabad, Telengana .We have taken 100 dried ulnar bone without any pathological / abnormal breaks in it .6 ulna out of 100 were observed to have abnormal bony projections from the posterior upper 1/3rd part of superior surface of olecranon process. The incidence is 6%.The length, breadth and thickness of the spur are measured with the help of Vernier caliper and measuring scale. The results were analyzed.

Length of the spur: it is taken from the root of the spur to its tip

Breadth of the spur: it is taken from maximum width at its root

Thickness of the spur : it is taken at the most distal part of the tip of the spur

DISCUSSION:

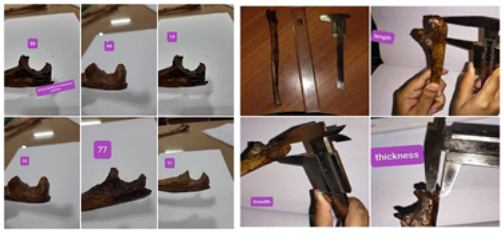
Bone spurs are bony projections that develop along the edges of bones. Also called osteophytes, bone spurs often form where bones meet each other in your joints [3]. They should not be confused with enthesophytes, which are bony projections which are at the attachment of a tendon or ligament [4]. Bony Projection may be formed when osteogenic layer lying beneath the periosteum is detached thereby activating the osteocytes. These lay down the extra bony growth. Bony projections/ bony out growths are also known as exostosis. Bony out growths are common in shoulders, knees and feet etc.

In our study, the bony spur is seen on posterior upper 1/3rd of olecranon process. we have taken the length, breadth and thickness as

Length of the spur: it is taken from the root of the spur to its tip

Breadth of the spur: it is taken from maximum width at its root

Thickness of the spur: it is taken at the most distal part of the tip of the spur with the help of VERNIER CALLIPER.



The measurements taken are as follows:

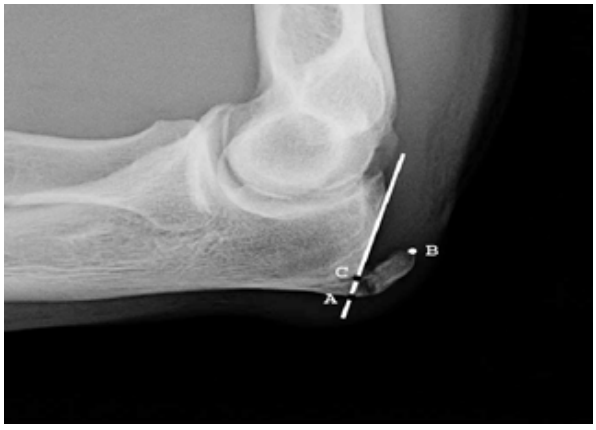
S. No	Presence Of Spur On The Bone	Upper 1/3 Rd
1	11	L- 16 mm
		B - 21 mm
		T - 3mm
2	19	L- 8 mm
		B - 5mm
		T- 4mm
3	33	L- 16 mm
		B- 21 mm
		T- 2 mm
4	41	L- 12 mm
		B -15 mm
		T -4 mm
5	77	L -16 mm
		B- 18 mm
		T – 5 mm
6	86	L – 8mm
		B- 5 mm
		T-4 mm

In previous study the percentage of prevalence is 4%. In our study it is 6%.

Abnormal bony projections have also been reported on iliac crest [5], obturator foramen [6] and external occipital protuberance (singh R, unpublished data). Inflammation of the Achilles tendon can lead to the formation of a bone spur at the back of the heel bone (calcaneus bone). Inflammation of the tissue on the bottom of the foot, plantar fasciitis, can lead to a bone spur at the underside of the heel bone. These bone spurs are sometimes referred to as heel spurs [7)]. But the same from the posterior aspect of superior surface of olecranon process of ulna is seen in this study.

Posterior part of superior surface of ulna gives insertion to triceps brachii muscle. This muscle is the strong extensor of elbow joint. When this muscle is excessively used it may give rise to such type of bony projections in two ways- (1) Due to over stretching of the muscle near the insertion, there might be micro trauma which ultimately calcify and ossify giving rise to bony projections. (3) Due to overuse, the periosteum may be elevated, activating osteocytes of the osteogenic layer underlying the periosteum. The osteocytes might lay down the bony tissue forming exostosis. Abnormal blood calcium levels in calcium metabolism disorder may also lead to calcium deposition leading to formation of bony projections. Moreover, exostosis may be due to disturbance of endochondral ossification which may be hereditary transmitted.

This bony tubercle may impinge on triceps muscle and neurovascular structures causing spasm of the muscle leading to pain during biomechanical movement of elbow and neurovascular complications. The bony projection may injure the structures surrounding the bony growth when olecranon process occupies the olecranon fossa during full extension of elbow.



CONCLUSION:

This study is of a great importance to surgeons while doing surgeries around elbow joint, helpful for neurologist and radiologist for the appropriate diagnosis and helpful for anatomist to identify morphometric variations in normal bone**.**

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