



MORPHOMETRIC STUDY OF OLECRANON PROCESS AND TROCHLEA OF HUMERUS IN ADULT POPULATION OF TELANGANA REGION.

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ABSTRACT

Introduction: Morphometric study of Olecranon process and Trochlea of humerus in Adult population of Telangana region.

Materials And Methods: The study was done on 120 dry Adult Humerus of unknown age and sex collected from the Department of Anatomy, Kakatiya Medical College, Warangal, Telangana state.

Results: Maximum width of Right and Left Olecranon process of humerus were 30mm and 34 mm respectively while the minimum width of olecranon process of humerus were 22mm on right and 24mm on left side. Mean width of olecranon process of humerus were 26 mm on right side, 29 mm on left side .

Maximum length of Right and Left Olecranon process of humerus were 20mm and 20 mm respectively while the minimum length of olecranon process of humerus were 15mm on right and 16 on left side. Mean length of Olecranon process of humerus were 17.5 mm on right side, 18 mm on left side .

Maximum width of right and left Trochlear process of humerus were 30mm and 30 mm respectively while the minimum width of width of right and left trochlear process of humerus were 18mm on right and 22 on left side. Mean width distance of trochlea of humerus were 24 mm on right side, 26 mm on left side.

Conclusion: The knowledge of Morphometric study of Olecranon process and Trochlea of humerus is important for anatomists, It is also helpful for orthopaedic surgeons in distal end fracture of humerus and its reconstructive surgery for various implants.

KEYWORDS : Olecranon process and Trochlea of humerus

INTRODUCTION:

The humerus is the longest and strongest bone of upper extremity. It has expanded upper end, lower end and a cylindrical shaft. Lower end consist of capitulum, trochlea, radial fossa, coronoid fossa, olecranon fossa, medial and lateral epicondyles. Intact humerus and its segments is very important for anatomists and forensic experts to investigate the identity of a skeleton. In anthropology and forensic science, morphometric analysis is carried out on remains of the long bones of the individual in absence of cranium and pelvis [1-3]. In long bones, femur and tibia collectively remains the best for assessment of living stature of the individual [4,5]. However in absence of long bones of lower limb, estimation of living stature can also be assessed by the long bones of upper limb such as humerus, radius and ulna [6,7]. We can find out the total humerus length by fragments of humerus for estimation of sex [8]. Morphometry of distal end of humerus is also important for determination of sex [9]. It is also important for orthopaedics surgeons in distal end fracture of humerus.

The measurement of various segments of humerus is very important to provide data for various implants in reconstruction of various humerus fracture. The present study is conducted for morphometric study of olecranon fossa and trochlear width of humerus.

MATERIALS AND METHODS:

The study was done on 120 dry adult humerus of unknown age and sex collected from the Department of Anatomy, Kakatiya Medical College, Warangal, Telangana state. Vernier caliper, tape, scale.

Three parameters were taken from lower end of humerus, those are

1. Maximum width of Olecranon fossa.
2. Maximum length of Olecranon fossa.
3. Maximum width of Trochlea of humerus.

OBSERVATIONS & RESULTS:

Total 120 humerus were included in this study, out of which 60 were right and 60 were left. Maximum width of right and left olecranon process of humerus were 30mm and 34 mm respectively while the minimum width of olecranon process of humerus were 22mm on right and 24 on left side. Mean width of olecranon process of humerus were 26 mm on right side, 29 mm on left side .

Maximum length of right and left olecranon process of humerus were 20mm and 20 mm respectively while the minimum length of olecranon process of humerus were 15mm on right and 16 on left side. Mean length of olecranon process of humerus were 17.5 mm on right side, 18 mm on left side.

Maximum width of right and left trochlear process of humerus were 30mm and 30 mm respectively while the minimum width of width of right and left trochlear process of humerus were 18mm on right and 22 on left side. Mean width distance of trochlea of humerus were 24 mm on right side, 26 mm on left side (Table-1).

DISCUSSION:

The distal humeral end articulates with the bones of the forearm and fractures involving it, may leads to several reconstructive problems like damage to the nerve and blood vessels. These fractures gain special attention for orthopaedic surgeons and to overcome these problems, they ought to know the morphometry of distal humerus(11) . The mean distance between proximal and distal point (length) of olecranon fossa was found to be 1.75 cm on right side and 1.8 cm as mean on left side which was in consonance with study of Berjina Farooq Naqshi et al(14) and Premchand et al (12), not in consonance with Akman et al. [11] , Sanjeev Kumar Sinha, et al (Table-2). Complex anatomy of elbow, small size of the fracture fragments and limited amount of subchondral bone, which is often osteopenic, combine to make, very difficult, the

operative management of intra articular fractures even for skilled surgeons. This problem can be overcome if morphometry of distal humerus is worked out(13). The mean width of Olecranon fossa was found to be 2.6 cm, on right side and 2.9 cm , on left side in this present study. Mean width distance of trochlea of humerus were 24 mm on right side, 26 mm on left side (Table-1).

Table 1: Showing Maximum Width, Length Of Olecranon Fossa And Maximum Width Trochlea Of Humerus.

| S. no. | Parameter | Right (in cms) | | Left (in cms) | | Mean(in cms) | |
|--------|---------------------------|----------------|-----|---------------|-----|--------------|------|
| | | Max | Min | Max | Min | Right | Left |
| 1. | Width of olecranon fossa | 3.0 | 2.2 | 3.4 | 2.4 | 2.6 | 2.9 |
| 2. | Length of olecranon fossa | 2.0 | 1.5 | 2.0 | 1.6 | 1.75 | 1.8 |
| 3. | Maximum width of trochlea | 3.0 | 1.8 | 3.0 | 2.2 | 2.4 | 2.6 |

Table 2: : Showing Comparison Of Distance Between Proximal & Distal Edge (Length) Of Olecranon Fossa Of Humerus With Other Authors

| S.no | Authors name | Race | Mean length in mms | |
|------|---------------------------------|------------------|--------------------|------|
| | | | Right | Left |
| 1. | Premchand et al(12) | South Indian | 17.6 | 18.2 |
| 2. | Berjina Farooq Naqshi et al(14) | North Indian | 17.7 | 18.2 |
| 3. | Akman et al. [11] | Turkish | 24.2 | 23.9 |
| 4. | Sanjeev Kumar Sinha, et al.[15] | North Indian | 18.3 | 18.4 |
| 5. | Present study | Telangana region | 17,5 | 18.0 |



Fig-1: Showing Horizontal and Vertical



FIG-2: Showing maximum trasverse diameter diameter of Olecranon fossa of Trochlea.

CONCLUSION:

The knowledge of Morphometric study of Olecranon process and Trochlea of humerus is important for anatomists, It is also helpful for orthopaedic surgeons in distal end fracture of humerus and its reconstructive surgery for various implants.

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