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MORPHOMETRIC STUDY OF DRY ADULT HUMAN TRAPEZOID ALONG WITH ITS CLINICAL SIGNIFICANCE IN TELANGANA REGION

Anatomy

Dr. Srijani Banerjee* Post graduate, Dept of Anatomy, Osmania Medical College, Koti, Hyderabad, Telangana. *Corresponding Author

Dr K. Aparna Vedapriya I/C Professor and HOD, Dept of Anatomy, Osmania Medical College, Koti, Hyderabad, Telangana.

ABSTRACT

INTRODUCTION: The distal carpal row from the radial side is made up of the trapezium, trapezoid, capitate and hamate bones. The trapezoid also known as the lesser multangular, resembles a four-sided table in the geometrical shape of a trapezoid leading to its name. Although many studies have described the dynamic aspects of carpal bones, very few studies have looked into the morphometry of the trapezoid bone. The morphometry of the trapezoid is important anatomically and clinically as arthritis of the scaphoid-trapezium-trapezoid joint is a condition that usually occurs along with arthritis of the carpometacarpal joint of the thumb. Traditional treatment involves a corticosteroid therapy and splinting, while severe cases may require surgical intervention. Also, trapezoid fractures occur in 2% of all carpal injuries. **AIM AND OBJECTIVES:** To study the morphology of dry adult human trapezoid and to evaluate various morphometric parameters like Length, Width, Length of concave facet on medial surface, Width of concave facet on medial surface, Length of distal surface for articulation with base of second metacarpal and Width of distal surface for articulation with base of second metacarpal. **MATERIAL AND METHODS:** The study was conducted on 50 dry human adult Trapezoids in the Department of Anatomy, Osmania Medical College, Koti, Hyderabad. Various parameters like Length, Width, Length of concave facet on medial surface, Width of concave facet on medial surface, Length of distal surface for articulation with base of second metacarpal and Width of distal surface for articulation with base of second metacarpal of both right and left sides were calculated by using Vernier Calipers and were evaluated statistically. **RESULTS:** The study shows Length of right trapezoid was 12.43±2.46mm and left was 11.43±1.57mm; Width of right trapezoid was 11.84±2.07 and left was 11.67±2.12; Length of concave facet on medial surface of right trapezoid was 8.85±1.74 and left was 8.29±1.23; Width of concave facet on medial surface of right trapezoid was 5.87±0.89 and left was 5.88±0.69; Length of distal surface for articulation with base of second metacarpal of right trapezoid was 13.21±1.32 and left was 12.19±1.48; Width of distal surface for articulation with base of second metacarpal of right trapezoid was 5.91±0.87 and left was 5.86±0.96. **CONCLUSION:** Though very few studies have been done regarding the morphometry of Trapezoid, its anatomical and clinical knowledge is important.

KEYWORDS

Distal Carpals, Trapezoid Bone, Morphometric Study, Arthritis

INTRODUCTION:

The distal carpal row from the radial side is made up of the trapezium, trapezoid, capitate and hamate bones. The trapezoid also known as the lesser multangular; it is classified as a short bone. The bone resembles a four-sided table in the geometrical shape of a trapezoid with its dorsal side (on the side of the back of the hand) being two times wider than its palmar side leading to its name. The trapezoid articulates with four bones – the second metacarpal, trapezium, capitate, and scaphoid. The flexor pollicis brevis (deep head) arises from the palmar surface of the trapezoid, while the adductor pollicis (oblique head) arises from the distal palmar surface on the ulnar side. There are no muscle attachments on the dorsal surface. Although many studies have described the dynamic aspects of carpal bones, very few studies have looked into the morphometry of the trapezoid bone.

As it forms part of the scaphoid-trapezium-trapezoid joint, the trapezoid is vital to the movement and flexing of the wrist joint. The morphometry of the trapezoid is important anatomically and clinically as arthritis of this joint is a condition that usually occurs along with arthritis of the carpometacarpal joint of the thumb. Traditional treatment involves a corticosteroid therapy and splinting, while severe cases may require surgical intervention. Also, trapezoid fractures occur in 0. 4% of all carpal injuries.

MATERIAL AND METHODS:

The present study was conducted on 50 dry human adult trapezoids in the Department of Anatomy, Osmania Medical College, Koti, Hyderabad. This study included fully ossified, dried, cleaned trapezoids only. Broken and deformed trapezoids were excluded from the study.

Various morphometric parameters of both Right and Left Trapezoids were measured as follows:

Length of trapezoid: The radio-ulnar length was measured by means of directly placing the vernier calliper over the bone.

Width of trapezoid: The dorso-palmar width was measured with the help of vernier calliper placed directly over the bone.

Length and Width of concave facet on medial surface of trapezoid and Length and Width of distal surface for articulation with base of second metacarpal of trapezoid was measured with the help of vernier calliper placed directly over the facet and articular surface respectively.

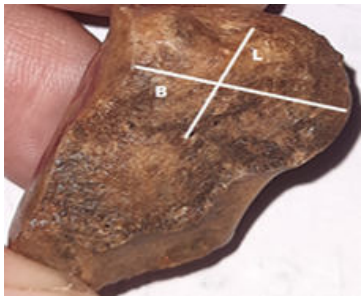

Fig: Length and Width of concave facet on medial surface of trapezoid.

Fig: Length and Width of distal surface for articulation with base of second metacarpal of trapezoid.

RESULTS:

A total of on 50 dry human adult Trapezoids were studied. The minimum, maximum, average, and standard deviation values of the various parameters which were studied on either side of the trapezoids are shown in Table 1. There was no statistically significant difference between the values obtained on the right and left sides (P>0.05).

Table 1. Dimensions for trapezoid

Parameters	Right		Left	
	Mean (mm)	SD	Mean (mm)	SD
Length	12.43	2.46	11.43	1.57
Width	11.84	2.07	11.67	2.12
Length of concave facet on medial surface	8.85	1.74	8.29	1.23
Width of concave facet on medial surface	5.87	0.89	5.88	0.69
Length of distal surface for articulation with base of second metacarpal	13.21	1.32	12.19	1.48
Width of distal surface for articulation with base of second metacarpal	5.91	0.87	5.86	0.96

DISCUSSION:

Although many studies have described the dynamic aspects of carpal bones, very few studies have looked into the morphometry of the trapezoid bone. The results so obtained were compared with the results of a very limited number of earlier studies available to provide a database of the normal values for future comparative studies. The trapezium dimensions determined in the present study were on lower side vis-a-vis the study by Loisel F et al and this could be attributable to the impact of ethnicity on bone morphometry. the smooth articular surface for capitate on the medial surface was observed to present a groove at its lower end in thirty-six specimens (incidence 30%).

The trapezoid is the least commonly fractured or even injured among the wrist bones, accounting for only about 2% of all carpal fractures. Being surrounded by the trapezium, capitate, scaphoid, and the second metacarpal, it is often sheltered from minor blows and injuries. So, when a trapezoid fracture does occur, it is almost always along with fractures of other carpal bones, like the trapezium, capitate, hamate, or the metacarpals. Arthritis of the scaphoid-trapezium-trapezoid joint is a condition that usually occurs along with arthritis of the carpometacarpal joint of the thumb. Traditional treatment involves a corticosteroid therapy and splinting, while severe cases may require surgical intervention.

CONCLUSION:

Though very few studies have been done regarding the morphometry of Trapezoid, its anatomical and clinical knowledge is important as arthritis of the scaphoid-trapezium-trapezoid joint is a condition that usually occurs along with arthritis of the carpometacarpal joint of the thumb. Traditional treatment involves a corticosteroid therapy and splinting, while severe cases may require surgical intervention.

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