



ORIGINAL RESEARCH PAPER

Anatomy

STUDY OF ANGLE OF HUMERAL TORSION

KEY WORDS: Angle, Torsion, Humerus

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ABSTRACT

The word 'torsion' means the twisting or wrenching of a body by exertion of forces tending to turn one end or part about a longitudinal axis while the other is held fast or turned in the opposite direction. The process of torsion is seen in many bones of human skeleton like scapula, hip bone and talus but is most evident in long bones, specially the humerus and the femur. Variations in the degree of torsion of the humeral head have been widely documented within anthropological literature over the course of time. The patterns of variation by age, population, side and sex have been documented. With the progress of field of sports medicine, humeral torsion has received renewed attention. **Material and Method-**The material used in this study consists of 50 Humeri available in the Department of Anatomy, JLN Medical College, Ajmer. **Result-**The average angle of torsion of right Humerus was observed as 74.35° and of left Humerus was observed as 61.89°. **Conclusion-**The angle of Humeral torsion is a result of more than one factor. It is a tetrapod character produced as a result of interaction of hereditary torsion upon which an ontogenic torsion is superimposed.

Introduction –

The twisted appearance of the humerus has been noted since the middle of the 18th century. Since then the Humeral torsion has been studied by several workers in different parts of the world. The amount of humeral torsion (angle) is a result of a hereditary torsion to which an ontogenic torsion has been added. Ontogenic torsion is affected by external factors like function and muscular forces. The torsion process has gradually increased in the humerus, from lower vertebrates to higher vertebrates, as an adaptation for the erect posture.

MATERIAL & METHOD- The material used in this study consists of 50 Humeri available in the Department of Anatomy, JLN medical College, Ajmer. In the selection of the Humeri the following things were kept in sight:-

1. That the humeri are from normal, healthy individuals and are non pathological.
2. The upper and lower ends of the bone are intact so as to give correct measurements.
3. That there has occurred a complete fusion of the epiphysis of the upper and lower ends.

All the bones were properly identified. In all 30 right humeri and 20 left humeri of different ages from adult age onwards without sex differentiation have been studied. After marking the axes of upper and lower ends by fixing the plastic sticks of 0.5mm diameter with clay, the humerus was kept on flat surface and image was taken from the upper end for each bone.

Result- Out of total 50 humerus bones, 30 were of right side and 20 of left side irrespective of sex. The maximum angle of torsion on right was 77° and minimum was 69°; the average angle of torsion was observed as 74.35°. The maximum angle of torsion on left was 64° and minimum was 55°; the average angle of torsion was observed as 61.89

Degree of Torsion	Right Humerus	Degree of Torsion	Left Humerus
69	2	55	3
70	2	56	1
71	5	57	4
73	4	60	5
74	7	61	5
75	3	64	2
76	3	-	-
77	4	-	-

Discussion-

In order to obtain the true value of the angle of humeral torsion, it is necessary to subtract 90° from the measured obtuse angle. The angle of humeral torsion is a result of more than one factor. It is a tetrapod character produced as a result of interaction of a hereditary torsion which is superimposed on ontogenic torsion. As an advancement towards the adaptation for erect posture, along with the dorsoventral flattening of the thorax and dorsal migration of the scapula, muscular forces act and produce an ontogenic torsion due to this the value of the angle of the humeral torsion is a measure of hereditary torsion to which an ontogenic torsion has been added.

SUMMARY AND CONCLUSION- Greater torsion angle in the right humeri, a was also observed by others and also supports the views of Karhl & Evans that the angle of humeral torsion is a result of a hereditary torsion, to which an ontogenic torsion is produced by the muscular forces, function is superadded. Torsion is different from the rotation which the entire limb undergoes during ontogeny.

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