



ORIGINAL RESEARCH PAPER

Anatomy

MORPHOLOGICAL AND MORPHOMETRIC STUDY OF SCAPULA

KEY WORDS: Acromion process, Scapula, anthropology, measurement.

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ABSTRACT

The variations of the acromion process are important during surgery around the Shoulder joint. The knowledge regarding shape and various distances of acromion process might benefit the surgeons and provide a support to increase the knowledge about the disease that appears in this region. Aims and Objectives - the aim of the study is to record the morphometric values and morphology of the scapula. Material and Methods- Present study was conducted on 100 scapulae. Various morphological types of acromion process, different shapes of Glenoid cavity, suprascapular notch were observed and studied. Result – Commonly observed acromion process was of Type II Quadrangular. The main type glenoid cavity shape observed was oval. Type of suprascapular notch observed was type III. Conclusion - The study is helpful in the anthropology for racial and other investigations. It is important for clinicians for diagnosis and treatment of diseases of the shoulder joint.

INTRODUCTION –

Scapula is a flat triangular bone of upper limb region having 3 processes, the spine, the acromion, and the coracoid process. Out of these the acromion process and the coracoid process are larger, that extend beyond the margins of the glenoid cavity superior to the head of the humerus. The morphometric of the scapula showed the great clinical significance of medial angle of scapula. The acromion is the larger posterior process having a facet for the lateral end of the clavicle it is related to varieties of shoulder disorder.

The morphometric study of the acromion process of the scapula is of great interest in the field of Forensic anthropology and in clinical sciences. The morphometric of the acromion process of the scapula is significantly important as it is implicated in impingement syndrome of the shoulder joint.

OBJECTIVES -

To evaluate non – parametric and parametric data of acromion and discuss their relation with the Scapular parameters.

MATERIAL AND METHOD -

The study was conducted in Anatomy department in JLN Medical College Ajmer. A total of 78 Scapulae were selected out of which 37 of Right and 41 of Left state. The bones belonged to mature specimens but exact age and gender were not known. The bones were isolated and morphologically studied.

The parameters measured were:-

- 1) Maximum Length of Acromion (MLA)
- 2) Maximum Breadth of Acromion (MBA)
- 3) Distance between tip of acromion process and tip of coracoid process (ACD1)
- 4) Distance between tip of acromion process to dorsum of base of coracoid process (ACD2)
- 5) Distance between supraglenoid tubercle and tip of Acromion process (AGD)

Standard anthropometric method was used to take the measurement by using sliding Vernier Caliper with precision for accuracy of 0.01mm and recorded in mm.

OBSERVATION-

S.No	Parameter	Sub - Parameter	Right		Left		Total	
			No.	%	No.	%	No.	%

1	Shape of Glenoid Cavity	Pear	17	14.94	11	26.82	28	35.89
		Inverted comma	4	10.81	7	17.07	11	14.10
		Oval	13	35.13	23	56.09	36	46.15
2	Type of suprascapular notch	Type I	5	13.51	4	9.75	9	11.53
		Type II	11	29.72	10	24.30	21	26.92
		Type III	21	56.75	27	65.85	48	61.53
3	Shape of acromion process	Triangular	17	45.94	11	26.82	28	35.89
		Quadrangular	29	78.37	12	29.26	41	52.56
		Tubular	4	10.81	5	12.19	9	11.53



DISCUSSION -

The maximum length of acromion process variation which is significant in forensic anthropology. The present study showed that both right and left scapula of population 45.14mm (right) and 43.92 (left) varies with the study of Collipal et al on acromion process of world adult Chileans as

69.12mm and 63.15mm for right and left respectively and that also varies with Nigerians study conducted by Ladipo showed results as (44.62mm and 43.39 mm of right and left respectively).

The maximum breadth also varies with that of Nigerian population and the study of Collipal et al but resembles close relations with the study conducted by Jaskaran et al. The present study shows MB as 26.14 of right and 24.87 of left while the study conducted by M.B.Sinha et al was 17.46 of right and 22.12 of left.

According to the Bigliani et al classification scheme, the main type of acromial morphology was described as Type I (flat), Type II (curved), and Type III (hooked). The reported data as - 8.6% for Type I, 42% for Type II and 38.6% of Type III.

The prevalence in the present study as maximum were of Type III 36%. The possibility of having a Type III acromion is greater as the subject increases, according to Yukio et al this allows some speculations that a hooked form of acromion is a degenerative process.

The variations in the form of the acromion has been associated with some clinical cases like the sub acromial impingement syndrome which is defined as a painful process that is caused by the friction occurring between the inferior surface of the anterior acromion, the sub acromial bursa, coracoacromial ligament on one hand and the rotator cuff on the other.

Mansur et al classified the shape of the acromion process into 3 types as - Triangular 36.76%, Quadrangular 52.94% and Tubular 10.29%. While in the present study Triangular were 28 scapulae, Quadrangular were 41 and Tubular were 9.

RESULT-

The major challenge for any medico - legal investigator in identifying unknown human remains is the development of biological profile through the identification of race, sex, stature and age. These biological profiles can dramatically narrow down the pool of possible victim matches and this very useful in developing country.

Our present study showed that acromion has a significant racial variation. This will be useful in medico-legal cases in personality identification such as in cases of mass disaster and crime investigation. Limitations to this study include inability to classify these bones in to the gender group as the bones were already mixed up together in the various laboratories. The specific ages of these bones cannot be ascertain.

CONCLUSION-

The morphological study of acromion process clinical and forensic implications, has given an insight into the statistical values and racial variations of right and left acromion process of scapulae. This study also revealed that accurate anthropometric scapular measurement could be of high importance in clinical practice and racial identification in forensic science.

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