Morphological Study of Acromion Process of Dry Scapula

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KEYWORDS
acromion process, scapula

ABSTRACT:
Background and aim:
Acromion is a bony projection on shoulder blade, or scapula. It extends laterally from the shoulder joint, spanning over the coracoid process.The acromion folds anteriorly and continues the scapular spine. When treating the upper extremity, it is crucial because it serves as the site of many muscles and ligaments. The acromion's shape variability may be affected by epigenetic and developmental factors. So, aim of our study to observed shape of acromion process.
Materials and Methods:
An descriptive study was conducted on100 dry scapulae from Indian population using cotton thread, a measuring scale, markers, and sticker.Prevalence was tabulated.
Results:
The three classifications of the acromion process were distinguished. (flat 39%)/ Type I, (curved 61%) /Type II, (hooked 0%)/ Type III. In above study, type II is commonly observed.
Conclusion:
Orthopedic surgeons may find the acromion and its several forms helpful when undertaking shoulder joint repair procedures.
Categories: Anatomy

Introduction

The scapula, or shoulder blade, is a flat, triangular bone on the upper back, spanning between the second and seventh ribs on the posterior and lateral aspects of the chest wall.It bears three processes the spine, acromion, coracoids [1].The acromion is a broad, flat, or slightly triangular bony extension that projects from the spine of scapula.The acromial angle is meeting point of lower border of the spine and lateral margin of acromion process. Theouter edge, tip and superior surface of the acromion process are readily palpable through the skin[2]. The dorsal surface, which is located just beneath the skin, is covered solely by the skin and superficial fascia [3].The anteriorly acromionand coracoid process, separated by the coraco-acromial ligament, together create the coraco-acromial arch, which sits above the glenohumeral joint.Coraco-acromial arch is crossed by the proximal humerus, the biceps tendon, the subacromial bursa, and fourtendons of rotator cuff [4].Various diseases and contributes to pathological shoulder conditions is associated with the acromion.Moreover, its shape is a crucial diagnostic tool for shoulder pathologies [5]. Therefore, it's crucial to consider the various acromion process types before doing surgery[6].Acromial was classified into three types: (flat)type I, (curved)type II, (hooked)type III by Bigliani et al. which examined 140 shoulders. The Bigliani-Morrison-April EW morphological classification has become an essential diagnostic method for evaluating rotator cuff tendon lesions and impingement. [7].Orthopedic surgeons may need to be aware of the various types of acromion processes during surgery, as this knowledge can help tailor their surgical approach and improve patient outcomes.[8].

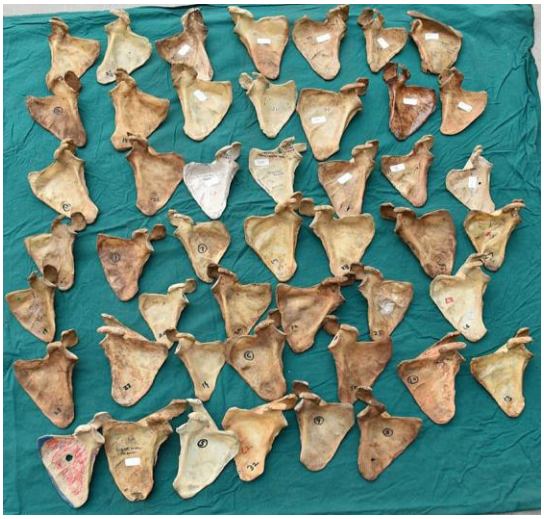
Aims and objectives

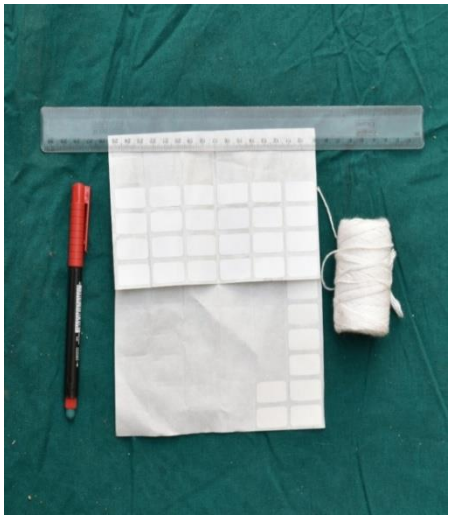
The aim of this study is to classify the different types of acromion process within our population.

Materials and Methods

Descriptivestudy was carried out on 100 dry human scapulae ofindeterminate origin, all from the Indian population. The study was done at Department of Anatomy, KIMS, KVV, Karad, Maharashtra, India. The bones were isolated and inspected macroscopically.Damagedscapulae were excluded from this study.Scapulae were classified according to type of acromion process.

A measurement was taken by using cotton thread, measuring scale, marker and stickers.Descriptive statistical analysis was used to evaluate the data and determine the frequency of the different types of acromion process.





PHOTOGRAPH: 1 Scapulae PHOTOGRAPH: 2 Measuring Tools

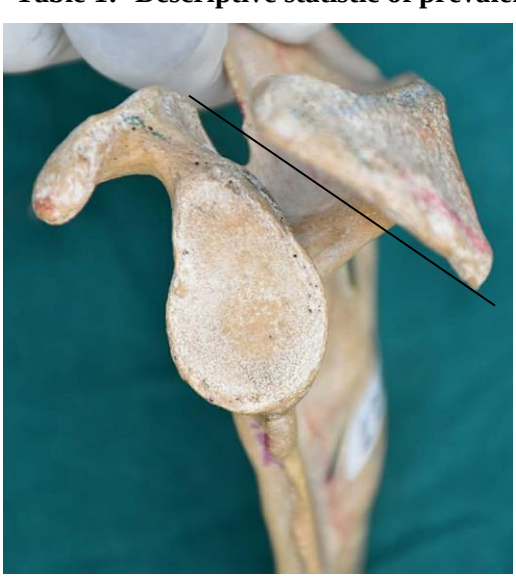
Following parameters was taken.

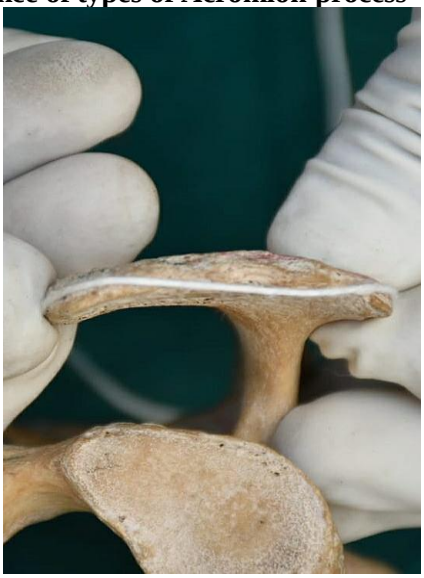
The classification of the acromion according to its inclination is as follows: a) Bigliani (flat)Type I, b) (curved)Type II, and c) (hooked)Type III [7].

Results

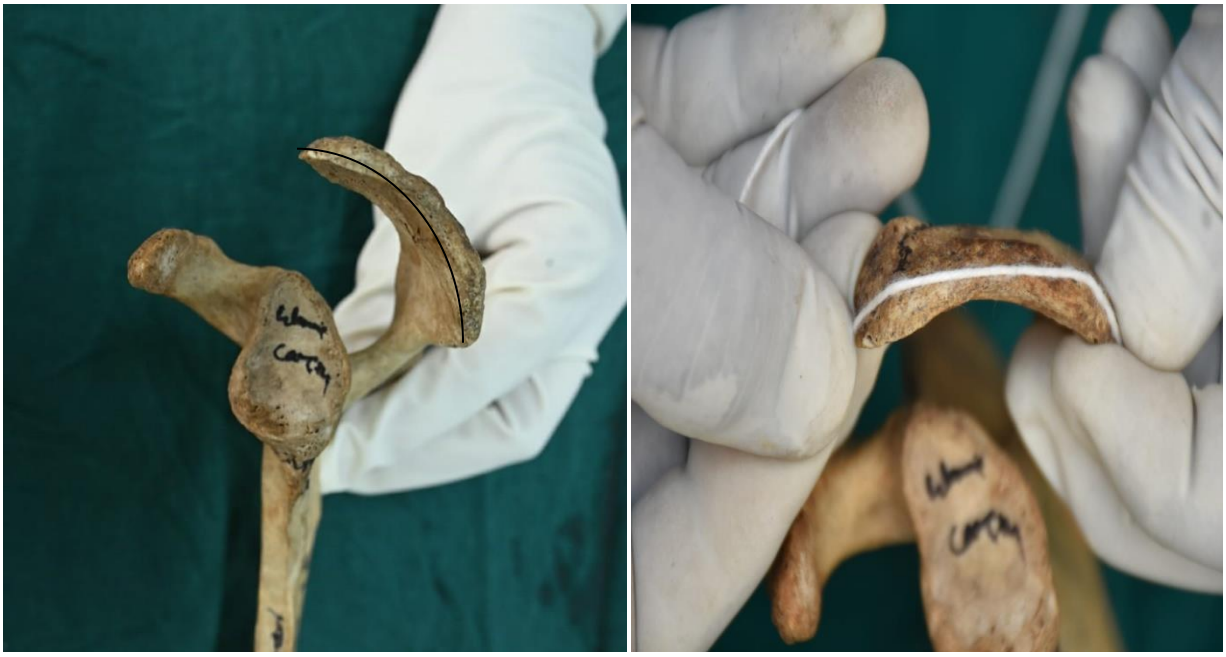
Type	Sample size (n) 100	Prevalence %
I (Flat)	39	39 %
II (Curved)	61	61 %
III (Hooked)	0	0 %

Table 1:- Descriptive statistic of prevalence of types of Acromion process





PHOTOGRAPH: 3 In the Bigliani classification of acromial, Type I is flat acromion.



PHOTOGRAPH: 4 In the Bigliani classification of acromial, Type II is curved acromion.

In this study, the curved (type II) acromion process was the most frequently observed, accounting for 61% of cases. The flat/(type I) was the second most frequent form reported(39%).The least common shape reported in this study was the hooked (type III) acromion process, which was observed in 0% of cases.

Discussion

Sr. No	Author's Name	Year	Sample Size	Type I (Flat)	Type II (Curved)	Type III (Hooked)
1.	Mako Hirano et al [10]	2002	91	36.3%	24.2%	39.6%
2.	Nigar et al [11]	2006	90	11%	66%	23%
3.	Musa et al [12]	2014	146	37%	48.7%	13.7%
4.	Panigrahi, T. K et al [13]	2018	297	24.59%	49.18%	26.22%
5.	Present study	2023	100	39%	61%	0%

Table: 2 Comparison with other studies

As statedMako Hirano et al. type I 36.3%, type II 24.2% type III was 39.6% [10]. Nigar et al. reported type I 11%, type II 66% and type III 23.0% [11].Musa et al. studied type I 37%, type II 48.7%, type III 13.7%.[12]. Panigrahi, T. K et al. observed type I 24.59%, type II 49.18% type III 26.22% [13].The current study's findings regarding the prevalence of different acromion processes were: type I (flat) - 39%, type II (curved) – 61% type III (hooked) – 0%. This is due to study done in different region.So most common prevalent type is type II (curved). The prevalence of type of acromion can depend on occupation, or population [9].Thus, several researches have examinedthe scapulae's acromion process.The association among rotator cuff injuries, shoulder impingement, acromial morphology is widely acknowledge.

Conclusion

The acromion process is critical for constructing the coraco-acromial arch and plays a key role in stabilizing the shoulder joint.Understanding the different types of acromion process can be valuable for orthopedic surgeons when performing shoulder repairs.

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