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Morphology of acromion of dry human scapula in Jammu region

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Abstract
The 35 dry human scapulae were studied for the morphology of acromion and the different shapes were categorised as flat, curved and hooked. We have found 8.5% flat, 42.8% curved and 48.5% hooked acromions in the study. The high number of hooked acromions and high incidence of shouler pain patients relates with each other but needs further evaluation for confirming the association.

Keywords: Morphology, acromion, dry human scapula

Introduction
The acromion is the expanded plate of bone which extends laterally from the spine of scapula and overhangs the glenoid cavity and arches over the glenohumeral joint to articulates with the clavicle at the acromioclavicular joint. The tip of the acromion gives attachment to the coraco – acrominal ligament [1].

The structure of acromion is a causative factor in impingement syndrome of the shoulder joint, so understanding its morphometry becomes important [2]. Bigliani *et al*., studied 140 shoulders and categorized the acromial morphology radiologically into three types: Type I or flat, type II or convex, and type III or hooked. Since that time, the Bigliani-Morrison-April morphological classification has been the most commonly used descripton for the shapes attributed for the impingement syndrome and rotator cuff tears [3, 4].

The variations of the acromion process should also in mind of surgeon pertain around the shoulder joint for the impingement and rotator cuff injuries [5, 6].

Material and Methods
This study was conducted on 30 dry human scapula bones of unknown gender. The shapes of the acromion process was seen with the ruler. It was kept under the long axis of the acromion and then seen for its shape with naked eye.

Observations and Discussion: There were 35 scapulaes available to us. The appearance of the acromion as visible to naked eye on applying a scale under its inferior surface was noted and has been tabulated below

Flat shaped	3
Curved	15
Hook	17
Total	35


Flat Acromion


Curved Acromion


Hooked Acromion

The acromions with the least curved undersurface were categorised as flat, however there was no such acromion which could be graded completely flat. We had 3 (8.57%) such scapulae which could be graded near flat. The findings match with Singroha R *et al*. who had conducted study on 100 scapulae also had only 9% scapulae with flat surface whereas Gupta C *et al*. has reported 32% flat acromions in their study [7, 8].

Out of 35 scapulae, 15 (42.85%) were curved acromions. The authors Gupta C *et al*. has reported 22% and Singroha R *et al*. has reported 48% of their scapulae to be having curved under surface.

Out of 35 scapulae, 17 (48.57%) were graded as hooked. Singroha *et al.* has reported 43% and Gupta C *et al*. has reported 43% of their scapulae to be having hooked under surface. In this study as well as other studies by Gupta C and Singroha R *et al*. there is similarity in high number of hooked acromions. It also corresponds to higher number of patients reporting with shoulder pain in orthopaedic opd (15% -20% patient in Orthopeic OPD had shoulder pain). Whether hooked acromions are really culprit of causing pain due to impingement need to further assessed by the dyanamic studies involving Ultrasounds and Magnetic Resonance Imaging.

The curved and flat acromions are innocuous to the individual and so donot draw much attention by the clinician or anatomist. The reasons of developing the hooked acromion in a population need to be further studied with reference to the genetic and physical influence on it.

Conclusion

The pathologies generating pain at shoulder are not very well understood by the clinician, relating pain pathologies to anatomical reasons is a step towards better understandingof the pathologies. The finding of high hooked acromions and high number of shoulder pain patients though get related, but further studies are needed to confirm the relation.

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