

Original Article

Morphometric analysis and surgical anatomy of coracoid process and glenoid cavity

Sunita Kalra^{a,*}, Swati Thamke^b, Ankit Khandelwal^c, Gitanjali Khorwal^a^a University College of Medical Sciences & Associated GTB Hospital, Delhi, India^b Government Medical College, Aurangabad, Maharashtra, India^c Formerly at University College of Medical Sciences & Associated GTB Hospital, Delhi, India

ARTICLE INFO

Article history:

Received 18 November 2016

Accepted 7 January 2017

Available online 26 January 2017

Keywords:

Coracoid process

Glenoid cavity

Surgical anatomy

Latarjet procedure

ABSTRACT

Introduction: This study was designed to study the morphometric dimensions of coracoid process and glenoid cavity of scapula and to ascertain any correlation involving them. The comprehension of standard morphometric measurements of coracoid process and glenoid cavity is missing in the academic literature. Its awareness is imperative in trauma cases, surgical interventions and replacement surgeries in the shoulder region.

Methods: For this investigation 69 dry adult scapulae (45 of right side and 24 of left side) of Asian origin without any apparent damage to their osseous structure were studied. The present study demonstrates the analysis of various dimensions of coracoid process and glenoid cavity.

Results: Pearson correlation (*r*-coefficient) was positive for glenoid cavity vertical and horizontal dimensions. The interrelation between all the parameters was highly significant; sig (2-tailed) test was 0 and *p* value as 0.1, an interesting trend.

Discussion: Variation of dimensions of coracoid process and glenoid cavity are important for radiologist and orthopaedic surgeons for diagnosing various pathologies and plan for repair. The data base provided in the present study is not only helpful in the present day scenario, but with advancement of techniques and advent of various replacement procedures, these dimensions can serve as a baseline and potential prospect for coracoid process replacement surgeries in future.

© 2017 Anatomical Society of India. Published by Elsevier, a division of RELX India, Pvt. Ltd. All rights reserved.

1. Introduction

1.1. Coracoid process

The Gray's anatomy describes the origin of this process from pinnacle of the head of scapula.¹ It bends to some extent anterolaterally. With the arm by the side of the trunk, it points almost straight forwards. Its enlarged tip is conspicuous under the anterior fibres of deltoid. It is palpable approximately 2.5 cm below the clavicle at the junction of medial three fourth and lateral one fourth. There is well marked supraglenoid tubercle near the base of the coracoid process adjacent to the glenoid cavity. On the dorsal surface of coracoid process there is a marking produced due to the attachment of coracoclavicular ligament. The coracoid process is joined to clavicle by the coracoclavicular ligament.¹ The lateral

border of coracoid process gives attachment to the coracoacromial ligament and inferiorly to the coracohumeral ligament. The tip of coracoid provides attachment to coracobrachialis and the short head of biceps brachii muscles.

1.2. Glenoid cavity

The superior angle of scapula is covered by muscles. The lateral angle, truncated and wide-ranging, is the head', bearing the glenoid cavity of scapula and forming a glenohumeral joint with the humerus. Glenoid cavity provides a partial and superficial socket for the head of humerus.¹ Immediately, superior to glenoid cavity there is well marked supraglenoid tubercle close to the root of the coracoid process. The anatomical neck is the constriction adjacent to the boundary of glenoid cavity. The anatomical neck extends between the infraglenoid and supraglenoid tubercles. Surgical neck is described as beginning inferiorly, close to rim of glenoid cavity. It passes supero-laterally through the spinoglenoid notch and continues towards the suprascapular notch, hence medial to the coracoid, and is completed by an identical ill-defined ventral line.¹

* Corresponding author at: Department of Anatomy, University College of Medical Sciences & Associated GTB Hospital, Delhi, India.

E-mail address: net31aug@yahoo.co.in (S. Kalra).

The comprehension of standard morphometric measurements of coracoid process and glenoid cavity is missing in the academic literature. Its awareness is imperative in trauma cases, surgical interventions and replacement surgeries in the shoulder region. Henceforth, this investigation was designed to study the morphometric dimensions of coracoid process and glenoid cavity of scapula and to ascertain any correlation involving them.

2. Materials and methods

For this investigation, 69 scapulae (45 of right side and 24 of left side) available in the Department of Anatomy were studied. All scapulae were dry adult Asian in origin and without any apparent damage to their osseous structure. The measurements were taken manually with vernier callipers accurate to 0.1 mm. Observations were taken by two separate people to rule out any inter observer or intra observer variation (Fig. 1a and b).

The following parameters were measured:

1. Glenoid cavity – maximum vertical and horizontal dimensions.
2. Coracoid process – thickness at the base, total length of horizontal part and medio-lateral/width (M-L) and superior-inferior/thickness (S-I) dimensions of the horizontal part.

Data was tabulated and statistically correlated.

3. Results

The summary of the morphometric parameters measured is listed in Table 1, and statistical analysis in Table 2 and Fig. 2.

Glenoid cavity vertical dimensions (height) were varying from 2.8 mm to 4.3 mm with range of 1.5 mm and mean of 3.409 ± 0.3669 mm.

Horizontal dimensions (width) of glenoid cavity were varying from 1.7 mm to 3.5 mm with range of 1.8 mm and mean of 2.396 ± 0.3220 mm.

Thickness of coracoid process at the base was 0.6 mm to 1.8 mm with range of 1.2 mm and mean of 1.039 ± 0.2302 mm.

Horizontal length of coracoid process was 3 mm to 4.9 mm with range of 1.9 mm and mean of 4.045 ± 0.4434 mm.

Width (M-L) of horizontal part of coracoid process was 0.9 mm to 2 mm with range of 1.1 mm and mean of 1.416 ± 0.2386 mm.

Thickness of horizontal part of coracoid process (S-I) was 0.6 mm to 1.4 mm with range of 0.8 mm and mean of 0.854 ± 0.1705 mm.

The width of glenoid cavity was around 70% of glenoid height. The thickness of horizontal part of coracoid process was approximately 82% of thickness at its base. Also, thickness of horizontal part of coracoid was about 35% of width of glenoid cavity and just 25% of glenoid length. As compared to the length of horizontal part of coracoid process glenoid width was approximately 60% whereas glenoid height was around 85% of it.

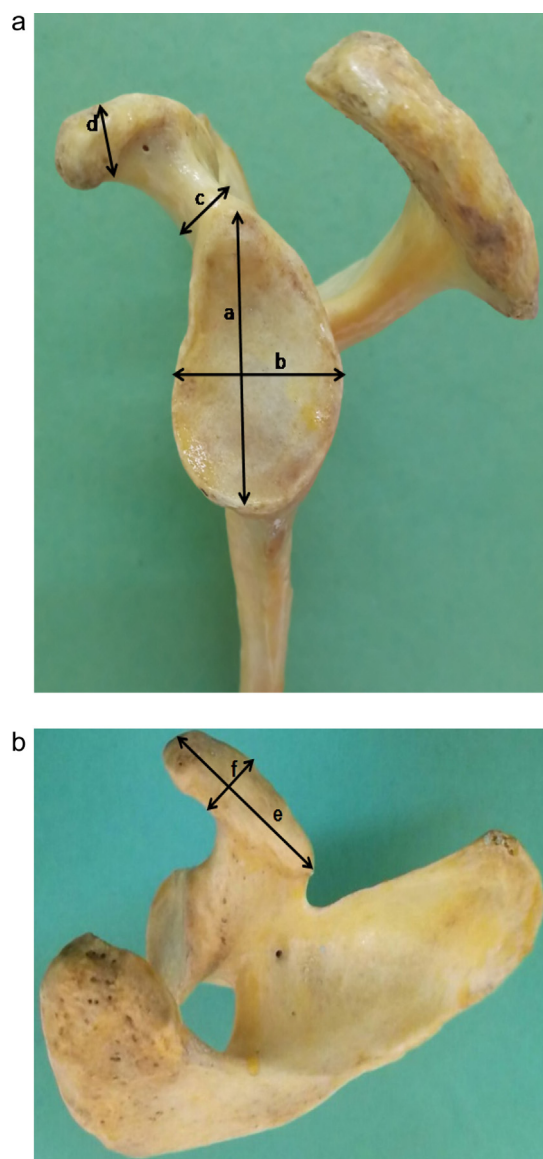


Fig. 1. (a) Lateral view of left scapula showing the dimensions measured of glenoid cavity and coracoid process {glenoid height (a), glenoid width (b), coracoid process thickness at base (c), coracoid process (horizontal part) superior-inferior dimension/thickness (d)}. (b) Superior view of left scapula showing the length of coracoid process (e), medial-lateral/width (f) dimension of horizontal part of coracoid process.

Pearson correlation (*r*-coefficient) was positive for glenoid cavity vertical and horizontal dimensions. The interrelation between all the parameters was highly significant; sig (2-tailed) test was 0 and *p* value as 0.1, an interesting trend.

Table 1
Morphometric measurements of coracoid process and glenoid cavity.

	Descriptive stats (n=69)			Mean	Standard deviation	Variance (mm)
	Range	Minimum (mm)	Maximum (mm)			
Glenoid vertical (height)	1.5	2.8	4.3	3.409	0.3669	0.135
Glenoid horizontal (width)	1.8	1.7	3.5	2.396	0.322	0.104
Coracoid thickness (at base)	1.2	0.6	1.8	1.039	0.2302	0.053
Coracoid length	1.9	3	4.9	4.045	0.4434	0.197
Coracoid width (M-L)	1.1	0.9	2	1.416	0.2386	0.057
Coracoid thickness (S-I)	0.8	0.6	1.4	0.854	0.1705	0.029

Download English Version:

<https://daneshyari.com/en/article/5639965>

Download Persian Version:

<https://daneshyari.com/article/5639965>

[Daneshyari.com](https://daneshyari.com)