

TYPES OF ACROMION AND ITS ASSOCIATION WITH SHOULDER IMPINGEMENT SYNDROME

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OBJECTIVE:

To find out the association between shoulder impingement and morphological characteristics of acromion.

METHODS:

This descriptive cross sectional study was conducted at the Department of Orthopedic

Surgery and Traumatology (DOST-I), Mayo hospital Lahore between 1st January to 30th October 2013. The study population composed of 60 patients of shoulder pain with age 40 years and above. We analyzed demographic variables for frequencies and their associations between variables using SPSS version 17.0. Significance level was $p < 0.05$.

RESULTS:

Amongst the total 60 patients, majority 36 (60%) were females and 24(40%) were males. We included patients with age group ranged between 40 years and above. Most of them 27 (45%) had type II acromion which is curved in morphology.

CONCLUSION:

We concluded that shoulder impingement syndrome was present commonly amongst female than male. It was Bigliani type II acromion causing shoulder impingement in age group of 40 years and above.

KEY WORDS:

Acromion, shoulder impingement syndrome (SIS), Bigliani's classification.

INTRODUCTION:

Shoulder impingement due to rotator cuff and narrowing of sub-acromial space is believed to be most frequent cause of shoulder pain [1,2,3] both in primary and secondary care. Charles Neer first described impingement in 1972 [3,4]. The reported incidence of impingement is

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approximately 70% of the shoulder diseases [5]. The morphology of acromion also contributes to its origin and results into disabling painful shoulder. [6] Bigliani was first who described acromion on the basis of morphology. He classified acromion radiologically on arch view into three types being flat, curved and hooked [7,8].

Neer outlined 3 stages of shoulder impingement included inflammation, odema and hemorrhage of conjoint tendon in stage 1, mostly affects younger age group people below 25 years of age and condition is usually reversible when managed conservatively. Stage 2 is a continuous process of stage 1 but symptoms are consistent. It affects patients between 25 to 40 years. Stage 3 is a mechanical disruption and it affects patient over the age of 40 years. In this stage there is partial or complete tear of rotator cuff [15].

It is related to chronic repetitive mechanical irritation to the conjoint tendon. It undergoes compression and bears micro-trauma as it passes under the coracoacromial arch. When arms abducts at 90 degrees and internally rotate at 45 degrees, the sub-acromial space width changes and the supraspinatus tendon lies in closest relation the anterior inferior border of the acromion [7].

The most common symptoms in impingement syndrome are painful arc range 60 to 120 degree on abduction, weakness and a partial loss of movement at the affected shoulder. The pain gets worsened at night and with over-head shoulder movements. It results into significant functional disability and compromised quality of life [3,9]. This condition is diagnosed clinically and initial assessment lays important role in identifying any particular cause of shoulder pain from other diseases. Every shoulder pain is not impingement. Every curved acromion does not cause impingement. Early diagnosis of disease and its management can help in reduction of disease progression and its effect on daily life. Without denying the advantage

of conventional x-rays, it can be used for diagnosis and management of impingement syndrome. Bigliani classified acromion into three types including Type I (flat), II (curved) & III (hooked). Type III being most common amongst three which is (43%) and Type I (17%) and Type II (40%) subsequently [8].

There are different studies emphasizing the importance and use of various tools in diagnosis of associated causes and management of impingement [4,6]. We studied acromion types in our population on scapular Y view and elaborated its relationship with shoulder impingement syndrome.

METHODOLOGY:

It was a cross sectional survey using convenient sampling technique. The study was conducted in Department of Orthopedics Surgery and Traumatology (DOST-I) unit-I Mayo Hospital, Lahore from 1st January to 30th October 2013. All patients with shoulder pain were selected as target population for the sample size. Sixty one patients' who visited out-patient department with complaint of shoulder pain were included in the study.

Data was collected on x-rays films using scapular Y view. X-rays were later printed on a paper and Bigliani classification was applied to measure the anterior acromion arch. The arch was measured using simple ruler. We selected four points and they were labeled as point A, B C and point O. Point A and B were marked at the lowest ends of the anterior and posterior ends of acromion arch subsequently. They were joined by drawing straight line meeting both points. Point C was taken as center between two points A and point B while point 'O' was marked as center of the humerus head. The center of the humerus head was taken with carefully drawing one horizontal and other vertical line in central plane. The center point where the two lines crossed each other was marked "'O'" point. Pain severity was assessed using visual analogue score (VAS). The pain score was

observed separately in all type of impingement.

The inclusion criterion of the study included all patients above 40 years of age with shoulder pain. All those patients, who had age below forty years and systemic disease with shoulder pain, were not included in the data.

Data was entered carefully and later analyzed with the help of a software SPSS version, 17.0. Frequencies were tabulated for demographic variables, associations between variable were tested for statistical significance using Chi-square and differences were regarded to be significant at the 5% level.

RESULTS:

Out of the total 60 samples, most 36 (60%) were females and 24 (40%) were males of age 40 years and above (mean 41.66 ± 2.13 S.D) with large number 35(58.2%) patients diagnosed were present in the age group

between 50 to 60 years which showed that disease was commonly present in old age group. Amongst the total, majority 27 (45%) of the patients had acromion type II (curved) which was the most common cause of shoulder impingement our study. Most 25 (41.66%) had type III (hooked) in our study population while 8 (13.4%) of the patients had flat acromion. (Table 1) The severity of pain was assessed by using visual analogue score (VAS). The maximum pain score was 6 in our study. Amongst the all respondents viewed, severe pain was associated with both type II and type III acromion was 10 (16.6%), with moderate pain was prevalent 42 (70%) in both type II and type III acromion. Mild pain was only present in 08 (13.3%) patients was associated with type I acromion (Table 2).

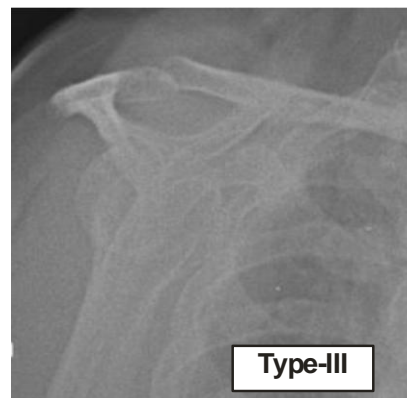
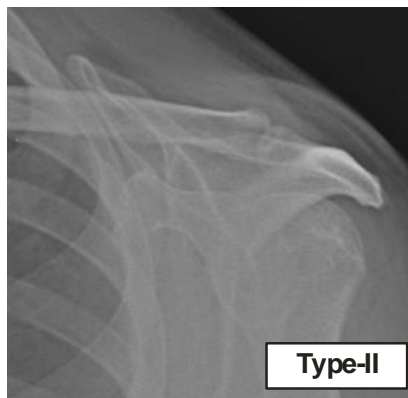
TABLE 1: DATA FOR DEMOGRAPHIC VARIABLES AND ACROMION TYPES.

Variables	Frequency (n=60)	Percent (%)
Gender		
• Male	24	40
• Females	36	60
Age in Years		
• 40-45	09	15
• 45-50	13	21.6
• 50-55	16	26.6
• 55-60	19	31.6
• >60	03	5
	Mean 41.66 ± 2.13 SD	
Types of Acromion		
• Type-I	08	13.4
• Type-II	27	45
• Type-II	25	41.6

TABLE 2: TYPES OF ACROMION AND ASSOCIATION OF PAIN

		Types of Acromions			N=60	p-value*
		Type I	Type II	Type III		
Visual	Analogue					
Score (VAS)						
• Mild		08	00	00	08	0.00
• Moderate		0	27	15	42	
• Severe		0	02	08	10	
		08	29	23	60	

*Test of significance was chi's square



DISCUSSION:

The shoulder impingement syndrome (SIS) may lead to functional disability and compromised quality of life of the individuals. Neer's idea of impingement was followed in many studies. Numerous studies had reported shoulder impingement and its association with acromion morphology [10,11]. Prescher viewed that type II and types III acromion has close anatomical association. He described that morphology characteristics of type III acromion is quite similar to type II acromion [12].

In our study, type II (Curved) 27 (45%) was present in most individuals which is consistent with the data published in other studies [6,10]. The disease is common among female than male was reported by other studies [13,14]. Similarly it was found in our study that females were in majority 36 (60%) than male. The pain score was 06 on visual analog scale amongst many 10 (16.67%) of the patients with acromion type II and type III. These

patients complained about significant reduction in life routine work and sleep disturbances due to shoulder pain. We can achieve optimal results in evaluating disease by X-rays scapular Y view. This method is easy and low cost. We used visual analogue score to assess pain severity. The maximum pain score was found to be moderate in intensity. It was associated with painful activity in type II acromion 27 (45%) and 15 (25%) in type III acromion.

The scapular Y view needs accurate patient position and proper X-rays beam exposure. With this we can diagnose and achieve optimal response with treatment. The quality of life can be improved with betterment in routine activity of patients with shoulder impingement syndrome.

CONCLUSION:

The scapular Y view required accurate patient positioning and proper x-rays beam with good exposure. With simple x-rays scapular Y view we can diagnose the disease early and prevent

disease progression by improvising good treatment. Thus it was concluded that shoulder impingement was prevalent in females with age group of 40 years and above. Type II acromion was commonly associated with shoulder impingement syndrome.

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