Traumatic Rotator Cuff Tears

Department of Orthopaedic Surgery, Eulji University Hospital

Kwang-Won Lee, M.D., Ph.D.

Multiple etiologic factors have been associated with the development of rotator cuff tear. Degeneration, vascular factors, impingement, trauma, glenohumeral instability, scapulohumeral dysfunction, and congenital abnormalities all appear to contribute, in combination, to the formation and progression of rotator cuff lesions. Most symptomatic rotator cuff tears are a result of an acute injury in the setting of some preexisting rotator cuff disease. Traumatic insults to the shoulder can result in tearing of the rotator cuff tendon.

The decision whether a rotator cuff tear has a traumatic or degenerative origin still causes some controversy, especially in legal assessments. Because of the relatively high prevalence of degenerative changes with increasing age, including partial and full thickness rotator cuff tears, it may be difficult to demonstrate the cause of an acute traumatic rotator cuff tear. Although there have been many reports on current knowledge of the anatomy, biomechanics and pathogenesis of rotator cuff pathology, few papers demonstrate criteria for differential diagnosis between traumatic and degenerative tears. Based on X-ray, MRI and operative findings in rotator cuff tears underline the criteria for distinguishing between traumatic and

	Traumatic	Degenerative
Medical History	<40 yrs	
	No prior shoulder pain	Prior injury history
Injury mechanism	Fall	No fall
Primary finding	Visit clinic within 3 days	No visit within 2 weeks
Clinically	Hematoma/swelling	Muscle atrophy SSP/ISP/Deltoid
	Drop arm sign	Spontaneous LHB rupture
	Weakness Abd/IR	
X-rays	No secondary change on humeral head and ACJ	Cuff tear arthropathy
		Secondary change on humeral head and ACJ
		Opposite side cuff tear arthropathy
USG	<2 weeks: hematoma, rupture	Opposite side rupture
MRI	< 6weeks: rupture form, bone edema	<12 weeks: fatty degeneration
Operation	< 2 weeks: hemoarthrosis, hemobursa	< 2 weeks: no hemoarthrosis
	<12 weeks: lesion type bleeding	<12 weeks: smooth tendon end, second change
Histology	<12weeks: hemosiderin deposition, fiboblast granulation	<12weeks: collagen structure chondroid metaplasia

degenerative lesions. X-Rays of both shoulders can lead to indirect demonstration of preexistent changes in the rotator cuff. MRI evaluation can show up the rotator cuff tear and demonstrate signs of acute injury. The assessment of correlation between trauma and rotator cuff tear should be based on following criteria: patient's history, trauma mechanism, initial clinical findings and course of the functional deficit. From a legal point of view (e.g., private accident insurance, workers compensation claims), this will help the orthopaedic surgeons in judging the cause of posttraumatic rotator cuff deficiency.

REFERENCES

1. Braune C, Gramlich H, Habermeyer P: The macroscopic aspect of rotator cuff tears in traumatic and 2. nontraumatic rupture cases. Unfallchirurg. 2000 Jun;103(6):462-467.
2. Lehner B, Loew M: Etiology of rotator-cuff-tears and consequences for legal assessment. Zentralbl Chir. 2002 Mar;127(3):187-193.
3. Loew M: Traumatic development of rotator cuff lesion. Scientific principles and consequences for expert assessment. Orthopade. 2000 Oct;29(10):881-887.
4. Loew M, Habermeyer P, Wiedemann E, Rickert M, Gohlke F: Recommendations for diagnosis and expert assessment of traumatic rotator cuff lesions. Unfallchirurg. 2000 May;103(5):417-426.
5. Loew M, Rompe G: Criteria for legal assessment of rotator cuff rupture. Unfallchirurg. 1994 Mar;97(3):121-126.