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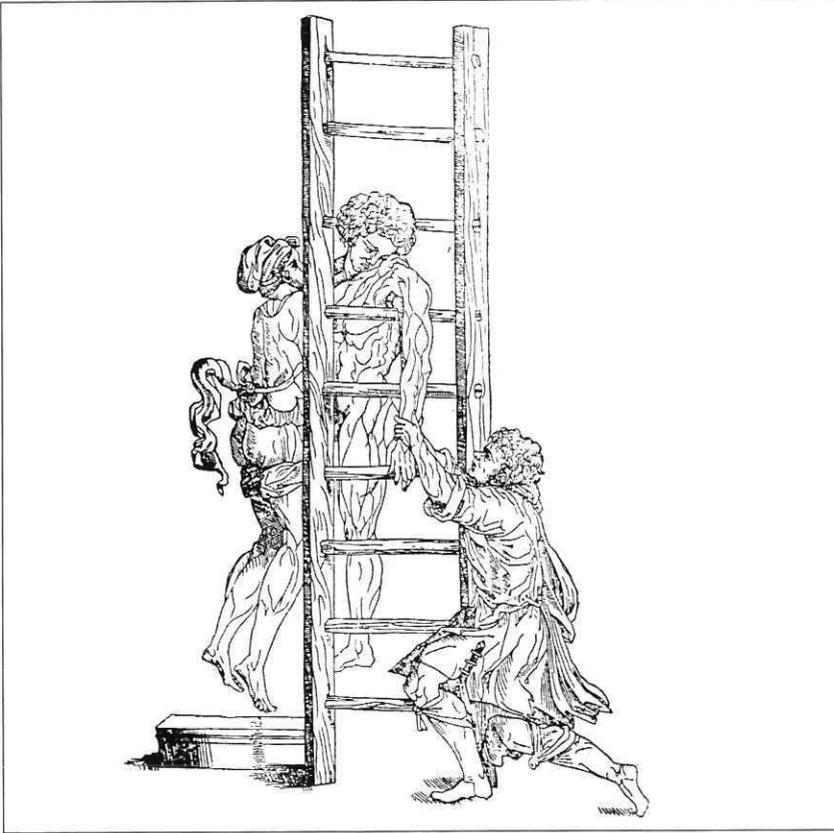
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## Chapter 2

### Classification of shoulder instability





## 2. Classification of shoulder instability

*"If you would speak to me, first define your terms." Voltaire.*

### Classification

Instability of the shoulder joint is a common problem. Instability is a clinical entity and should be separated from the term laxity. Laxity is a normal finding when we investigate the shoulder joint and varies from patient to patient. It is an asymptomatic, passive translation of the humeral head on the glenoid. The degree of laxity is affected by age and gender.

Glenohumeral instability is the inability to maintain the humeral head centred in the glenoid fossa.<sup>4,6</sup> Warner and Flatow defines glenohumeral instability as a symptomatic condition that can be manifest as pain in association with excessive translation of the humeral head.<sup>9</sup> Recurrent instability may consist of repeated glenohumeral dislocations, subluxations, or both. Manifestations of instability are based on "host factors" and magnitude of force required to create the injury.

The first classification of shoulder instability was made by Hippocrates. He divided the shoulder instability in traumatic and atraumatic.<sup>7</sup>

Neer (1990) advised no alteration of Hippocrates classification except for the addition of a large and important category that comprises patients who neither have had a significant injury nor generalized joint laxity. His classification of recurrent dislocation is as follows<sup>7</sup>:

- I Atraumatic : no injury
- II Traumatic : one major injury
- III Acquired : repeated minor injuries

Hawkins (1991) classified the shoulder instability based on an algorithmic approach with factors as timing / frequency, direction, degree, aetiology and whether or not the patient can voluntarily produce the instability.<sup>2</sup>

### Timing/frequency

The dislocation can be recognised in the acute period (within several hours or days) after the injury or after a longer period than several weeks (3-6), the chronic period. With respect to frequency, the event is classified as the first-time (or primary) dislocation or as a recurrent dislocation (multiple episodes of dislocations)

### Degree of instability

Recurrent instability may be characterized as dislocation, subluxation or apprehension. *Dislocation* of the glenohumeral joint is the complete separation of the articular surfaces;

Glenohumeral *subluxation* is defined as symptomatic translation of the humeral head on the glenoid without complete separation of the articular surfaces. Subluxation of the glenohumeral joint is usually transient: the humeral head returns spontaneously to its normal position in the glenoid fossa. *Apprehension* refers to the fear of the patient that the shoulder will subluxate or dislocate. This fear may prevent the patient from participating in work or sports.

### **Direction of instability**

With respect to direction, glenohumeral instability may be anterior, posterior, inferior or combinations of these (multidirectional). When the instability is in only one direction, it is named unidirectional.

### **Aetiology of instability**

Traditionally, concerning the aetiology, glenohumeral instability was divided into traumatic and atraumatic. Neer added the category of acquired instability, due to repetitive microtrauma of the shoulder joint such as with swimming and pitching.

Repetitive injury may be the cause of acquired instability, as seen in overhead athletes, and may present as multidirectional instability, rather than pure unidirectional instability.

### **Volition of instability**

It is important to consider whether the instability is voluntary or involuntary. We defined the instability voluntary when a patient is able to dislocate his shoulder at will, or involuntary, as the dislocation happens completely outside the control of the patient.

Voluntary instability is more often seen in posterior and multidirectional instability. Within the group of voluntary instability is a group of patients with emotional or psychological disorders.

Thomas and Matsen (1989) have described the acronyms TUBS and AMBRI to classify most patients with instability.<sup>8</sup> TUBS refer to patients with a *traumatic* lesion, who have a *uni-directional* component to their disease that frequently has a *Bankart lesion* and responds well to *surgery*.

AMBRI refers to patients who have an *atraumatic* aetiology of their *multidirectional* disease that often has *bilateral* shoulder findings and responds to *rehabilitation*. With this we should realize that this is a simplification of shoulder instability and project the two ends of the spectrum of instability. In general there is an overlap in aetiology, direction and degree of instability which creates a continuum on the spectrum of shoulder instability.<sup>4,5</sup>

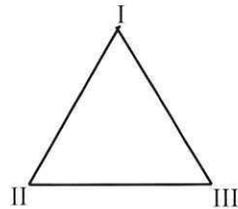
**Spectrum of instability**

Trauma	Microtrauma	Atraumatic
<b>Less laxity</b>		<b>More laxity</b>
Unidirectional	Bidirectional	Multidirectional

Recently Bayley (2002) gave attention by “new light through old windows” to his classification system of shoulder instability which he developed at the Royal National Orthopaedic Hospital.<sup>1</sup>

He found that confusion is compounded by the frequent misunderstanding of the common terms of instability. Multidirectional instability means one thing to one doctor and quite something else to another; also the terms voluntary and involuntary are particularly hard to differentiate. Confusion often exists as to whether a shoulder, is unstable or just lax. Neither do existing classifications recognize two fundamental issues, namely that a combination of pathologies may exist and also that case may move from one group to another over time. His system of shoulder instability is anchored by three basic groups:

- I Traumatic structural
- II Atraumatic structural
- III Habitual non-structural (muscle pattern)



His classification works for anterior and posterior dislocations and also for subluxations. He preferred to use the model in a triangle since it better highlights the continuum of presentation which can occur in between the three polar groups. Only 30% of the patients are just only type I or II or III.

According to Kuroda et al. the current use of atraumatic instability is confusing since it can include the “loose shoulder”, voluntary dislocation, habitual dislocation and sustained subluxation.<sup>3</sup>

In the scope of this thesis we will further describe the acute first-time (anterior) shoulder dislocation and will not discuss the other forms of shoulder instability.

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