

Multidirectional Instability of Shoulder Joint: A Review

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Introduction

The biomechanics of the shoulder joint are complex. To allow a functional range of motion, stability is sacrificed. Glenohumeral joint stability is maintained by static and dynamic stabilizers. Static stabilizers are non-contractile structures including capsulolabral structures and bony glenoid while dynamic stabilizers are contractile structures including rotator cuff, conjoint tendon, and long head of the bicep. The objective of this review is to elaborate on multidirectional instability (MDI) of the shoulder joint and the management of this disorder.

Review

Laxity can be affected by hereditary and genetic factors. This can be seen for example in generalized joint laxity which often manifests in the shoulder as MDI. Mutations in collagen genes can cause altered collagen structure, mostly in collagen Type I, resulting in smaller and longer collagen cells. Abnormalities could be found in mRNA synthesis or amino acid transcription for collagen protein, resulting in amino acid content variation. Alterations in fine-tuning mechanism, cleavage process, ionic interaction, cross-linking and metabolism could also result in collagen quality variation. Genetic factors could also cause elastin overproduction rate or amount. Elastin amino acid content alterations could also be affected genetically. These alterations produced a looser static stabilizer. Even so, shoulder joint have multiple static stabilizers and the individual having hereditary laxity does not always have problems related to joint laxity. If the laxity caused problems, it is usually in the form of pain, discomfort, or disruption in shoulder joint function. To compensate for the loose static stabilizer, rehabilitation should be optimized on the contractile, musculature structure of the glenohumeral joint. Besides rehabilitation, capsular shift procedure could also be performed as management of the affected joint by open surgery, arthroscopic capsular plication, or arthroscopic thermal capsulorrhaphy.

Conclusion

Based on the review conducted, reoperation rates for open surgery, arthroscopic technique, and thermal technique were approximately 10%, 5%, and 15% subsequently. This should be considered when choosing the appropriate surgery method for MDI management if rehabilitation on contractile structures does not improve patients' condition.