

Trauma upper limb

## **Acromioclavicular joint reconstruction: A comparative biomechanical study of three techniques**

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### **Abstract**

#### INTRODUCTION

Acute acromioclavicular joint dislocations indicated for surgery can be treated with several reconstruction techniques.

#### OBJECTIVES

The purpose of this in vitro study was to evaluate the acromioclavicular joint stability after three types of validated reconstruction as compared to the native situation.

#### METHODS

Nine pairs (right-left) of intact cadaveric shoulder specimens were assigned into three study groups with randomly distributed samples according to the coracoclavicular distance. The study groups were instrumented with either acromioclavicular and coracoclavicular cerclages (CE), a Twin Tail TightRope (TR), or a LCP S-A Clavicle plate (CP). Native and instrumented specimens were tested quasi-static non-destructively (superior; 70 N, anteroposterior;  $\pm 35$  N, 10 mm/min) and cyclically until failure (superior, valley load: 20 N, initial peak load: 70 N, increment: 0.02 N/cycle).

#### CONCLUSION

The TR system provided the highest stability but failed earlier than the CE reconstruction compared to the native situation. The CE reconstruction might mimic the native acromioclavicular joint stiffness better than the other two setups, leading to more physiologic reconstruction.