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Functional Outcome Oxford Shoulder Score after Modified Weaver Dunn Technique Reconstruction in Patients with Acromioclavicular Injuries

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Abstract : Objective : The aim of this study was to compare the clinical outcome of Oxford Shoulder Score in patients with acromioclavicular injuries that were operated with Modified Weaver Dunn Technique Reconstruction compared with the healthy side.
Material And Methods : A total of 8 patients with acromioclavicular injuries from 2011 until 2019 that were included into the study that were treated with Modified Weaver Dunn Technique. Age, gender, range of motion and OSS score that was followed for minimum 6 months after surgery (Oxford Shoulder Score [OSS]) were recorded.
Results : Patients' gender characteristics totalled three females (3) and five males (5). There weren't significant differences with regard to the OSS at minimum six months prior to surgery ($p<0,05$) with OSS score of joints that were treated with Modified Weaver Dunn Technique (44 ± 1,309) compared to healthy side (46,88 ± 0,835), range of motion forward flexion (169,63±0,835) and healthy side (177,88±2,1), extension (50±2,673) and healthy side (58,25±2,188), abduction (169,38±3623) and healthy side (178,±2,070), internal rotation (58,63±2,326) and healthy side (63,36±4,173), and also external rotation (49,38±3,204) and healthy side (56,88±3,720).
Conclusion : Modified Weaver Dunn Reconstruction Technique can give good functional outcome and has no differences with the healthy side.
Keywords : Modified Weaver Dunn Technique; Acromioclavicular Injuries, Oxford Shoulder Score.

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Introduction

Acromioclavicular injuries account for 12% shoulder injuries at population and approximately 40% cases involve athletes. Majority of injuries are acromioclavicular injuries with rockwood classification type I-III and are treated conservatively except athletes and patients with heavy activities.[1,2] Surgery in acromioclavicular injuries cases was still debatable. Modified Weaver Dunn Technique Reconstruction is one of the method that is most commonly used, involving excisions of the lateral end clavicle and transferring it to the acromioclavicular ligament to replace the coracoclavicular ligament that was already damaged at the lateral edge. Ligament that was transferred is then fixated with screw, cerclage wires and is transplanted with autogenous or synthetic tendons like dacron, fiber carbon, gore-tex and braided polyester.[3]Acromioclavicular injuries are more common in man compared with women with ratio 5:1 and young patients are more commonly seen sufferingfrom this injuries. Incidence is approximately 1,8 per 10.000 in 1 year.[4]

Some other treatment methods are pin fixation after reduction or usage of hook plate.[5] Therefore the present study was undertaken to compare outcomes of Modified Weaver Dunn Technique Reconstruction in acromioclavicular injuries' patients compared to the healthy joint's side.

Methods

This cross sectional study was conducted at Medical Faculty of North Sumatera University/Haji Adam Malik Hospital, North Sumatera, Indonesia for 1 month from March 2019 until April 2019 by collecting OSS from patients who underwent Modified Weaver Dunn Technique Reconstruction from 2011-2019 and 8 patients met the inclusion criteria.

Patients were called back and evaluated clinically with Oxford Shoulder Scoring System (OSS), which consist of pain, daily activity and also the patients were evaluated in range of motion of the shoulder.

The relation between shoulders that were treated with Modified Weaver Dunn Technique compared with the healthy sides were analysed using unpaired T-Test. All statistical calculation were performed using computers based statistic programme. The study was approved by Health Research Ethical Committee of Medical Faculty of North Sumatera University/Haji Adam Malik Hospital and informed consent was obtained from all subjects.

Results

The study included 8 patients with acromioclavicular injuries, 3 female patients (37,5%) and 5 male patients (62,5%) with mean age of 31,13 ± 7,9 years old.

Table 1.Characteristics distribution of subjects that underwent Modified Weaver Dunn Technique Operation.

Variable	Total
Female, n(%)	3 (37,5%)
Male, n(%)	5 (62,5%)
Youngest	21 years old
Oldest	43 years old
Mean age	31,13 ±7,9

Table 2. Statistical Analysis Functional Outcome ofOxford Shoulder Score of Modified Weaver Dunn techniqueon Acromioclavicular Injuries

		Mean	p value
Oxford Shoulder Score	**Modified Weaver Dunn technique**	44 ±1,309	0,000
	Control	46,88 ±0,835	

Tabel 3. Range of motions: forward flexion, extension, abduction, internal rotation or external rotation compared to healthy sides, included significant statistical analysis with p value < 0,05.

Mean (in degrees)	Forward Flexion	Extension	Abduction	Internal Rotation	External Rotation
Cases	169,63 ±3,114	50 ± 2,673	169,38 ±3,623	58,63 ±2.326	49,38 ±3,204
Control	177,88 ±2,1	58,25 ±2,188	178 ±2,070	63,36 ±4,173	56,88±3,720
Statistical analysis, P value	0,000	0,000	0,000	0,013	0,01

Statistical analysis with unpaired T-test showed that there was a significant relationship and no differences between shoulders that were operated with Modified Weaver Dunn Technique and healthy sides.

Discussion

The main purpose of this study was to evaluate the relationship of OSS outcome between shoulder sides that were operated using Weaver Dunn Technique compared to healthy sides. The result of this study showed that the OSS clinical outcome was good and similar to the healthy side. This result has similar result with research by *Ravi and Gupta.*[15]The result of measuring the range of motion in shoulders that were treated with Modified Weaver Dunn Technique compared to the healthy sides was also similar with other research that was conducted by H*egazy et al,* which also gave good result.[23]

More studies, samples and comparisons with another operation techniques are recommended for future research.

Conflict of interest

No declared conflict of interest relevant to this article was reported.

References

1. Rockwood CA Jr, Young DC. Disorder of the acromioclavicular joint. In: Rockwood CA, Jr, Matsen FA, III, Eds. The Shoulder. Philadelphia, PA: WB Saunders 1990; vol. 1: pp. 413-75.
2. Emery R. Acromioclavicular and sternoclavicular joints. In: Copeland SA, Ed. Shoulder surgery. London: WB Saunders 1997.
3. Galal et al. Modified Weaver-Dunn Procedure *Versus*The Use of Semitendinosus Autogenous Tendon Graft for Acromioclavicular Joint Reconstruction. Open Ortho Journal. 2016, 10: 166-178
4. Chillemi, Claudio. Epidemiology of Isolated Acromioclaviuclar Joint Dislication. Emergency Medicine International 2012;
5. Boffano, michele. The Surgical Treatment of Acromioclavicular Injuries. 2017
6. Thompson, J. C., & Netter, F. H. (2010). *Netter's concise orthopaedic anatomy*. Philadelphia, PA: Saunders Elsevier.
7. Ryan J. Warth. Acromioclavicular joint separations. Curr Rev Musculoskelet Med (2013)
8. Bontempo NA, Mazzocca AD. Biomechanics and treatment of acromioclavicular and sternoclavicular joint injuries. Br J Sports Med. 2010;44:361-369

9. Wallace et al. The Clinical Assessment and Classification of Shoulder instability. Orthopaedics and Trauma Journal.2008
10. Salter EG Jr, Nasca RJ, Shelley BS. Anatomical observation on the acromioclavicular joint in supporting ligaments. Am J Sports Med. 1987;15:199-206.
11. Paul et al. A modified weaver dunn procedure without need for internal fixation. Acta Orthopaedica Belgica. 2010.
12. Bilal, Muhammad. Modified Outcome of Weaver Dunn Acromioclavicular Joint Stabilisation. International Journal of Ortopaedic Sciences 2017; 3(1): 718-721
13. Xinning et al. Current Concepts Review: Management of Acromioclavicular Joint Injuries. 2014. The journal of Bone and Joint Surgery.
14. Brent et al. Acromioclavicular Joint Instability-Reconstruction Indication and Techniques. 2004. Operative Techniques in Sports Medicine.
15. Ravi, gupta. Functional Outcome of Modified Weaver Dunn Technique ForAcromioclavicular Joint Dislocation. India Journal of Orthopaedics. Indian J Orthop. 2018
16. Dawson J, Fitzpatrick R, Carr A. Questionnaire on the perceptions of patients about shoulder surgery. J Bone Joint Surg Br 1996;78:593-600.
17. Peter J. Acromioclavicular joint reconstruction with coracoacromial ligament transfer using the docking technique. BMJ Musculoskeletdisord. 2009
18. Oystein et al. Evaluation of Oxford Instability Shoulder Score, Western Ontario Shoulder Instability Index and Euroqol in patient with Slap lesions. BMC Research Notes. 2013, 6;273
19. Oxford Shoulder Score. Journal of Orthopaedic Trauma: September 2006 - Volume 20 - Issue 8 - p S130-S131 Upper Extremity
20. Ebrahimzadeh et al. Oxford Shoulder Score: A Cross-Cultural Adaptation and Validation Study of the Persian Version in Iran. Iran J Med Sci. 2015, 40(5): 404-410
21. Nicholas David et al. Oxford shoulder score in a normal population. Int J Shoulder Surg 2014,8(1): 10-14
22. Younis et al. The Range of the Oxford Shoulder Score in the asymptomatic population: a marker for postoperative improvement. Ann R CollSurg Engl. 2011.
23. Hegazyetal Modified Weaver-Dunn Procedure The Use of Semitendinosus Autogenous Tendon Graft for Acromioclavicular Joint Reconstruction.

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