

Shoulder Reduction on the Scene: Current Practice and Outcome of the Bavarian Mountain Rescue Service – a Prospective Observational Study



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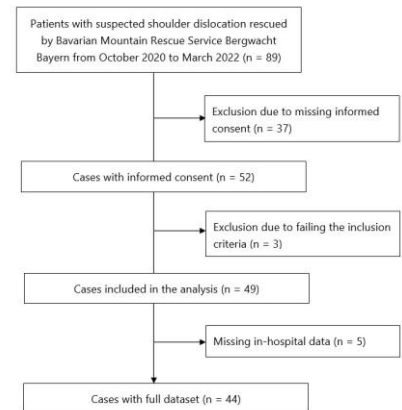
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BACKGROUND

Shoulder dislocation is painful and immediate reduction markedly reduces pain level and facilitates evacuation (1). The Bavarian Mountain Rescue Service (Bergwacht Bayern, BWB) follows the Medical Commission of the International Commission for Alpine Rescue (ICAR MEDCOM) by recommending the Campell method also for its trained non-physician-rescuers (2). Our study aims to evaluate the actual current practice in the Bavarian mountains.

MATERIALS and METHODS

Our prospective observational study included patients of any age being preclinically suspect of traumatic shoulder dislocation, treated and evacuated by the BWB. Between October 2020 and March 2022, data were systematically collected using three questionnaires: the first one completed on-site by the rescuer, the second one by the receiving physician in the hospital and the third one as a follow-up by the patient, mainly addressing the overall outcome.



Consort flowchart of “Shoulder Reduction on the Scene – Current Practice and Outcome of the Bavarian Mountain Rescue Service”

RESULTS

Eighty-nine patients with traumatic shoulder dislocation were identified, forty-nine of them (age 42±18 years) were recruited and forty-four accomplished a complete dataset (out-of-hospital, in-hospital and follow-up) while in five cases the in-hospital data were missing (see Consort flowchart). In 34 (69%) of 49 cases included in the analysis, reduction on the scene was attempted. In most cases the operator was an emergency physician [18 (53%)] or mountain rescue paramedic [10 (29%)]. In six cases (18%) it was a mountain rescue member with basic medical training. The operator’s formal qualification did not have an impact on success ($p=0.217$, $n=28$). The chosen method had no effect on success rate (Campell vs. Fares vs. other, $p=0.864$, $n=27$). The preclinically suspected shoulder dislocation was clinically confirmed in 37 of 44 (84%) cases. Concomitant injuries in other body regions were found in 8 of 49 (16%) cases, being strongly associated with incorrect diagnosis of shoulder dislocation ($p=0.002$). Younger age ($p=0.043$) and first event of shoulder dislocation ($p=0.038$) were associated with a higher success rate of reduction attempts. Out-of-hospital reduction led to significant pain release and no worse long-term outcome.

CONCLUSION

Our data suggest that shoulder reduction on the scene using the recommended Campell-method, even by non-physician rescuers of BWB, might be beneficial. However, predictors of success and incorrect diagnosis should be considered before. Beyond that, an intensive training especially enabling the BWB-rescuers to clinically discriminate between an isolated dislocation and a fracture appears desirable.



Figure: The Campell-method with two rescuers for reduction of shoulder dislocations (© Bergwacht Bayern)

Funding: This study was funded by the Forschungspreis 2019 of BExMed “Deutsche Gesellschaft für Berg- und Expeditionsmedizin e.V.”

1) Beeson MS. Complications of shoulder dislocation. Am J Emerg Med. 1999;17(3):288-95.
2) Forster H, Zafren K. Alpine Emergency Medicine Commission - Recommendation 0009 - Treatment of Shoulder Dislocations. Accessed on 27 April 2023. URL: <https://www.alpine-rescue.org/articles/49--treatment-of-shoulder-dislocations>.

