

The Rate of Mediastinal and Vascular Injury Following Acute Posterior Sternoclavicular Dislocation: A Multicenter Study

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Purpose: Acute posterior sternoclavicular dislocations (APSCDs) are rare injuries, historically with concern for injury to the great vessels/mediastinal structures from initial trauma or subsequent treatment. Orthopaedic texts, conferences, and journal articles often cite the need for a vascular surgeon to be present/available during the surgical treatment of these injuries. To our knowledge, however, there are no large studies characterizing the rate of injury to vascular and mediastinal structures with APSCD. The purpose of this study was to characterize the rate of vascular injury with APSCD in a large multicenter cohort.

Methods: Following IRB approval, records of skeletally immature patients (≤ 25 years) treated for APSCD were retrospectively identified and collected from each participating center. Patient demographic information, injury mechanism, associated mediastinal injuries, and need for vascular/general surgery intervention were recorded. Mediastinal structures that were injured or compressed by mass effect were specifically characterized by review of preoperative CT imaging. Statistical comparisons were done using Student t tests, with P values < 0.05 considered significant.

Results: We identified 127 patients (87% male) with a mean age of 14.7 years (range 5-22 years). APSCD was most commonly the result of a sporting injury (96, 76%), with patients also commonly sustaining injuries resulting from same-level falls (13, 10%) and high-energy motor vehicle trauma (13, 10%). The most common findings on CT imaging were compression of the subclavian or brachiocephalic veins (46, 38%). Associated injuries, including clavicle shaft fractures, pulmonary contusions, humerus fractures, and rib fractures were documented in a minority of patients. 11 patients had successful closed reduction, and 2 were treated with observation. 114 patients underwent open reduction and internal fixation, with 25 failed or unstable closed reductions preceding open treatment. Vascular or general surgery was documented as available for 85 procedures (67%). There were no instances of vascular or mediastinal injury during reduction or fixation requiring intervention.

Conclusion: In this multicenter series of 127 APSCDs, which is the largest in the literature to date, no injuries to the great vessels/mediastinal structures requiring intervention were identified. While this study suggests vascular injuries following APSCD are quite rare, vascular complications are catastrophic when they do occur. Treating providers should consider these data and their own institutional resources to maximize patient safety during the treatment of APSCD.