

Subclavian Artery Pseudoaneurysm as A Complication of Clavicle Fracture Managed Conservatively

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Clavicle fractures are often amenable to conservative management with good outcomes and low complication rates. We report a rare but serious complication of a conservatively managed lateral third clavicle fracture that resulted in a symptomatic pseudoaneurysm of the subclavian artery necessitating operative repair.

Keywords: clavicle fracture, conservative treatment, pseudoaneurysm.

A 60-year-old male patient presented to us with left sided neck pain and swelling, with weakness and blanching of his left upper extremity. He had sustained a road accident 5 months ago and was diagnosed with a minimally displaced lateral third clavicle fracture that was managed conservatively in a figure of eight bandage for 6 weeks. The patient sought consultation when, even after months, his pain did not subside and he gradually developed the swelling and arm weakness. On examination, there was a soft, pulsatile, mildly tender and compressible swelling about the left supraclavicular fossa. This

was associated with blanching of the left hand and motor (but not sensory) weakness in the left upper extremity with muscle power of 3/5 in all groups. X-rays showed a non-united lateral third clavicle fracture which had displaced (**Figure 1**). A CT-angiogram revealed a pseudoaneurysm of the left subclavian artery as a result of perforation by the fracture end (**Figure 2**). With the diagnosis of left subclavian artery pseudoaneurysm, patient was taken for surgery. At surgery, two Fogarty catheters were passed proximal and distal to the aneurysm through the brachial artery and inflated to control bleeding during dissection. Subclavian artery was

approached through infra and supraclavicular approaches. As the patient started to bleed profusely, the middle section of the clavicle was divided to gain quick access to the hole in the subclavian artery, which was then repaired. The clavicle fracture was approximated with strong ethibond sutures after the aneurysm was repaired and normal distal flow confirmed.



Figure 1: A) X-ray of left clavicle showing fracture of Lateral end, B) Neck swelling and weakness and blanching of the upper extremity

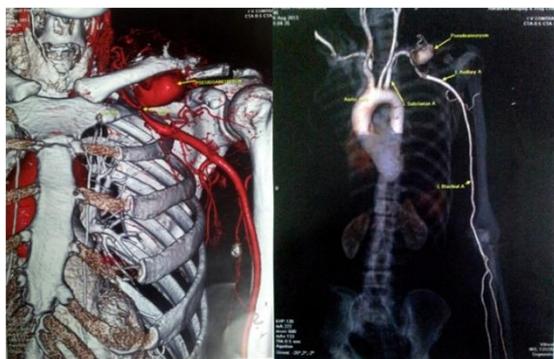


Figure 2: CT-angiogram showing the pseudoaneurysm and its relationship to the fracture

Post-operative recovery was uneventful and the patient returned to normal daily activities without any pain or weakness (**Figure 3**). Post-operatively, the patient was able to achieve full abduction of the shoulder on the affected side, which he was unable to do prior to surgery. The limb blanching and weakness also resolved completely.



Figure 3: Complete functional recovery and fracture union post-surgery

Discussion

Isolated undisplaced or minimally displaced clavicle fractures are generally considered to be innocuous injuries. Conservative management in a figure of eight bandage or arm sling is sufficient to achieve union in most cases.^{1,2,3} The present case highlights a rare but potentially limb and life threatening complication that can occur during the course of conservative treatment. This complication has also been reported after surgical fixation as well as after anterior shoulder dislocation.⁴ The proximity of the major neurovascular bundles supplying the upper extremity makes them vulnerable to injury by fracture fragments or hardware used for fixation. The pseudoaneurysm can develop acutely or chronically and may compress the brachial plexus causing neurological deficits of the upper extremity.^{5,6} Bleeding from the pseudoaneurysm can be potentially limb- or life threatening.^{6,7} Surgical repair of the pseudoaneurysm may require a double approach to gain access to the proximal or distal aspects of the subclavian artery. Embarking on treatment for clavicle nonunion without recognizing this rare possible complication can be catastrophic. A vascular consultation is mandatory for any case where there is even a remote suspicion of a pseudoaneurysm. A CT-angiogram is the investigation of choice to

study the site and extent of the aneurysm and the relationship of the fracture to the lesion.

We recommend a very high index of suspicion when confronted with a clavicle fracture with overt or subtle neurovascular symptoms with or without a neck swelling. A prompt vascular consult, a CT-angiogram and careful operative repair usually results in complete recovery.

References

1. Chervu A, Quinones-Baldrich WJ. Vascular complications in orthopedic surgery. *Clin Orthop* 1988;235: 275-88.
2. Craig EV. Fractures of the clavicle. Rockwood CA, Matsen FA III editors. *The Shoulder*. WB Saunders, Philadelphia, 1998, pp 428-82.
3. Yates DW. Complications of fractures of the clavicle. *Injury* 1976 ;7:189-93.
4. Tsutsumi Koji, Hiroshi Saito, Mikihiro Ohkura. Traumatic pseudoaneurysm of the subclavian artery following anterior dislocation of the shoulder: A report of a surgical case. *Ann Thorac Cardiovasc Surg* Vol. 12, No.1 (2006).
5. Serrano JA, Rodriguez P, Serrano P, Carpintero P. Acute subclavian artery pseudoaneurysm after closed fracture of the clavicle. *Acta Orthop Belgica*, Vol. 69 – 6 – 2003.
6. Hansky B, Murray E, Minami K, Körfer R. Delayed brachial plexus paralysis due to subclavian pseudoaneurysm after clavicular fracture. *Eur J Cardiothorac Surg* 1993;7:497-8.
7. Howard FM, Shafer SJ. Injuries to the clavicle with neurovascular complications. A study of fourteen cases. *J Bone Joint Surg* 1965;47-A: 1335-46.