

ACUTE SUBCLAVIAN ARTERY PSEUDO-ANEURYSM AFTER MINIMALLY DISPLACED FRACTURE OF CLAVICLE: A CASE REPORT

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ABSTRACT

Closed clavicle fracture is usually managed conservatively with good outcomes and with low complication rates. The most common complication following a clavicular fracture is nonunion, between 6 and 15% of cases(1).vascular complication following closed clavicle fracture are very uncommon(2,3). Many cases have been published in literature pseudo aneurysm as a late complication. We report a rare case of acute pseudoaneurysm of subclavian artery following clavicle fracture.

Key words:

Clavicle fracture, pseudoaneurysm
subclavian Artery, endovascular
stenting

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INTRODUCTION

A 21 years old male patient attended emergency department of North eastern Indira Gandhi regional Institute of Health & Medical Sciences (NEIGRIHMS), Shillong with a history of RTA 1 week back and was diagnosed as a medial 1/3rd shaft minimally displaced # Right sided clavicle (Allman Group III) for which he was managed conservatively with an arm pouch sling. In the past 3 days he started developing severe throbbing pain and swelling over the right upper chest region associated with right arm weakness.

Clinical examination revealed abrasion over the right anterior chest wall with a soft, pulsatile, tender and compressible globular swelling involving the right supraclavicular & infraclavicular fossa (Fig. 1 & 2). Patient was not able to move the right arm. The muscle power of the right upper extremity was 3/5 in all the muscle groups, however the sensations were intact. Radial, ulnar pulse palpable and a normal capillary refill time of 2-3 seconds. Radiograph showed fracture of the middle third of the right clavicle (Fig. 3). Doppler study shows a right subclavian artery pseudoaneurysm with turbulent flow and surrounding thrombus. ECG showing normal sinus rhythm.

CT-angiogram revealed a pseudoaneurysm of the right subclavian artery measuring 64.2 mm X 48.5 mm in size as a result of perforation by the fracture end (Fig. 4 & 5).

Endovascular Stent grafting (Fig.6- Stent marked by Arrow in the figure) was done by the intervention radiology department and transferred to Cardiovascular and thoracic surgery (CTVS) department. For the fracture of clavicle, patient is treated conservatively with shoulder immobilizer with the advice to maintain external support for 4 weeks and was discharged with resolution of symptoms after a week,

DISCUSSION

Due to closed anatomical relationship between brachial plexus & subclavian artery in thoracic outlet, both structures are often simultaneously involved in shoulder girdle injury. Isolated lesion of the subclavian artery or brachial plexus can occur, especially with clavicular fractures (4) Fracture fragments or implants used for fixation of clavicular fractures may be the cause of injury to these neurovascular structures.

This case presents a rare but potentially limb and life threatening complication following closed clavicle fracture. The relation of the major neurovascular bundles and the clavicle is vulnerable to injury by fracture fragments or implants used for fixation. The pseudoaneurysm may compress the brachial plexus causing neurological deficits of the upper extremity. Bleeding from the pseudoaneurysm can be potentially limb or-life threatening [5, 6].

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Sturm and Cicero devised five criteria to diagnosed a subclavian arterial injury. These criteria include first rib fracture, diminished or absent radial pulses, palpable supraclavicular hematoma, chest X-ray demonstrating a widening of the mediastinum or haematoma over the area of the subclavian artery, and brachial plexus palsy [7].



Fig.1 & 2



Fig.3



Fig.4

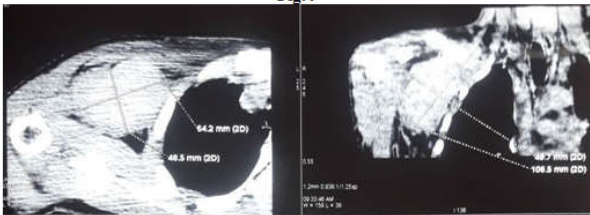


Fig.5



Fig.6

Options for the treatment of the subclavian artery aneurysm include conservative with observation or open operation and endovascular repair [2]. Yates DW [8] has treated 60 years old women with axillary artery false aneurysm following lateral end of clavicle fracture with resection of the aneurysmal sac and end to end anastomosis (8).

Serrano JA *et al* [5] advice that subclavian artery pseudoaneurysm treatment must be surgical, using a double surgical approach. Yamashita *et al* [9] reported Successful Treatment of Iatrogenic Subclavian Artery Pseudoaneurysm by Ultrasound-Guided Thrombin Injection.

Management is a challenging task which include both surgical and endovascular techniques. Open surgery with potential blood loss and injury to nearby neurovascular structure have been published. With the advancement of endovascular techniques, stenting seems to reduce these risks [10]. Our patient was subjected to endovascular stenting by

interventional radiologist and clavicle fracture was managed conservatively as was minimally displaced and had good chances of uneventful union.

CONCLUSION

Acute subclavian artery Pseudoaneurysm following clavicle fracture is a rare complication but life and limb threatening. We recommend a strong index of suspicion for it if the patient presents with throbbing pain, swelling and neurological symptoms in the affected upper extremity. Management is multidisciplinary including vascular surgeon, radiologist and orthopaedic surgeon. Subsequent management with minimally invasive procedure like endovascular stenting can be very rewarding with good outcome in such a situation.

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Ethical Approval: Approving the report by the ethical committee was not necessary, because no biomedical research involving human subjects has been done.

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