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• Case Report •

둔기손상에 대한 쇄골골절에 생긴 외상성 쇄골하동맥 박리: 폐쇄가 길면 수술하느냐 또는 스텐트를 삽입하느냐?

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- Abstract -

Traumatic Subclavian Artery Dissection in Clavicle Fracture Due to Blunt Injury: Surgery or Stent in Long Segment Occlusion?

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Subclavian injuries in blunt trauma are reported in less than 1% of all arterial injuries or chest related injuries. We report a female 68 yr-old patient whom has visited our emergency center due to a motorcycle traffic accident with complaints of right chest wall and shoulder pain. Her injury severity score was 22 and she was found with a comminuted clavicle fracture and subclavian artery injury. She developed delayed symptoms of pallor, pain and motor weakness with loss of pulse in her right arm. Attempts at intervention failed and thus, she underwent emergency artificial graft bypass from her subclavian artery to her brachial artery. Her postoperative course was uneventful and she is happy with the results. Although rare, a high index of suspicion for the injury must be noted and the inevitable surgical option must always be considered. [J Trauma Inj 2015; 28: 219-221]

Key Words: Sublavian artery, Clavicle fracture, Bypass graft

I. Introduction

Subclavian artery injuries can require emergent intervention caused by fractured fragments by stretching, transection or compression(1). Acute occlusion causing limb ischemia, obviously, may occur, but there has even been a case with retrograde thrombosis causing cerebral infarct(2). Subclavian artery injuries are relatively common during penetrating wounds, but much less seen during blunt injury. Complete acute occlusion in subclavian artery dissection can be treated by autologous and artificial bypass grafts or by endovascular techniques when feasible. We report a

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68-yr-old woman who had acute onset of subclavian artery occlusion due to an isolated long segment dissection to her brachial artery due to a comminuted clavicle fracture.

II. Case

A 68-yr-old woman was admitted via our emergency center after motorcycle traffic accident with symptoms of right chest wall pain and right shoulder pain. She was found with multiple rib fractures, Rt 2-9th and Lt 11th; Type C Pelvic right upper rami fracture with instability and a bone fragment protruding into her pelvic cavity; sacral bone fracture; and Liver laceration. Her trauma severity score of her chest was grade III with a total injury severity score of 22. Three-dimensional reconstruction of her vessels has shown occlusion due to dissection and thrombosis of her right subclavian artery from 2cm distal from her origin of her subclavian to her midportion of her brachial artery (Fig. 1). She developed delayed symptoms of pallor, pain, motor weakness, and loss of pulse in her right arm. Initial attempts at intervention (stent insertion) failed due to the long segment of occlusion. An emergent operation was scheduled for limb salvage.

A modest 10 cm incision was placed over her clavicle extending below and laterally. For exposure, portions of her clavicle were removed. A 6 mm PTFE straight 6 mm graft was utilized. Subclavian artery end-to-side to Brachial artery end-to-side with ligations on both ends was done with 6-0 Prolene continuous sutures and a drain placed. Her drain was removed on postoperative 2nd day, stitch out

Fig. 1. A 3D computer tomographic image showing the long occluded segment of her Rt subclavian artery to her brachial artery (shown by arrows).

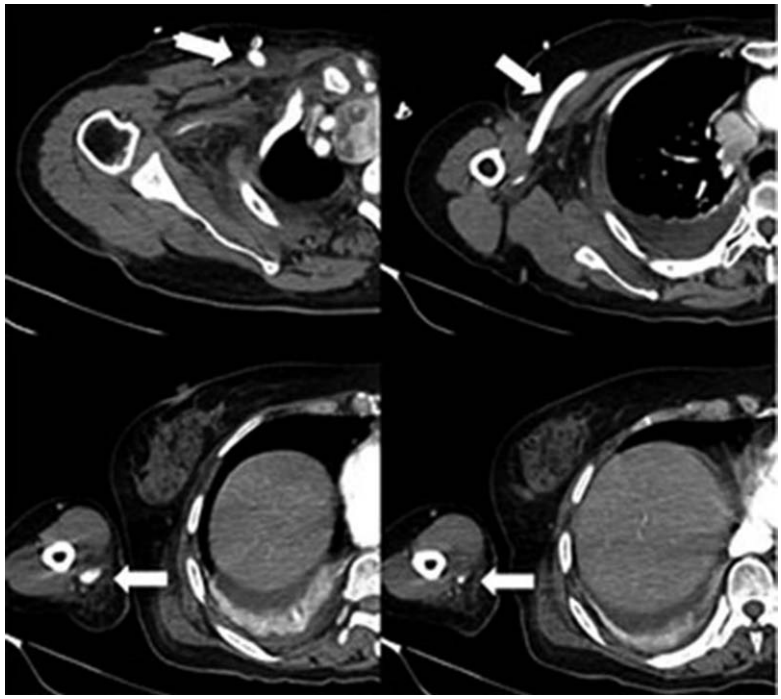

Fig. 2. A computer tomographic image showing patency of her bypassed 6 mm graft (arrows over 4 serial images).

done on postoperative 12th and 14th day. She was on rehabilitation for the remainder of her hospital stay and on postoperative 1 month a chest CT confirmed primary patency of her graft. Six months after her incident, she is doing well with a strong radial pulse, with only mild symptoms of upper extremity weakness, most likely due to her partial clavicle removal. Her CTs show good patency (Fig. 2).

III. Discussion

Although rare, isolated subclavian artery injury and occlusion after blunt injuries can prove to be a true emergent entity. Recently, intervention with stent insertions has been successful, but only in a few select cases. Our particular case presents with failed intervention due to the extreme length of the dissection and occlusion and emergent graft operation for limb salvage. In a report by Klocker et al. (3), where there were 16 cases of subclavian injuries, of which 4 were treated by stent insertions and 12 by grafts. The preferred method in that series was autologous vein grafts, whenever possible. A review done by DuBose et al.(4) in 2012 has presented only 6 cases of dissection of subclavian artery caused by blunt injury treated by endovascular stenting. Subclavian total occlusion caused after dissection seems to be quite rare, and treatment by endovascular techniques possible in only a few select cases. In our particular case, stenting appeared difficult, and surgery seemed the only feasible option.

REFERENCES

1) Nakada T, Idoguchi K, Fukuma H, Ono H, Nakao S, Matsuoka T. Case report: Urgent endovascular treatment of subclavian artery injury after blunt trauma. F1000Research 2014;3:310.
2) Chavali S, Shukla U, Chauta S. Traumatic subclavian arterial thrombosis presenting with cerebral infarct - A case report. Heart, Lung & Circulation 2014;23:e202-6.
3) Klocker J, Falkensammer J, Pellegrini L, Biebl M, Tauscher T, Fraedrich G. Repair of arterial injury after blunt trauma in the upper extremity - immediate and long-term outcome. Eur J Vasc Endovasc Surg 2010;39:160-4.
4) DuBose JJ, Rajani R, Gilani R, Arthurs ZA, Morrison JJ, Couse WD, Rasmussen TE. Endovascular management of axillo-subclavian arterial injury: A review of published experience. Injury, Int J Care Injured 2012;43:1785-92.