

Case Report and review of literatures Common Carotid Artery Aneurysm and Subclavian Arterio-Venous Fistula

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Summary:

Vascular injury is still common in countries such as Iraq where both military and urban violence are endemic.

This is a report of a thirty eight year old civilian patient who had been inflicted with shrapnel injury during the 3rd. Gulf war, which had caused two different types of vascular injury with minimal evidence of vascular injury with evidence of only two small wounds in the neck and upper chest at the time of injury but presented few months later with a pulsatile neck mass and palpable thrill across the right supraclavicular area and upper chest.

Preoperative investigations were done including Doppler study and angiography which confirmed the presence of right common carotid artery aneurysm and right subclavian arterio- venous fistula.

Surgical treatment performed sixteen months later by combined trap-door approach and cervical incisions and by the use of scrubner's shunt (which is used for emergency haemodialysis in renal failure patients) as a carotid shunt due to the unavailability of carotid shunt in Iraq to maintain cerebral perfusion during common carotid artery clamping .

Excellent recovery occurred without any neurological sequel.

The report will include also a review of literatures about these rare vascular injuries.

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Introduction:

Vascular trauma is still common in countries where military or urban violence are endemic. Extra cranial common carotid artery aneurysms are very rare (1). Subclavian artery injuries are rare Vascular injuries and may be difficult to manage with an associated high morbidity and mortality (2). In this manuscript I am presenting a very rare case of combined common parotid artery aneurysm and subclavian arteriovenous fistula.

Case History

A thirty eight year old Iraqi civilian sustained shrapnel injury during the third gulf war (Air force bombing) in the area of Babylon Governorate hundred Kilometer south east of Baghdad.

He was presented to the Emergency Department of the General Hospital of the same governorate immediately after the injury with only two small superficial wound in the neck and upper chest with no evidence of external or internal bleeding or any expanding hematoma of the neck, i.e. he was haemodynamically stable and almost asymptomatic at the time of presentation so he received the 1st. aid treatment and discharge d for follow up. The patient reappeared on August 2003 and was referred to the "Vascular Department of the Medical City Teaching Hospital complaining from pain in the neck, mild dysphagia with a clinical evidence of small pulsating mass in the neck and a thrill over the right side of the neck and upper right chest. Duplex and angiography were requested but the patient went home.

In July 2004 the patient came back with a visible pulsatile right sided neck mass, palpable and audible thrill all over the right side of the chest and lower Part of the neck. His Duplex ultra-sound and angiography were conclusive of both right common Carotid artery aneurysm and subclavian arterio-venous

Fistula Fig (1).



Figure 1: Angiography

A full reassessment of the patient was done, he looked well and fit, his blood group was rare (AB-ve). A written consent was taken (High risk consent) and the patient was informed about all possible general and neurological complications.

Surgery was performed on 16th August 2004 i.e. sixteen months later and due to the unavailability of both per-

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operative electro-encephalography monitoring and carotid shunt in Iraq so Scribner's shunt (which is used in Iraq for dialysis in acute renal failure patients Fig (2) was prepared to be used as an alternative mean for carotid shunt.

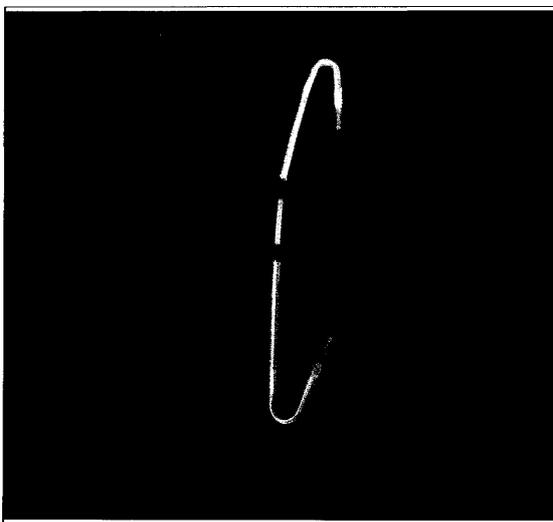


Figure (2) Scribner's Shunt (used for dialysis in renal failure)

Operative procedures:-

The patient intubated and in a supine position with a pillow in between the shoulders and the neck mildly extended and rotated towards the left side. The approach was through both a cervical incision anterior to the right sterno cleido mastoid muscle and a trap door incision passing through the second right intercostals space. Both the right subclavian artery and vein exposed. The fistula was demonstrated to be in the 1st. part of the subclavian artery. Proximal and distal subclavian artery control by nylon tape done and distal subclavian vein control by side clamp . Heparin 50001.U given intra-venously prior to arterial clamping. Division of the 2 cm fistula and repair of both the arterial and venous side by 4/0 proline was performed .Then the common carotid artery was exposed up to the bifurcation with the application of nylon tape around both side .Insertion of the Scribner's shunt between the proximal and distal part of the common carotid artery fixed by snares around the insertion sites so that the arterial flow maintained to the brain during arterial clamping. Clamping done for the carotid artery a big clot removed from the area medial to the common carotid artery which was overlying an irregular defect of about 3 cm (lateral tear) on the antero -medial wall of the artery which trimmed carefully and a synthetic patch sutured to the defect using 4/0 proline. Then the clamp was released and any bleeding points were secured .The shunt then removed and the sites of insertion were secured while the purstring suture already in place .The carotid clamping time was only 4 minutes. The patient did excellent and smooth recovery without any neurological sequel.Postoperatively the patient was put on antibiotics and heparin for seven days then he was discharged well on the 8th postoperative day on anti platelets only Fig(3)



Figure (3) surgical approach

Discussion:

Common carotid and subclavian arterial injuries are usually the sequel of penetrating chest and neck injuries occurring during war conditions but they are still rare or uncommon. Difficult to manage through the present situation in Iraq with increasing military conflict and civilian aggression may increase their incidence .In most of the cases they are usually silent or often present with small superficial or invisible chest or neck wounds as with the present case and this coincides with Amirjamshidi (3).Iraqi vascular surgeons had got a big and a long experience to deal with all types of vascular injuries due to the large number of vascular cases the met with during the 1st, 2nd and 3rd gulf wars .The rare occurrence of these types of vascular injuries are in agreement with other reports such as the report from Texas heart institute which described sixty -seven cases of external carotid artery aneurysm during thirty-five years, less than half of them were traumatic in origin (1) . However, a report from the department of surgery, University of South California stressed the high mortality rate and the difficult surgical exposure associated with subclavian arterial injury (5).Diagnosis was established with both Duplex and angiography. Both are vital for the diagnosis while Ginzburg -Estressing that the Duplex ultrasonography provides an excellent diagnostic modality and that it should be the primary diagnostic procedure of choice for penetrating neck trauma (6).The usual method of treatment for these cases is operative through the classical cervical incision anterior to the sternocleidomastoid for the carotid artery and through the clavicular incision combined with sternotomy for the proximal lesion of subclavian artery and this agree with (Demetriades-D et al (5).The use of various endovascular techniques for the treatment of these types of vascular injuries still not well developed in our country .They are specially used in case of upper extremity vascular injury more than with carotid aneurysm. Never the less endovascular graft offer distinctive advantages in some cases and are important tool for the treatment of vascular trauma and should be included in the armamentarium of all vascular surgeons (7).Postoperative neurological complications which is

reported with these aneurysm as with AI -Sabrout (1) and Lotina(4) did not occur in our case. No such case was reported before locally or internationally.

Conclusion:

Early detection of these serious and relatively uncommon vascular injuries with early planned surgical intervention will save these victims and will eliminate any possible neurological complications. The use of the alternative means as a carotid artery shunt in countries where no other means available can be justified

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