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Traumatic extracranial internal carotid-jugular fistula leading to serious injury: A case report in forensic assessment

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ABSTRACT

Traumatic carotid artery jugular vein fistula is a rare entity that is not usually detected during the acute injury phase. We presented 1 cases of traumatic carotid–jugular fistula. A 52 years old man that was referred to us because of an expanding neck hematoma. There was a 1×1 cm ulcer with a clot in zone II right neck and a thrill was palpated. We clamped the proximal and distal site of injury (Arteriovenous fistula), then divided the fistula and primarily repaired the artery (transversely) and the vein with 7-0 prolene suture. We placed two hemovac drains and then repaired the subcutaneous and skin and covered the site with gauze and then the patient was transferred to ICU. He was extubated the next day and physical exam was completely normal without any neurologic deficit. Carotid–jugular fistula should always be treated early to avoid the complications associated with the injury.

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Introduction:

Below 4% of complications resulting from vascular trauma in the head and neck region stem from arteriovenous fistulae (1). Interestingly, the most common cause involves penetrating trauma as a result of injuries occurred during war-time periods. According to several reports, carotid-jugular fistulae occurrences have been observed following neck surgery and infection, and in some cases, as iatrogenic complication of internal jugular vein cannulation. It is rare for

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congenital carotid-jugular fistulae to occur and even in such cases, it would often appear early in life (2, 3).

Carotid-jugular fistulae are typically accompanied by as pulsatile neck masses (4). The manifestations of high-flow arteriovenous shunt at the fistula are as high output cardiac failure and tinnitus, arterial steal. The mass effect caused by components of dilated vein may lead to dysphagia, stridor, and lower cranial nerve palsies as well (5). Reports of extracranialarteriovenous fistulae causing advanced neurological deficits are few (6). In addition to their case which involved characteristics related to insufficiency in posterior circulation insufficiency, Horiuchi et al. managed to discover only 3 cases of external carotid-jugular fistula (7).

Most of arteriovenous communications linking the main neck vessels are of traumatic origin which may either be penetrating or blunt. There are occasional reports of traumatic carotid jugular arteriovenous fistula associated with traumatic aneurysm, persisting for long durations (8-10). The present research addresses the report related to a 52 year old man suffering from traumatic carotid jugular fistula.

Case Presentation

A 52 years old man was referred to us because of an expanding neck hematoma. He was working with milling stone and was fragmenting a large stone suddenly a small price of it was hitting to the right side of the neck and caused massive bleeding and an expanding hematoma. He was prophylactically intubated and sent to our center. He arrived to our hospital after 4 hours. He was intubated and sedated so we couldn't exactly examine the level of consignees. There was a 1×1 cm ulcer with a clot in zone II right neck and a thrill was palpated.

The vital signs were pulse rate (PR): 86, blood pressure (Bp) =120/60, respiration rate (RR) =16, T=36.6, Saturation O2=96 There was no active bleeding any expanding hematoma in the neck. The patient was brought to the operating room immediately and we explored the right side of the neck with a lengitudinal incision in front of the sternocleidomastoid muscle (SCM). After exploring the common carotid artery We got a control of it then we explored the distal common carotid and its bifurcation and after clamping the proximal common carotid We incise the psuedoaneurysm and after controlling the bleeding with direct finger pressure, we clamped the proximal and distal site of injury (Arteriovenous fistula) and then divided the fistula and primarily repaired the artery (transversely) and the vein with 7-0 proline suture.

We placed two hemovac drains and then repaired the subcutaneous and skin and covered the site with gauze and then the patient was transferred to ICU.

He was extubated the next day and physical exam was completely normal without any neurologic deficit. The next day he was discharged. On follow up visit (10 days after discharge) the patient had no complaint and the physical exam was completely normal (Figure 1).

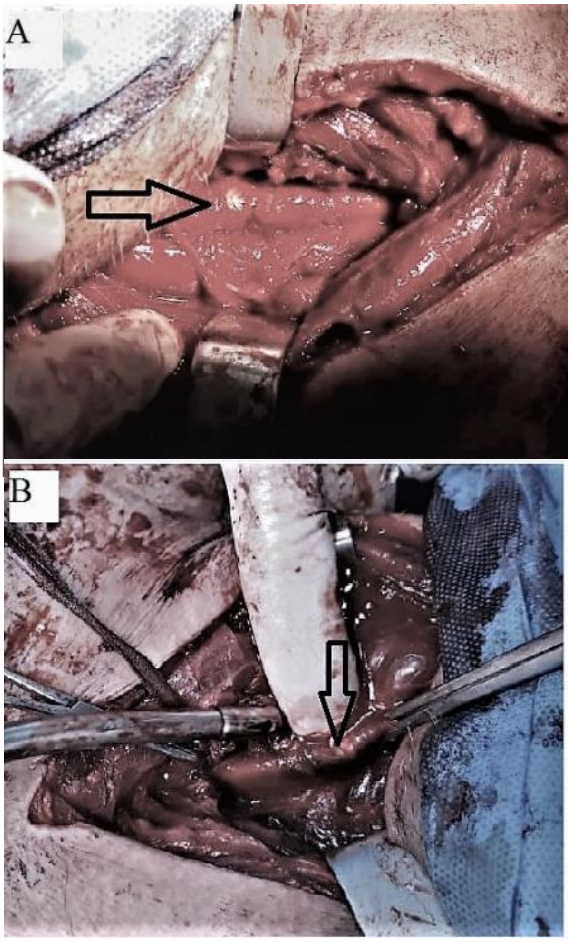

Figure1: Traumatic carotid artery jugular vein fistula case.A: Completed common carotid and internal jugular vein repair.B: Common carotid artery lesion.C: Internal jugular vein lesion

Discussion

Carotid artery traumas are usually devastating and require expeditious repair to avoid cerebral damage (11). Sometimes carotid trauma is mild with only few clinical manifestations. Whenever the lesion is small the artery will spasm and the bleeding will stop (12). This will cause the injury to be missed. Arteriovenous fistulas are divided into three types: congenital, spontaneous and acquired. There are two ways for acquired fistula to arise: from simultaneous artery and jugular vein injury or from inflammation of the hematoma. Sometimes fistula's position is deep and the size is small so its symptoms will not be obvious. If an arteriovenous fistula will not be treated it may cause congestive heart failure, cerebral ischemia, thromboembolism or rupture.

To assess a penetrating traumatic carotid-jugular fistula some important items should be considered: First, the proximity of the wound to the carotid artery should be evaluated. Second, there should be accordance between the clinical and imaging manifestations of carotid-jugular fistula Third, the trauma mechanism should be obvious. Fourth, whenever there is cerebral infarction, carotid artery occlusion the injury should be considers serious and treated expeditiously.

Conflicts of interest

The authors have declared no conflict of interest.

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