Endovascular Treatment of Carotid-Internal Jugular Venous Fistula in a Bomb Blast Victim
Tariq Ashraf1, K.M. Yousaf2, Navedullah Khan1 and Maha Zainab Z. Yaqub3

ABSTRACT
Carotid-internal jugular venous fistula is one of the rarest presentations among victims of bomb blast injuries. Treatment of such fistula is open surgery with high mortality and morbidity. Endovascular treatment with covered stent seems to have an optimal result with low complications. We present a case report of a bomb blast victim having carotid-jugular venous fistula with hemodynamic compromise. The patient was successfully managed with endovascular graft stent. There was an optimal result with no immediate and long-term complications.

Key Words: Carotid-internal jugular venous fistula. Endovascular graft. Stent.

INTRODUCTION
Arteriovenous fistulas (AVFs) can be subdivided into congenital which are less common, and acquired which are common. Acquired fistulas have a single large connection between artery and vein which results from either instrumental trauma (I/V catheter placement) or penetrating injury as in war or bomb blast injuries.1

The epidemiology of carotid-internal jugular venous fistula (CIJVF) in relation to war injuries depends on varying incidence of cervical vascular trauma which was 10.7% in World War I, 0.4% in World War II, 3.6% in Korean War, and 5% in Vietnam.2,3 Males are more vulnerable to traumatic injury due to increased exposure to external environment.4

The critical situation of Afghan War, occasional terrorist attacks, and bomb blast incidence in Pakistan have also affected civilian population.1

We herein, present a case of a young male with CIJVF who came from bomb blast affected area, and was successfully managed by endovascular approach.

CASE REPORT
A 32-year male presented with palpable thrill in the right lateral cervical region. The man came from Quetta, where in a bomb blast incidence 2 years back, he received fragmented particles of metal all over his body. On discharge from the local hospital, he noticed swelling and cervical thrill on his neck. Neck examination revealed a scar mark of entry site in the right lower neck and a palpable soft swelling with continuous thrill and systolic bruit. The thrill disappeared upon compression of scar area over the carotid area. Color Doppler showed a fistula between the right common carotid and right internal-jugular vein which was confirmed on CT angiogram. Chest radiography and echocardiography revealed mild cardiomegaly.

On refusal for vascular repair by the vascular surgeon because of expected intraoperative bleeding and post-procedural complications, we opted for endovascular approach.

Pre-procedure of cardiac evaluation was done, which included clinical examination, electrocardiogram (ECG), X-ray chest and echocardiography, which were normal. Right femoral artery access was made with 8 Fr sheath. With a 6 Fr. pigtail catheter, arch aortogram in digital subtraction angiography (DSA) was done. Fistulous communication between right common carotid and right internal jugular vein was registered (Figure 1a).

With 6 Fr, Jr4 diagnostic catheter, right common carotid artery was engaged and 0.035 inch superstiff Amplatz wire was placed in right common carotid artery. A 10x30 self expanding graft stent (Boston Scientific) was deployed. Post-stenting, arch aortogram showed absent fistulous communication (Figure 1b). Clinical examination showed absent thrill with no bruit in right cervical region.

Clopidogrel 300 mg and aspirin 300 mg were given before the procedure, with clopidogrel 75 mg for one month and aspirin 75 mg life long was advised. 100 U/kg of unfractionated heparin (UFH) was given at the start of procedure.

One month and 6 months follow-up were uneventful. Color Doppler showed no fistula between vessels. No neurological deficit was detected.
DISCUSSION

Acquired CIJVF are rare in head and neck region accounting for 4 - 7% of all traumatic AVFs throughout the body. CIJVF are very rare. This case report of CIJVF diagnosis and management is one of the first reports in the region.

CIJVF of neck may go unrecognised by the patient and the physician for a long-time after the initial incident. A number of cases have been reported which were not diagnosed or treated early but presented lately after patients developed dyspnoea on exertion or detected pulsation in neck, which made them to consult a physician. Duration from trauma to time of presentation varied extending from 2 years, as in this case, to 58 years. Cases with large diameter fistulas (> 8 mm) present with early symptoms as in this case, i.e. 2 years. They may present late, many years after injury, if diameter of fistulas is < 5 mm.

Treatment of CIJVF has progressed from surgery to endovascular therapy. The first endovascular covered stent in CIJVF was placed by Droll in 2004. Since then, a number of case reports have been published. But the approach to treating AV fistulas via open surgery or endovascular treatment is still debatable. Because of scarcity of vascular surgeons, their limited experience in such cases and increased chances of morbidity and mortality, endovascular management seems to be better option in both large and small diameter fistulas.

Traumatic CIJVF is a rare presentation of bomb blast injuries. Endovascular treatment of such fistulas is safe with optimal immediate results and no complications in long-term follow-up.

REFERENCES