



SHORT REPORT

Stenting in Zone II Stab Wounds of Carotid Arteries

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KEYWORDS

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Abstract We present three cases of endovascular treatment of a cervical Zone II carotid artery pseudoaneurysm and arteriovenous fistulae following stab wounds using covered Wall-graft stents in three male patients. All three were clinically stable with no other associated aerodigestive injuries or neurological deficit. Angiography revealed pseudoaneurysms and arteriovenous fistulae. Under local anaesthesia, using Seldinger technique and femoral approach, a covered Wall graft stent (Boston Scientific) was inserted using the standard endovascular technique. No cerebral protective devices were used in our patients. Patients received aspirin before the procedure. Patients were discharged on aspirin 24 hours later. Patients were followed up with duplex ultra sound at 3, 6 and 9 months intervals, with good patency.

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Introduction

Penetrating trauma to the carotid arteries accounts for more than 90% of all carotid injuries. Carotid injuries constitute 5–10% of all arterial injuries.¹ These injuries are classified according to the level of injury. The neck is divided into 3 zones. Zone I refers to the area between the sternal notch and the cricoid cartilage – Zone II is the area between the cricoid and the angle of the mandible; Zone III refers to the area above the angle of the mandible.^{2,3} It is accepted practice to image (angiography) injuries in Zone I and Zone III because of the difficulty in surgical exposure.^{2,4,5}

It is also recommended that Zone II injuries be explored.^{4,6–9} The recommendation stems from the fact that the area is accessible and deemed to be safe. There is limited published experience in the stenting of stab wounds in Zone II.² Most published experience in the literature on endovascular stenting of carotid injuries relates to Zone I and III.¹⁰ We present three male patients who were stabbed on the lateral aspect of the neck (Zone II) and treated successfully with endovascular stents for arteriovenous fistulae and pseudoaneurysms. All these patients were haemodynamically stable with no neurological deficit or aerodigestive injuries.

Case 1

A 21 year old male with a stab wound to the neck (Zone II). The patient was reported to have bled significantly at the scene which required a blood transfusion.

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On physical examination the patient had a 2 cm laceration on the left side of the neck Zone II that had already been sutured. He had no expanding haematoma but a palpable thrill. The laboratory values showed a haemoglobin of 7.4 mmol/l (after 2 Units packed cells). The patient had no other organ injuries in the neck. Clinically, the patient had no tracheo-oesophageal injury. Gastrografin swallow showed no injury. The remainder of the examination was unremarkable with no neurological deficit. Given the stable haemodynamic status of the patient, an angiogram was done. This showed an arteriovenous fistula (carotid artery – jugular vein) **Fig. 1**.

Twenty hours later the patient was taken for endovascular stenting. **Fig. 2** shows a post stent result.

Through the femoral approach, using a Seldinger technique, a 7 mm covered Wall graft stent (Boston Scientific) was inserted without any complications. Heparin was used intravenously during the procedure, with clotting time monitored. No cerebral protective device was used during the procedure and no complications were noted. The patient was discharged 2 days later on aspirin. He was reviewed at 3, 6 and 9 months intervals and the duplex Dopplers done showed good patency.

Case 2

A 31 year old male was brought to the casualty department after being stabbed on the neck.

On physical examination he had a 2 cm laceration on the lateral neck that had already been sutured. He had a non expanding haematoma on the injury site. The rest of the examination was unremarkable. Oesophageal injury was excluded clinically and radiologically. The laboratory values were normal. An angiogram was performed which demonstrated a pseudoaneurysm in the common carotid artery and an arteriovenous fistula **Fig. 3**.

The patient was later taken for endovascular stenting 24 hrs later **Fig. 4**.

Through the femoral approach using the Seldinger technique, an 8 mm covered Wall stent graft (Boston

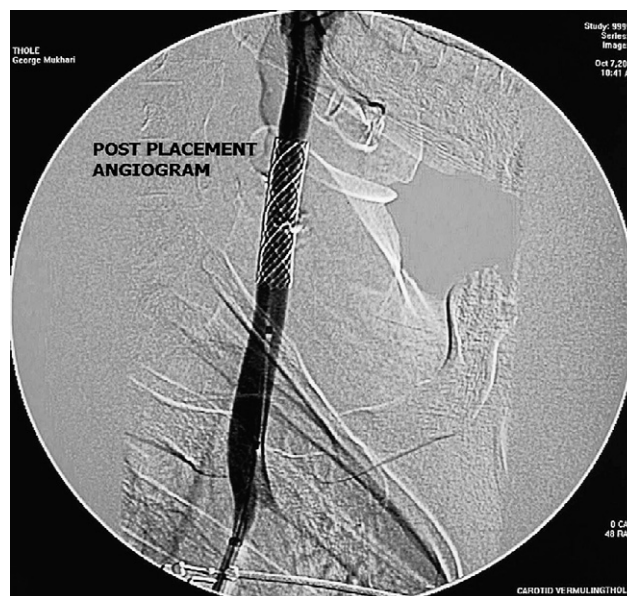


Figure 2 Angiogram showing an endovascular stent in the (L) carotid artery.

Scientific) was inserted using routine endovascular technique. There were no complications during the procedure. The patient was discharged 2 days later on aspirin. The patient was followed up to 9 months. The Duplex doppler done showed good patency and there was still no neurological deficit.

Case 3

A 25 year old male stabbed on the neck. The examination revealed a 2 cm laceration on the lateral side of the neck Zone II, with a haematoma and a palpable thrill. An angiogram was performed which showed a pseudoaneurysm (**Fig. 5A**). **Fig. 5B** shows intact blood flow into the brain through the opposite carotid artery.

Endovascular stenting was done 48 hours later without any complications and the patient was discharged 24 hours later on aspirin. **Fig. 6** shows the post stent angiogram.



Figure 1 Angiogram showing A-V fistula of (L) carotid artery – jugular vein.



Figure 3 Angiogram showing a Pseudoaneurysm of (L) common carotid artery.

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