

# management of acute, carotid dissection



A. Ross Naylor MD, FRCS

Professor of Vascular Surgery

Leicester Vascular Institute

Leicester UK

[arnaylor@hotmail.com](mailto:arnaylor@hotmail.com)

I have no disclosures  
relating to this talk

# demographics & aetiology

2–3 per 100 000 per year

responsible for 2% of all strokes

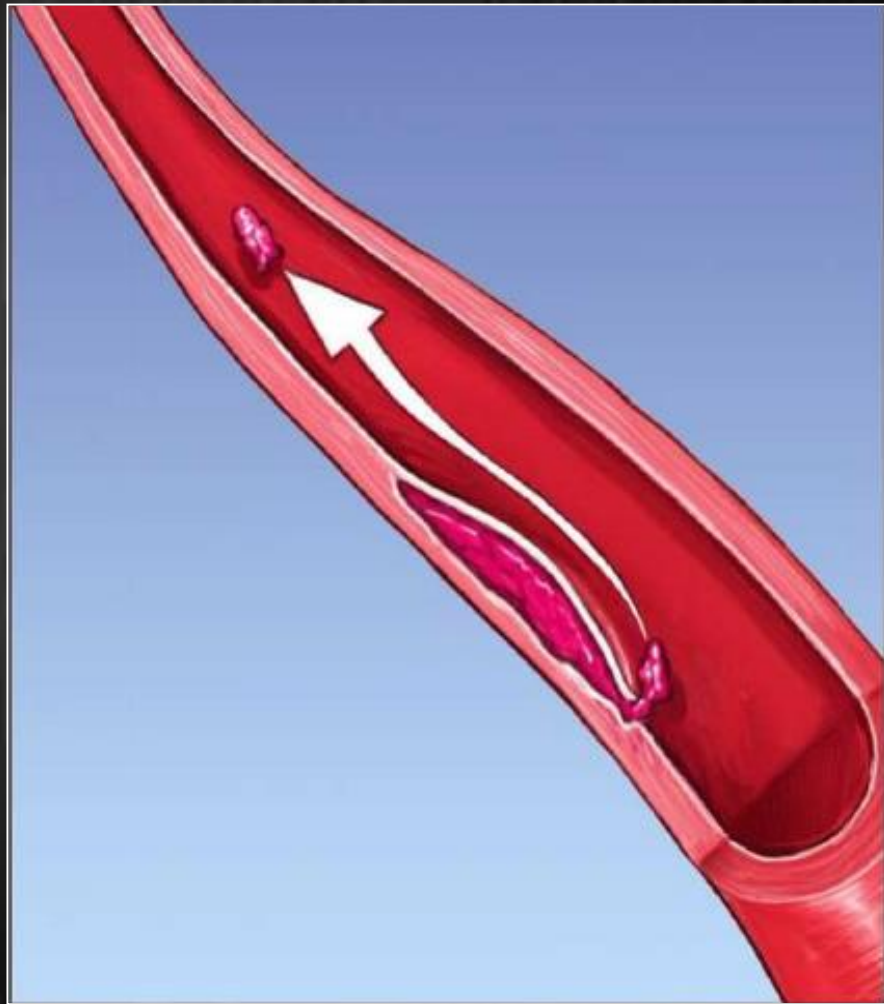
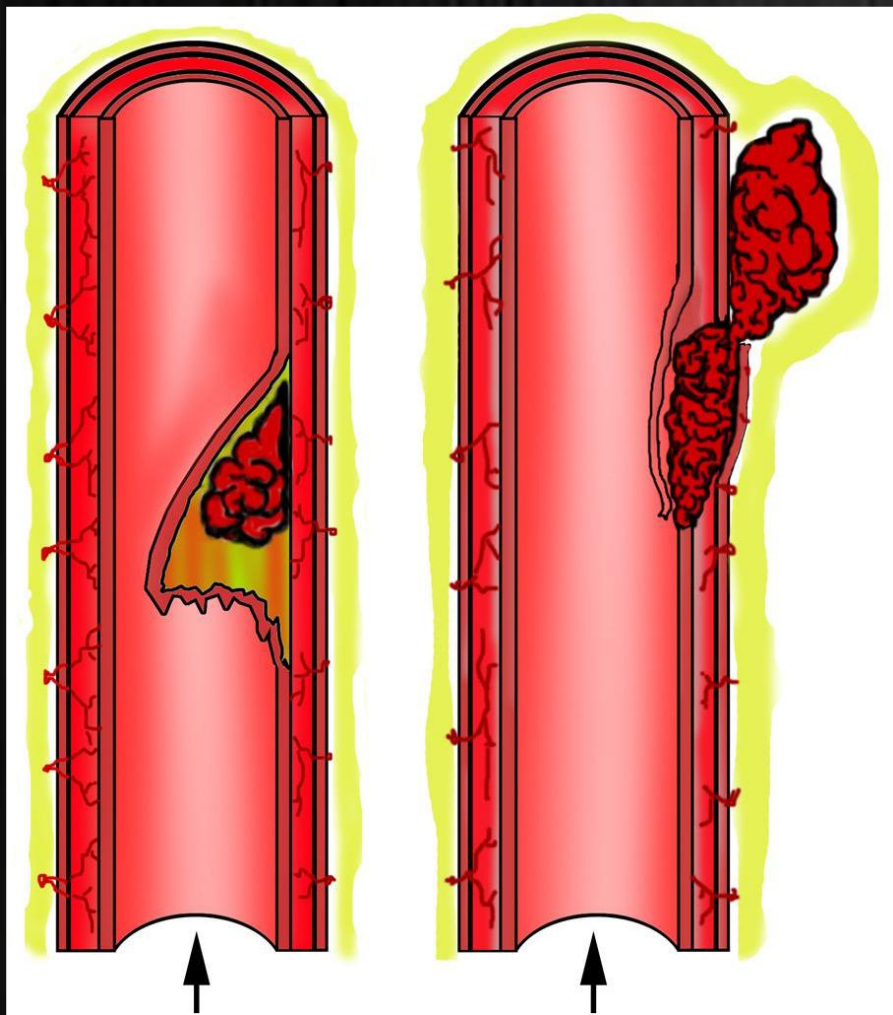
causes up to 25% of strokes in patients <45 years

mean age 45 years

‘spontaneous’ or post-trauma

association with FMD, collagen vascular disorders

# pathophysiology



# clinical presentation

'local' symptoms	ischaemic symptoms
fronto-temporal headache (70%)	amaurosis fugax (20%)
facial pain, neck pain (17%)	TIA/ ischaemic stroke (75%)
painful Horner's syndrome (50%)	hemiparesis 90%
pulsatile tinnitus (25%)	hemisensory 50%
CNI (mainly X-XII) (10%)	aphasia 35%
	dysgeusia (7%)
	no ischaemic symptoms (20%)

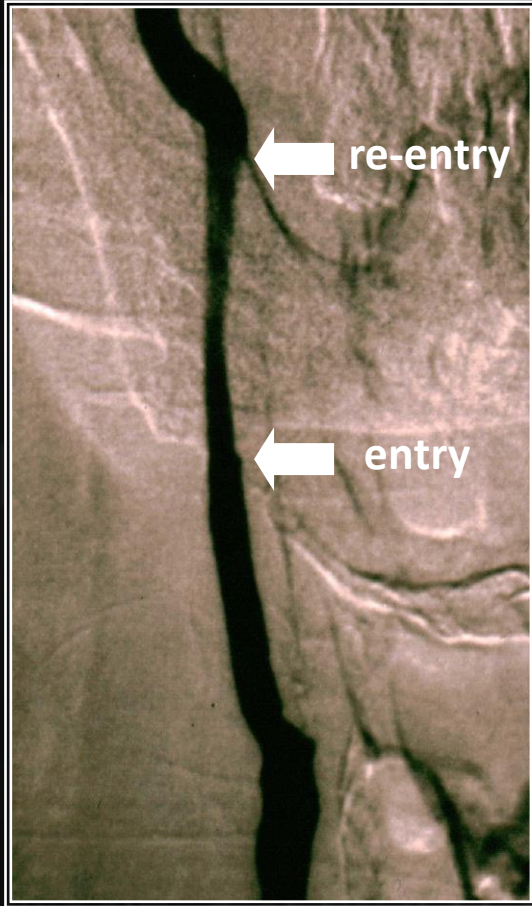
# dissection associated with trauma

prevalence: 0.1% of trauma patients in USA

most diagnosed after onset of symptoms with a resultant neurological morbidity of 80% and 40% mortality

with screening, incidence rises to 1% of blunt trauma patients & 2.7% with an injury severity score of  $\geq 16$ .

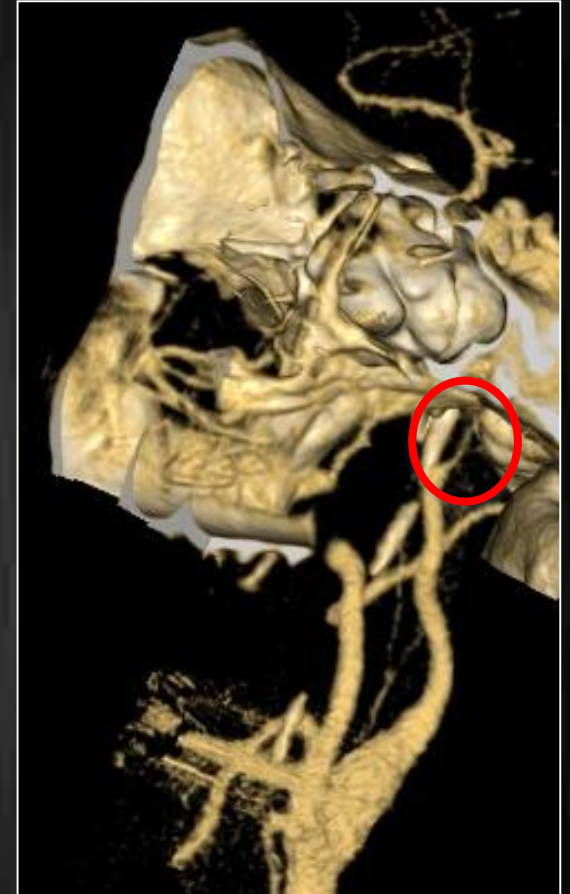




**Type 1**  
irregularity  
<25% stenosis



**Type 2a**  
25-70%  
stenosis



**Type 2b**  
70-99%  
stenosis



**Type 3a**  
pseudo aneurysm  
<70% stenosis

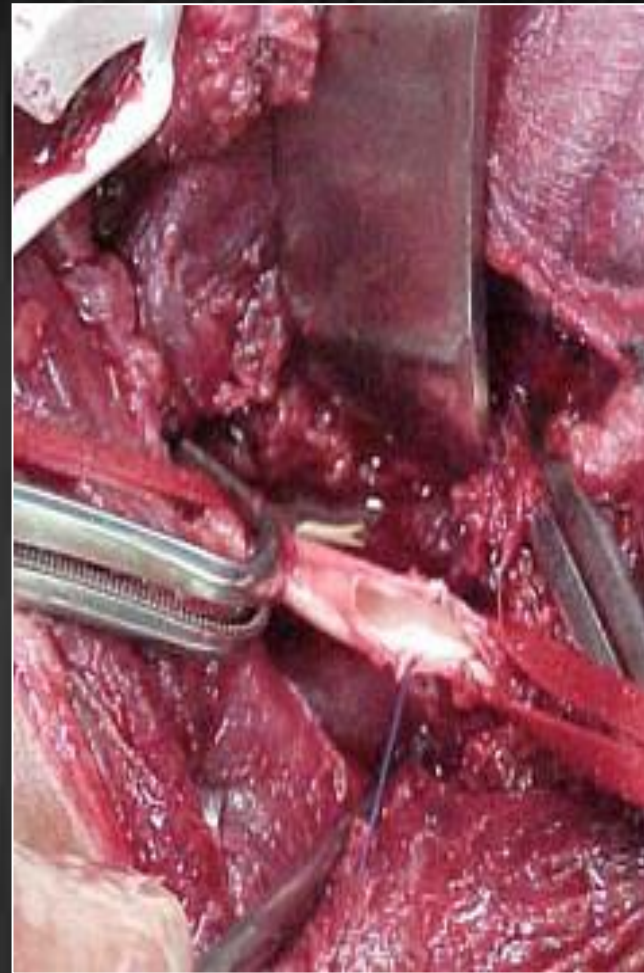


**Type 3b**  
pseudo aneurysm  
>70% stenosis

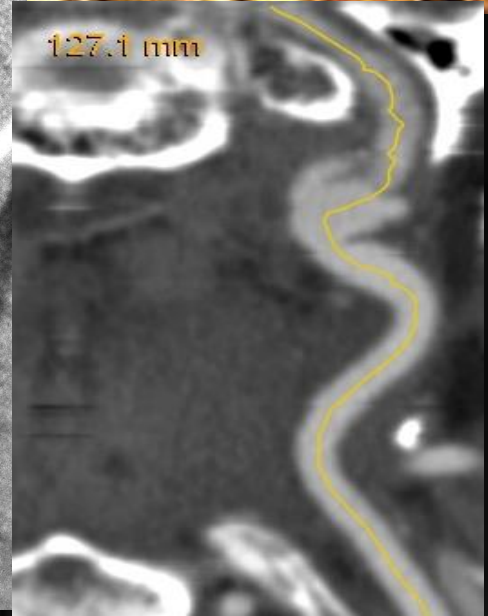
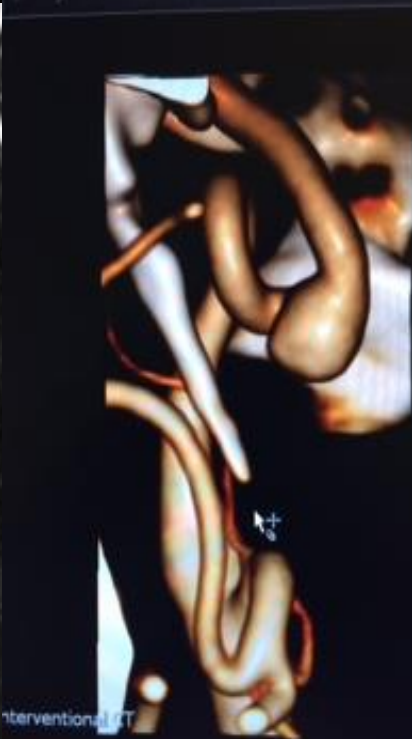
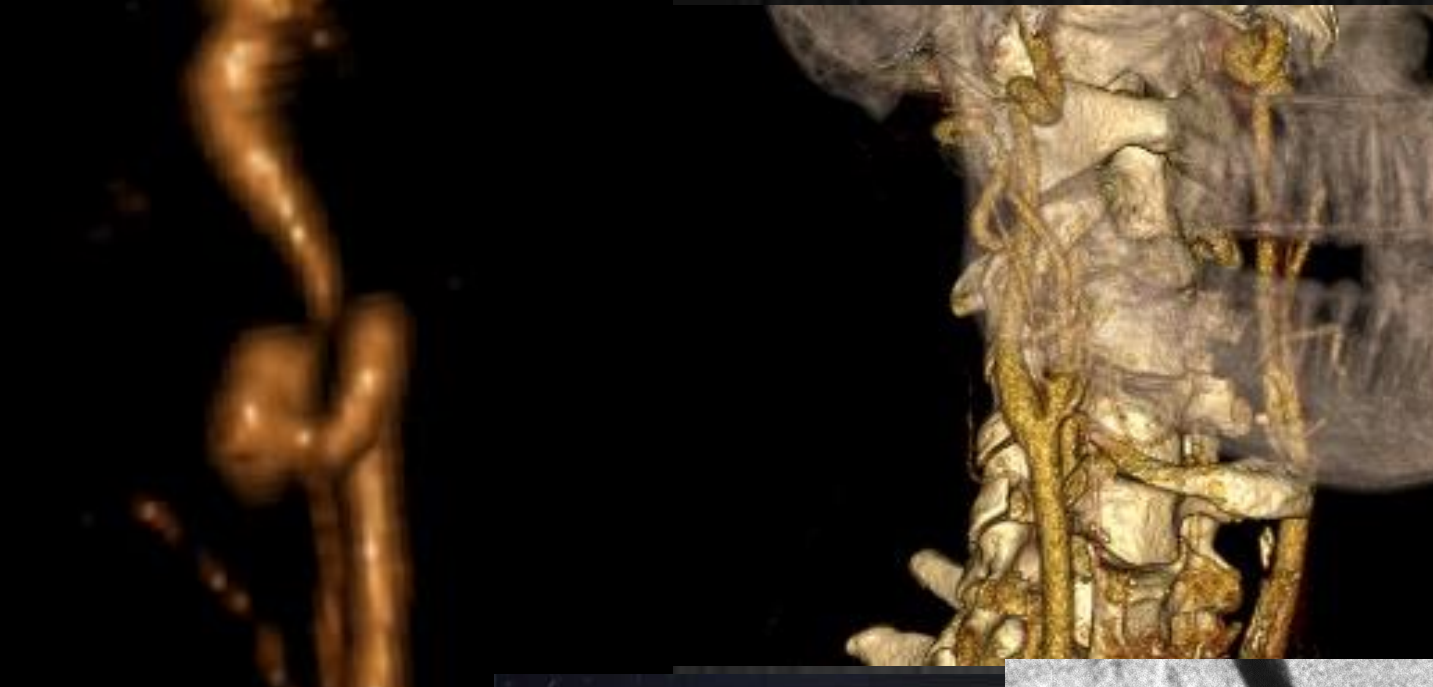




**Type 4**  
complete  
occlusion



**Type 5**  
transection  
significant AVF



management of 'spontaneous' CD



many lesions resolve with time



BASELINE



3 MONTHS LATER

## management of spontaneous acute CD

acute ischaemic stroke patients who may have extracranial CD should not be excluded from iv or ia thrombolysis (ESO 2016)

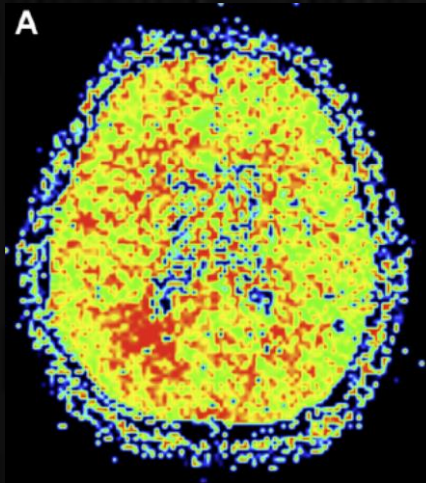
other patients with acute CD should receive antithrombotic therapy (ESO 2016)

There is no evidence of difference in outcomes for heparin then warfarin versus dual antiplatelet therapy (ESO 2016)



# is there a role for endovascular Rx?

indications for EVT in acute CD include fluctuating or deteriorating neurologic symptoms (despite optimal medical therapy), compromised cerebral blood flow, contraindications to anticoagulation and a symptomatic or expanding false aneurysm



Kim et al. Endovascular stenting for symptomatic carotid dissection with haemodynamic insufficiency  
World Neurosurg 2017;102;588-607

REVIEW

**Fate of Distal False Aneurysms Complicating Internal Carotid Artery Dissection: A Systematic Review**

K.I. Paraskevas<sup>a</sup>, A.J. Batchelder<sup>b</sup>, A.R. Naylor<sup>b,\*</sup>



166 false aneurysms  
40 followed definite trauma  
126 were 'spontaneous'  
mean follow-up 39 months (1mth – 15y)

REVIEW

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161/166 (97%) either remained unchanged or regressed/resolved

4/166 (2%) developed late symptoms all from one series of 8 trauma cases  
no symptoms in 126 spontaneous FAs

management of CD post trauma?

# which trauma patients need screening?

**TABLE 2. Denver Modification of Screening Criteria for BCVI Adapted From Cothren et al<sup>51</sup> (With Permission)**

## **Denver Modification of Screening Criteria**

### **Signs/symptoms of BCVI**

- Arterial hemorrhage
- Cervical bruit
- Expanding cervical hematoma
- Focal neurological deficit
- Neurologic examination incongruous with CAT scan findings
- Ischemic stroke on secondary CAT scan

### **Risk factors for BCVI**

- High-energy transfer mechanism with
  - Lefort II or III fracture
  - Cervical spine fracture patterns: subluxation, fractures extending into the transverse foramen, fractures of C1–C3
  - Basilar skull fracture with carotid canal involvement
  - Diffuse axonal injury with Glasgow Coma Scale score  $\leq 6$
  - Near hanging with anoxic brain injury



## FOLLOW-UP IMAGING

Follow-up 4 vessel angiography or MDCTA is recommended in grade I, II and III injuries and this should be performed 7 days post-injury

Eastern Association for Surgery of Trauma Guidelines

# management of CD post trauma

Grade I/II: barring contraindications, treat with antithrombotics such as heparin or aspirin

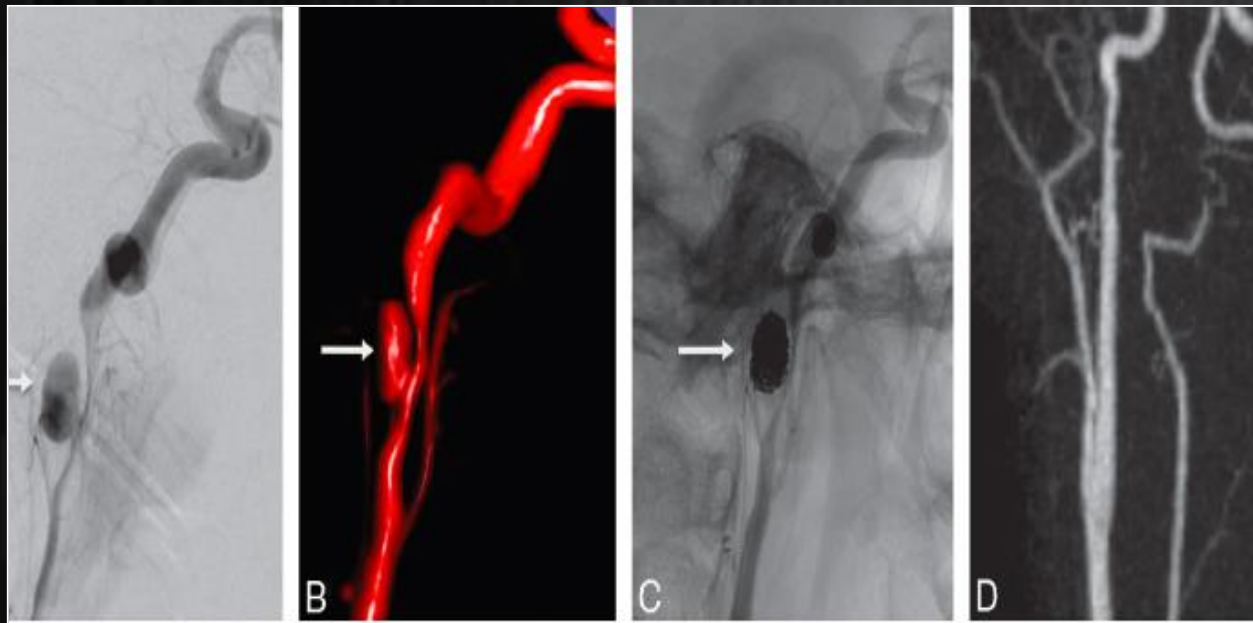
Grade III (pseudoaneurysm) rarely resolve and should be considered for surgery or EVT (APRx)

patients with a severe neurological deficit do not benefit from attempted revascularisation

in patients with an early neurological deficit and an accessible carotid lesion, surgery or EVT should be considered (APRx)

# Endovascular Repair of Traumatic Cervical Internal Carotid Artery Injuries: A Safe and Effective Treatment Option

R. Seth, A.M. Obuchowski, and G.H. Zoarski



false aneurysm



ischaemia

