Diagnosis and Management of Blunt Cerebrovascular Injuries

**Signs/Symptoms of BCVI**
- Potential arterial hemorrhage from neck/nose/mouth
- Cervical bruit in pt < 50 yrs old
- Expanding cervical hematoma
- Focal neurologic defect: TIA, hemiparesis, vertebrobasilar symptoms, Horner’s Syndrome
- Neurologic deficit inconsistent with head CT
- Stroke on CT or MRI

**Risk Factors for BCVI**
- High energy transfer mechanism associated with:
  - Displaced mid-face fracture (e.g., LeFort II or III)
  - Complex skull fracture/basilar skull fracture/occipital condyle fracture
  - Traumatic Brain Injury (TBI) with GCS < 6 in field
  - Cervical vertebral body or transverse foramen fracture, subluxation or ligamentous injury at any level*
  - Near hanging with anoxic brain injury
  - Clothesline type injury or seat belt abrasion with significant swelling, pain, or altered MS
  - TBI with thoracic injuries
  - Scalp degloving
  - Thoracic vascular injuries

*Excluding isolated transverse process or spinous process fxs

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**CTA**

- **Grade I Injury**
  - Surgically Accessible?
    - Yes: Operative Repair**
    - No: \(\cdot\) Antithrombotic Therapy: Heparin (PTT 40-50 sec) or Antiplatelet Therapy

- **Grade V Injury**
  - Surgically Accessible?
    - Yes: Operative Repair**
    - No: Endovascular Treatment

- **Repeat CTA in 7-10 days**
  - Injury Healed?
    - Yes: Discontinue Antithrombotics
    - No: Antithrombotics for 3-6 months and re-image

- **Equivocal Finding or High Clinical Suspicion**
  - C Consider Arteriogram vs Interval Repeat CTA

- **Positive**
  - B STOP

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**A** CT angiography with multidetector-row CT, 16-channel or higher. If fewer than 16 channels, interpret CTA with caution.

**B** If signs/symptoms or high clinical suspicion and (-) CTA consider digital subtraction arteriography as gold standard.

**C** Empiric heparin or antiplatelet Tx, planned interval CTA vs arteriography as the gold standard or if relative contra-indication to treatment.

**D** Grade II-IV, pursue operative repair if surgically accessible with clear distal endpoint.

**E** Heparin preferred in the acute setting. Antiplatelet therapy = ASA 325 mg daily. Use heparin if ASA contraindicated, or if potential need to reverse.

**F** Endovascular stenting in acute setting is limited by need for concurrent anticoagulation / antithrombotic therapy. Consider stenting for severe luminal narrowing or expanding pseudoaneurysm.

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