UAB Blunt Cerebrovascular Injury Neurovascular Consultation Protocol

Updated: 8-1-2024

Purpose: To establish a standard of care for blunt cerebrovascular injuries, based on Biffl Grade[1],in regards to neurosurgical consultation and management.

Definition:

Biffl injury grade	Angiograhic characteristics
I	Luminal irregularity or dissection with <25% luminal narrowing
II	Dissection or intramural hematoma with ≥25% luminal narrowing
III	Pseudoaneurysm
IV	Occlusion
V	Transection with free extravasation

Mild BCVI Definition:

- Biffl grade I common carotid (CCA), internal carotid artery (ICA) or vertebral artery (VA) injuries/irregularities
- Radiographic findings labeled “cervical/extracranial vasospasm”, “luminal irregularity”, “fibromuscular dysplasia”, “focal dilatation” or similar
- Radiographic findings of “cannot exclude mild irregularity/injury” or “study limited by artifact/hardware”
- Patients with known (and previously documented) chronic occlusions of CCA, ICA or VA
- Patients with incidental atherosclerotic plaques of their cervical vasculature
- Patients with external carotid artery injuries/irregularities (see exception below)
    - EXCEPTION:
- Intubated patients with any of the above findings and who are without focal neurologic deficit (see “Significant BCVI Protocol”)

Recommendation: Mild BCVI patients <u>do not require Neurovascular Team consultation</u> or evaluation (either e-consult or in-person)

Mild BCVI Management:

- For patients not currently taking any anti-thrombotic medication, all should be given aspirin 81mg (ASA 81) as soon as able (pending other injuries and operative plans from other services) and then be prescribed aspirin 81mg QD x90 days thereafter.
- For patients currently taking aspirin (whether 81mg or 325mg) or any other anti-thrombotic medication, including but not limited to clopidogrel (Plavix), ticagrelor (Brilenta), warfarin (Coumadin), apixaban (Eliquis), rivaroxaban (Xarelto), Heparin, Lovenox, etc., then the patient should continue their current agent for at least 90 days (or longer if clinically indicated).
    - There is no need to add ASA 81 as dual therapy.
- No neurosurgical follow-up is indicated for mild BCVI
- Mild BCVI are okay for discharge at the discretion of the Trauma team and do not require overnight observation/admission for their BCVI.
- BCVI with Concomitant TBI:
    - BIG 1 or BIG 2 intracranial injuries are not a contraindication to aspirin.

        - The addition of ASA 81 for mild BCVI for patients with BIG 1 or BIG 2 intracranial injuries does not elevate these patients to BIG 3 category and necessitate subsequent Neurosurgery "cranial" consultation
    - Any concomitant BIG 3 intracranial injury would prompt a Neurosurgery cranial consult, and ASA initiation/clearance would be deferred to the Neurosurgical team

Significant BCVI Definition:

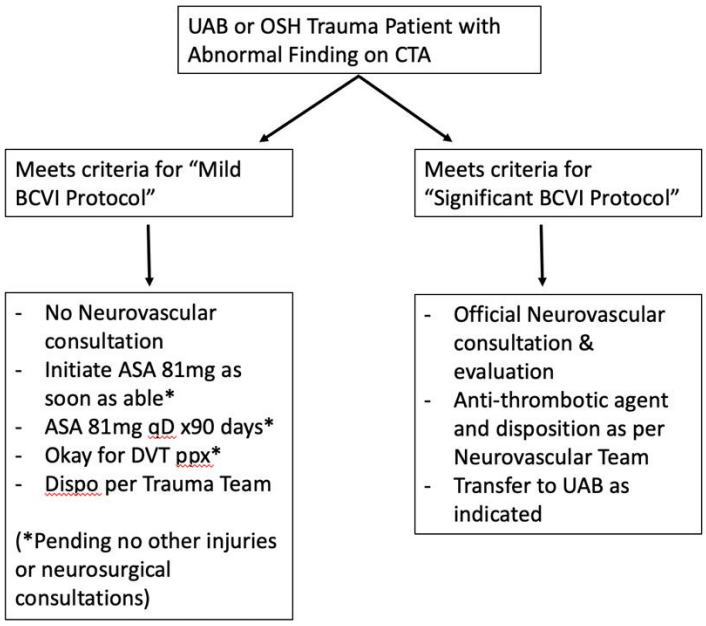
- Any patients with Biffl grades II-IV of the CCA, ICA or VA
    - *unless patient has a documented history or radiographic finding of chronicity*
- Patients with transections (Biffl grade V) of the CCA, ICA, or VA with or without active extravasation
- Patients with ECA injuries *with* active extravasation necessitating embolization
- Any patient with any CCA, ICA or VA irregularity/injury with a *focal* neurologic deficit.
    - Focal neurological deficit is defined as: facial, extremity or hemi-body weakness/numbness, visual field loss, or facial weakness that is not otherwise explained by other injuries such as spinal or long bone fractures, facial fractures, spinal cord injury or intracranial injury.
    - Confusion, combativeness, or pain are <u>not</u> considered focal neurologic deficits.
- Any patient with an incidental intracranial aneurysm or vascular malformation

Recommendation: Significant BCVI patients <u>will require Neurovascular Team evaluation</u> and formal recommendations

Significant BCVI Management:

- Patients with ECA injuries *with* active extravasation necessitating embolization → the on-call Neuro-Endovascular Attending/Fellow should be paged directly for management/intervention
- The treatment, disposition and follow-up will be at the discretion of the treating neurosurgeon.

If there is a patient who meets the criteria for the Mild BCVI under this Protocol but clinical concern exists, the Trauma team should contact the Neurosurgery on-call resident (pager #9228) or the Neurosurgery Chief Resident (pager #3364) directly. If there is still concern or discrepancy about the patient or recommendations, then the Neurovascular Attending on-call should be contacted.



Mild BCVI Protocol:
- Biffl grade I injuries
- Any "vasospasm", "focal irregularity", "cervical/extracranial vasospasm", focal "dilatation", and/or "fibromuscular dysplasia"
- "Cannot exclude irregularity/injury" or "study limited by hardware/artifact"
- Patients with atherosclerotic plaques
- Patients without focal neurologic deficit (FND)*

Significant BCVI Protocol:
- Biffl grade II-V injuries
- ECA injury with active extravasation (consult Neuro-Interventional Attending on call directly)
- Patients with any CTA abnormality with confirmed FND not otherwise explained by traumatic injuries
- Incidental intracranial aneurysms or vascular malformations

Notes:
- Patients with BIG 1 or BIG 2 intracranial injuries are okay to receive ASA 81 without necessitating a formal NSGY consult or elevation to BIG 3 status
- If patients are already on an anti-thrombotic medication such as Plavix, Warfarin, Eliquis, etc., then there is no need to add ASA 81 to their current regimen.

References:

1. Biffl, W. L., et al. (1999). "Blunt carotid arterial injuries: implications of a new grading scale." J Trauma