Dangerous Arterial Connections in the Head and Neck: Avoiding Neurological Complications

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Important in craniofacial lesions:
- Regional functional vascular anatomy
- Identification of dangerous anastomosis
- Functionally threatening location
- Understand some agents may be preferred depending on location

Why this is important?
RESULT OF EMBOLIZATION IN 1983

Regional Functional Anatomy
- 3 main anastomotic regions:
  - orbital
  - clival/petocavernous
  - upper cervical
- Important cranial nerve supply
  - V
  - VII
  - IX-XII

Orbital Anastomotic Region
- Main risk: blindness due to occlusion of the central retinal artery
  - MMA
  - ADT
  - Infraorbital artery
  - Sphenopalatine artery
  - Facial artery
  - STA

Russell EJ. AJNR 1986
Clival/Petrocavernous Region

- Main risk: ischemic stroke/cranial nerve injury
- ECA to ICA anastomosis
- Inferolateral trunk:
  - deep recurrent ophthalmic art.
  - artery of foramen rotundum
  - lateral clival branch
- MHT
  - recurrent artery of the foramen lacerum
  - medial clival artery

Hurley, Dabak, Shukla, Rakesh, Bendok, Hemorrhage and Ischemic Stroke: Medical, Imaging, Surgical and Interventional Approaches by Bendok, Naidech, Walker, Batjer. 2011
Upper Cervical Region

- Main risk: ischemic stroke/cranial nerve injury
- Ascending pharyngeal artery
- Occipital artery
- Ascending and deep cervical arteries
- Vertebral-basilar system/spinal cord

Ascending Pharyngeal Artery

Hasein-Bey L, et al. AJNR 2002

Cranial Nerve Supply

Geibprasert S, et al. AJNR 2002
Summary

- Craniofacial AVMs are rare lesions and should be managed in centers with expertise
- Knowing the concepts of functional vascular balance is fundamental in the head and neck area
- Knowledge and “real time” recognition of the so called dangerous anastomosis will keep you safe!

Thank You!

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