Does BAM Increase the Risk of Steal Syndrome?

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Causes Steal Syndrome

- #1 cause = AV access creation!!!
- Introduce a low resistance pathway into a high resistance circuit
- The result is STEAL

Surgical Causes of Steal Syndrome

- Tapered AVG's
- Hypertrophic Brachial Artery
- Large arterial anastomosis
- Small distal arteries
- Low resistance, high capacity access

Palmar Arch Shunt Steal

- 'MILLER' ligature restored flow to downstream arteries
- Traditional Blind Banding failed to correct steal symptoms
Clinically Symptomatic Steal

- Imbalance in resistances between AV access and distal capillaries
- AV Access Flow and Capacity
  - Low Flow < 800 cc/min
  - DRIL, Proximalization
  - Normal Flow = 800-1500 cc/min
  - High Flow = 1500-2500 cc/min
  - Pathologic Flow >2500 cc/min

Ischemic Limb

HIGH FLOW ACCESS

Transonic flow measurement > 6600 ml/min

Causes of Fistula Maturation Failure

- Poor Arterial Inflow
- Fixed venous Stenosis
- Hypertrophic Valves

Causes of Maturation failure are just as elusive and unpredictable as causes of symptomatic steal syndrome

HOW DO YOU PREDICT?

- Blood Pressure
- Tissue Integrity
- First Failure Predicts Subsequent Failure

Effect of BAM on AVF Maturation

- Balloon Angioplasty
  - Treat ARTERIAL Inflow, Mid AVF, VENOUS Outflow
  - Fracture stenosis
  - Break hypertrophic valves

- Flow Rerouting
  - Redirect flow into low resistance channels
  - Basilic-axillary > Cephalic

Angioplasty Maturation

Immature fistula
Initial BAM
4 weeks
6 weeks
Maturation Techniques

1) Flow Rerouting with Elimination of Competing Branch Veins
2) Staged Sequential Dilatation
3) Long Length Balloon PTA
4) Limited Controlled Extravasation

Balloon Assisted MATURATION

Fully matured A-V fistula
Coil embolization
Collateral flow reduced
Conclusion..... Yes / NO

- Symptomatic Steal Syndrome is a result of an imbalance in resistances between the AV access and distal perfusion beds.
- All AV access creates some steal.
- Predicting symptomatic steal is difficult, but avoiding techniques which will predispose to create steal is important.
- Balloon Assisted Maturation helps create low resistance high capacity flow pathways.
- Predicting who will develop symptomatic steal is difficult, but avoiding techniques which will promote steal are important.
- Having the knowledge and technical skills to detect and repair steal is priceles!