Intra-operative considerations

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It’s only minimally invasive if everything goes as planned
Prevention: The View Is Everything

- Avoid limbal blood vessels
- Safe entry practices
  - Don’t go where you can’t see
- High magnification
- Avoid visible vessels in the angle
- Bias maneuvers towards anterior TM
  - Remember that pigmented TM is posterior
- Reverse Trendeleberg
  - Especially in patients on blood thinners, OSA, obese

Intra-operative Hemorrhage

- Most common complication
- Complicates procedure
- Significant visual disturbance to patients
- Sometimes associated with IOP spikes
- Mechanisms
  - Backflow from downstream aqueous outflow pathway
  - Damage to highly vascular uveal tissue
    - Peripheral iris – Anterior synchiae, iris processes, circumferential vessels
  - Ciliary body
  - Damage to intrinsic vessels in TM (rare)

- The risk and extent of hemorrhage is proportional to amount of meshwork being incised

iStent
Hydrus (5-10%)

Kahook dual blade
Trabectome (10-20%)

GATT
OMNI (20-40%)
Mitigating Maneuvers: Pressurize & Elevate

- Same principles for skin wounds
- Maintain an elevated intracameral pressure
  - Fill AC with viscoelastic or air
  - Wait...
  - Pre-hydrate wounds to minimize hypotony
- Irrigation may wash away clotting factors
- Keep head of bed elevated
- Consider leaving a small amount of viscoelastic in the eye

Cyclodialysis Clefts

- Increasing incidence with the advent of MIGS
- Maximally unhappy patients
- Be careful in patients with pale trabecular meshwork
  - Pre-operative evaluation
  - Consider staining with vision blue
- Tell tale signs
  - Patient feels pain
  - Often accompanied by bleeding
  - Angle appears deeper

Surgical Management of Clefts

- Management may depend on extent of damage
- Small clefts (<1 clock hour) often can close with medical management alone
- Larger clefts usually need surgical intervention
- Early intervention is preferable in glaucoma patients
  - Delayed cleft closures are often accompanied by severe IOP spikes
Trouble Shooting the Schlemm’s Canal
Stent Troubles: iStent Inject

- Maintain focus on the trocar
- Perpendicular insertion and removal
  - Reduces likelihood of pulling out implanted stent
- Repositioning a stent
  - Option 1: Use injector sleeve to push back into TM
  - Option 2: Recannulate stent with trocar and inject elsewhere

Stent Troubles: iStent Inject

- Over-implantation is less of an issue with “W”
- Wider flange should be taken into consideration
  - Stents tend to extend close to the ciliary body
  - Place trocar in anterior aspect of PTM
- Implantation into ciliary body
  - Best to leave alone unless easily accessible
  - Attempts to retrieve may cause bleeding and clefts
Stent Troubles: Hydrus

- Entry of device through a separate paracentesis
- Device encounters blockage or enters suprachoroidal space
  - Adjust the angle: Flat approach or anterior angled approach
  - Implant stent from superior approach
  - Use of non-dominant hand to go in opposite direction

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