MIGS- The New Frontier in Ophthalmology

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No Financial Disclosures

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When Drops and Laser Fail

- Trabeculetomy
  - Gold Standard.
  - Myriad of potential complications
    - Trabeculitis
      - Blebitis, endophthalmitis
    - Hypotony
      - Pain, effusions
    - Hyphema
    - Patient Discomfort
- iStent/iStent Inject/W
- Hydrus
- Kahook Dual Blade
- GATT
- Xen Gel
- Durysta

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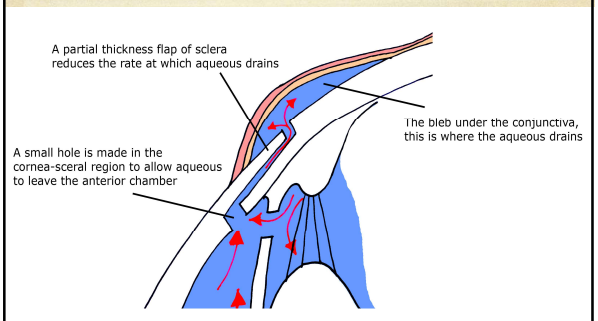
Trabeculetomy



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Glaucoma Treatment Dogma

- Drops • Low Risk
- Laser • Mild Risk
- Trab • Moderate Risk

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Enter MIGS

- Drops • Low Risk
- Laser/ Durysta • Mild Risk
- MIGS • Mild-Mod Risk
- Trab • Moderate Risk

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Patient Selection

- All pts NEED dx and stage of Glaucoma
- If no staging, then no insurance coverage and we need to complete testing on your patients. (OCT/HVF)
- Poor Compliance or maximum medical therapy
- Most also need Visually Significant Cataract

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Glaucoma Staging

- Glaucoma Suspect (Risk Factors(Fam Hx, Race, IOP, C:D, CCT) no optic nerve damage or HVF defects)
  - >2 RF is Low Risk and 3 or more is High Risk
- Ocular HTN (High IOP with no signs of optic nerve damage or HVF defects)
- Mild Stage Disease(ON damage on exam, OCT or Ganglion Cell Count with no HVF defects. May have some Double frequency defects)
- Moderate Stage Disease (ON Damage + HVF defects in one hemifield that is NOT within 5 degrees of fixation)
- Severe Stage Disease(ON Damage +HVF defects in both hemifields and/or within 5 degrees of central fixation)
- POAG vs SOAG(PG, PXEG, UG) vs NAG(confirmed on exam/gonio or OCT).

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Minimally Invasive Glaucoma Surgery (MIGS)

- Most are performed in conjunction with cataract surgery.
- Used mainly for Mild and Moderate Glaucoma (Except Xen).
- Increased safety and improved surgical speed and outcomes.
  - Reduced tissue manipulation, improved healing times, patient-doctor satisfaction
- Most procedures add on less than 5 minutes to case time.
- Targeting 2 spaces (TM/Sub Conjunctival)
  - iStent (Meshwork)
  - Hydrus(Meshwork)
  - Kahook Dual Knife(Meshwork)
  - GATT(Meshwork)
  - Xen Gel Stent(Sub Conjunctival)

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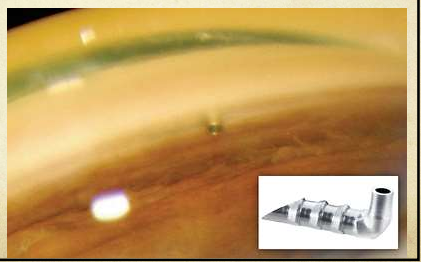
iStent

- The Original Gangsta(OG) of MIGS 6/25/2012.
- Non-Magnetic Titanium implant



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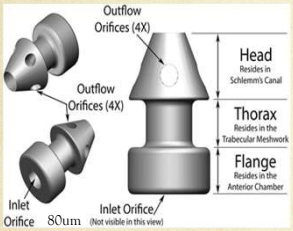
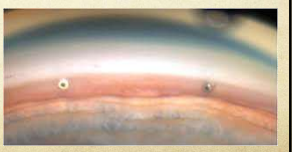
Gen2 iStent Inject (2018)





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iStent Inject Data

- In study eyes and in clinical trials found that 2 conventional iStents function better than 1 single stent[5].
- New generation design allows quick and efficient placement of 2 newly designed stents.
- 66% (58/88 eyes) achieved IOP>18mmHg without additions of medications at 12 months post op[6].
- 81%(71/88 eyes) achieved IOP>18mmHg WITH use of topical medications at 12 months post op[6].
- 93% had a 20% IOP reduction regardless of meds at 12 months[6].
- 86.9% had a reduced medication burden at 12 months[6].

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iStent Inject W(Sept 2020)

- iStent Inject Wide
  - Wider Flange for easier visibility
  - Less over insertion
  - Inc. Ease of Use
  - Same effectiveness

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Advantages and Disadvantages

- Treats at site of aqueous outflow
- Good Results
  - Reduce or eliminate drops
  - More consistent IOP control
- Portable, available wherever the surgeon is.
- Minimal Footprint (2%)
- Follow standard post-op visits with cataract surgery and add back glaucoma meds PRN depending on glaucoma severity.
- Not enough outflow for all glaucoma types.
- Insertion of foreign body.
  - Microhyphema
  - Iris Incarceration
    - Treated by YAG Laser

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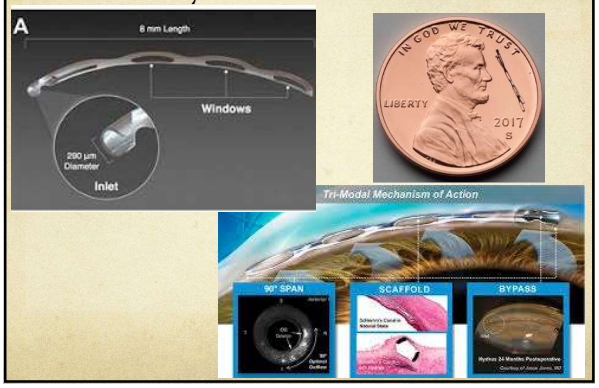
Hydrus Microstent



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Hydrus Microstent

- 8mm long, 290um lumen TM bypass stent.
- Done in combination with Cataract Surgery in about 2-3 mintues.
- Trimodal MOA, (1.Bypass 2. Scaffolds canal 3. 90 Degrees of canal)
- 77% patients in HORIZON had 20% IOP reduction from baseline at 24 months[7]
- 78% of patients in HORIZON are drop free sustained at 2 years.[7]
- COMPARE study showed 63% of patients achieved and maintained IOP <20% baseline at 2 years compared to 40% of iStent patients.[8] No Phaco!
- Mild hyphema/microhyphema post op with improvement in vision and pressure over average of 2-5 days.

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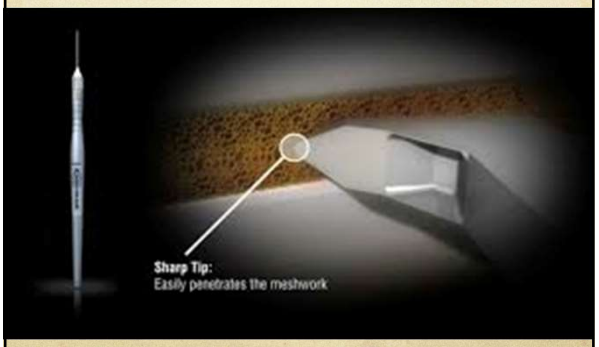
Kahook Dual Blade



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Kahook Dual Blade

- Single Use Dual Channel Blade (Economical)
- Ab-interno Approach through clear corneal incision.
- Creates precise parallel incisions to excise the trabecular meshwork. (Goniotomy)
- Can be used ALONE or in conjunction with cataract surgery for all stages of glaucoma.
- Post-op Hyphema resolves in 1 to 4 days after surgery
- Limited long-term data[5]

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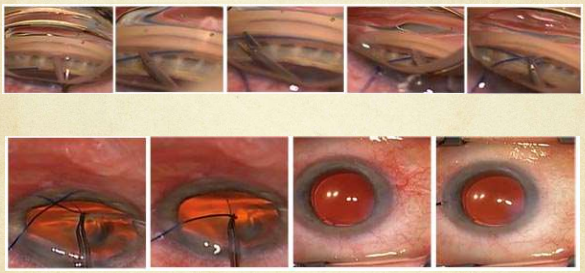
Gonioscopy Assisted Transluminal Trabeculotomy GATT



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Gonioscopy Assisted Transluminal Trabeculotomy GATT

- Ab-interno Approach with mushroomed 5/0 prolene through clear corneal incision.
- Creates 360° opening of the TM rather than 90-120.
- Can be used ALONE or in conjunction with cataract surgery.
- Can be used in all stages of glaucoma.
- Can boost effects with full trabeculotomy at end of case.
- High rate (75%) of post-op Hyphema resolves in 1 to 7 days after surgery
- Scarring of angle, on steroids, pilo/other gtts for 8-12 weeks.
- Technically more challenging to perform (20 minutes).
- Seems to work very well in steroid induced glaucoma.

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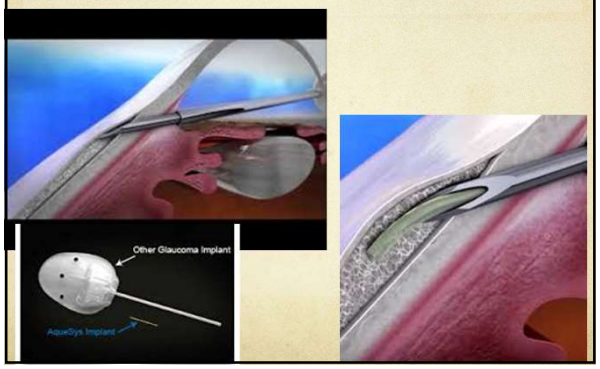
Xen Gel Stent



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Xen Gel Stent

- 6mm long gel tube in 3 diameters (45**, 63, 140um)
- Stent placed AB Interno out into the sub-conjunctival space to bypass the trabecular meshwork
  - Hi-tech minimally invasive Express Shunt (Trab replacer??????)
- For use in severe POAG patients only.
- Stand ALONE or in conjunction with cataract surgery
- 33% IOP reduction with drop of 1.7 medications[9]
- High rate of needling(35-50%)[10]
- Long-term efficacy/complications is still under scrutiny

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Co-management of Patients

- Most of the MIGS will be unaffected by the 1 day or 14 day co-mangement with cataract surgery
  - Xen Gel exception
  - Depends on your comfort
- Be comfortable with early post-op IOP spikes and hyphema
- Mild POAG-Stop all drops POD#0, add back PRN.
- Mod POAG-Stop all but PGA POD#0 add back PRN.
  - If only on PGA, then typically stop it. Exceptions(severe C:D or HVF defects close to severe staging)
- Some surgeons tapering of topical meds vs observe/resume
- Always stop all meds for Xen Gels and reluctantly add back, Needling>add drops.

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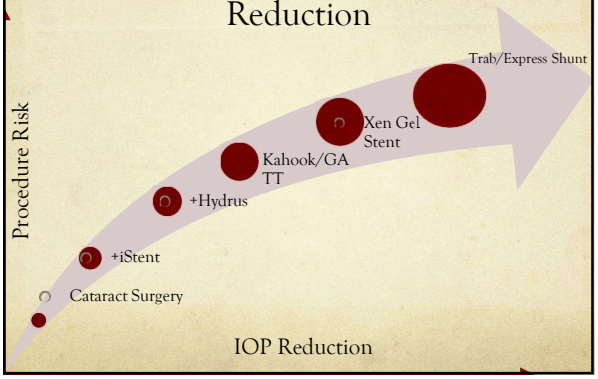
Procedure Risk vs IOP Reduction



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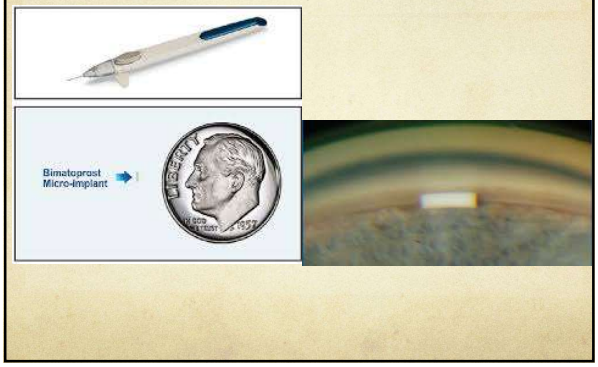
Durysta



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Durysta

- First sustained, intracameral, biodegradable, implant for POAG and Ocular HTN!
- Placed at slit lamp in office or in surgical center.
- Side effects/contraindications same as for all PGAs
  - Allergy, hx of inflammation, uveitis, mac edema, endophthalmitis.
- Cause some remodeling of TM over time
- 6 months 88% had 30% IOP reduction 40% at 12months and 28% at 24 months[11].
- Insurance coverage concerns for subsequent injections
- Long-term efficacy/complications is still under scrutiny

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THANK YOU

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Citations

1. Image courtesy of seatelleaec.com

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