Introduction to Minor Surgical Procedures

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Minor Surgical Procedures in Optometry???

• Punctal Occlusion
• Dilation & Irrigation
• Cyst incision and evacuation
• Corneal debridement
• Corneal foreign body removal
• Anterior stromal puncture
• Chalazion incision and curettage
• Papilloma Removal
• Correction of Trichiasis
• Thermal punctal cautery
Tools of the Trade

- Westcott scissors
- iris scissors
- tissue forceps
- chalazion clamp
- curette(s)
- Jaeger plate
Instrument Sterilization

• Autoclave
  – a must for intraocular surgery
• Ethyl Oxide Gas
  – alternative to autoclave
• Chemical Germicide
  – destroys most bacteria and viruses
  – may not eliminate spores
  – adequate for minor extraocular procedures
• Follow manufacturer’s guidelines
Asepsis

- Defined: the prevention of contact with microorganisms; freedom from infection
- Aseptic techniques
  - disinfecting surgical area
  - establishing a sterile field
  - proper instrument handling
  - wiping down work areas with germicide or diluted bleach (1:10)
Infection Control

• Protocols by CDC and OSHA
• Universal Precautions
  – hand washing
  – donning gloves
  – protective *eyewear*, masks, gowns
Biohazardous Waste and Sharps

• Biohazardous Waste
  – “any material other than sharps that is contaminated with blood, other body fluids, or tissue”
  – dispose in proper containers according to OSHA
• Needles and other sharps go in proper container
• NEVER recap a used needle
• Blood spills can be disinfected with 1:10 bleach
Laboratory Affiliation

• Blood Work (phlebotomy)
  – Send samples
  – Send patient

• Pathology evaluation
  – excised lesions
Medicolegal Considerations

- Informed Consent
  - written

- Standard of Care

- Chart Documentation
  - before
  - during
  - after
Procedure Safety Precautions

- Office Protocols
- Preoperative vitals
  - Blood pressure
  - Pulse
  - Temperature
- Informed consent
  - Written!
- Postoperative instructions
  - Contact numbers
Getting Prepared...

- Injection Techniques
  - Local Anesthesia
    - Lidocaine 1% or 2%
    - 1 cc tuberculin syringe (25 G ½”)

- Can you sew?
Concretion Removal

• “Lithiasis”
• removal not always indicated
• one drop of topical anesthetic
• ± vasoconstrictor
• use 25 gauge needle to remove
• one drop of topical antibiotic
Sebaceous Cyst Removal

• well-demarcated
• non-inflammatory
• creamy white if superficial
• skin-toned if deeper
• excise for cosmesis
Sebaceous Cyst Removal

• clean skin with alcohol
• patient fixates away from cyst
• Lidocaine injection
  – local infiltrative
• pull skin taut
• score the top of the cyst with a scalpel (cut away from the eye!)
Sebaceous Cyst Removal

• use cotton swabs to evacuate lesion
• best to cauterize wall of cyst
• antibiotic ung qid x 1 week
Sudoriferous Cyst Removal

• retention of sweat glands
• clear, fluid-filled
• remove for cosmetic reasons
• direct patient’s gaze away from lesion
• use tip of 25 gauge needle to puncture cyst
• use cotton swab to collect clear exudate
• apply antibiotic ointment in office
Inclusion Cyst Removal

• “blister” of the conjunctiva
• clear if epithelial
• opaque if epi and goblet cells
• precipitating factors:
  – trauma
  – surgery
  – foreign body
  – inflammation
Inclusion Cyst Removal

- topical anesthetic
- puncture cyst with sterile needle
- massage through closed lids
- topical antibiotic
- massage x 1 week
- usually recur
Milium

- 1-2 mm epidermal cyst
- white - yellow
- sites: eyelids, cheeks, forehead
- treatment:
  - incision and expression
“Make it go away!”

• 63 YOF
• CC: “I want to get rid of this bump”
• OHx: Lesion is probably benign
  – long standing
  – no change
  – uniform color
  – < 6 mm
  – no bleeding
Squamous Papilloma

- aka skin tags or acrochordons
- epidermal hyperplasia
- skin-colored or hyperpigmented
- F > M
- one or many
- often pedunculated
- sites: neck, axilla, eyelids
Papilloma and Verruca Removal

• cosmesis
• biopsy
• visual disturbance
Remember your H-ABCs

• H: hair, history
• A: asymmetry, avascular
• B: borders, bleeding
• C: color, change
• S: size

• If unsure -> send for histopathological analysis
• Stay within your comfort zone
Papilloma Treatment Options

• leave it alone
• chemical cautery
• argon laser removal
• surgical excision
  – lesion can be sent for histopathological analysis
  – requires local anesthesia
    • pedunculated may be an exception

• Stay within your comfort zone!
Papilloma Removal: Informed Consent

• Potential Complications
  – scarring
  – lid notching
  – infection
  – recurrence

• Get it in writing!!

• Make sure patient is not a keloid former!
Papilloma Removal: Procedure

- topical anesthetic OU
- ± sterile drape
- clean area
- local infiltrative injection of lidocaine
  - use Jaeger plate if near globe
  - inject ~0.2 cc
Papilloma Removal: Procedure

• grasp lesion with tissue forceps
• remove at base with scissors or scalpel
• place lesion in fixative (if sending to lab)
• cauterize
• antibiotic ung
Papilloma Removal: Post-Operative

• Patient Education
  – antibiotic ung x 1 week
  – scab in 1-2 weeks
  – red area 6-8 weeks

• RTC 1 week
Chalazion

- benign lesion
- sterile lipogranulomatous inflammatory lesion
- can cause visual disturbances
- measure size
- determine if it is anterior or posterior to the tarsal plate
Chalazion: Management

- warm compresses
- DIGITAL MASSAGE
- Many will resolve
- oral antibiotics are not indicated unless…
Chalazion: Intraloesional Steroid Injection

• Hx: how long has it been there?
• review complications:
  – depigmentation
  – recurrence
  – infection
  – ineffective
• written, informed consent
Chalazaion: Intralesional Steroid Injection

• Procedure
  – topical anesthetic OU
  – swab conjunctiva with xylocaine 4%
  – apply chalazion clamp
  – inject Kenalog 40 INTO lesion
  – massage
  – RTC 2-3 weeks
Incision and Curettage

• Patient Preparation
  – Potential complications
    • scarring
    • lid notching
    • recurrence
    • loss of cilia
    • permanent gland obstruction
  – written, informed consent
Incision and Curettage

• Procedure
  – determine if skin or conjunctival approach
  – topical anesthetic OU
  – +/- sterile drape
  – swab conjunctiva with lidocaine 4%
  – apply chalazion clamp
  – inject with lidocaine for local anesthesia
Incision and Curettage

• Procedure
  – make incision with scalpel
    • skin: horizontal
    • conjunctival: vertical
  – scoop out contents with curette
  – remove capsule wall and cauterize
  – may inject steroid
  – control bleeding
Incision and Curettage

- Procedure
  - suture if cutaneous approach
    - interrupted sutures
    - usually 3 or 4
  - antibiotic ung x 1 week
  - remove sutures in 3-5 days
  - RTC 1 week post-op
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**Corneal Debridement**

- enhances epithelial healing
- removes replicating virus
- indications:
  - recurrent corneal erosions
  - traumatic corneal abrasions
  - corneal burns
  - herpes simples keratitis (epithelial)
Corneal Debridement: Procedure

- Instill anesthetic
- pull epi towards center of defect
- scrub basement membrane
Corneal Debridement: After...

• If not HSK…
  – cycloplegic agent
  – antibiotic ointment
  – ± pressure patch
  – RTC 24 hours; then 3-4 days

• IF HSK…
  – cycloplegic agent
  – antiviral and antibiotic
  – NO patch
  – RTC 1 day
Anterior Stromal Puncture

- promotes firm adherences of epithelium
- used for recalcitrant RCE
- instill anesthetic
- debride area?
- apply 20-50 punctures into anterior stroma
  - Beyond defect
ASP: After...

• cycloplegic agent
• antibiotic ointment/solution
• pressure patch or bandage CL
• pain management
• RTC 1 day

• LONG TERM USE OF HYPERTONICS!
Suture Removal: Cutaneous

- Interrupted Suture
  - lift sutures with forceps
  - cut suture just above skin
  - pull knotted end towards wound
  - do not drag exposed suture through wound
Suture Removal: Cutaneous

• Running Suture
  – Cut every other strand at skin surface
  – grap middle portion and pull
  – remove knots as interrupted sutures
Ophthalmic Lasers for the Anterior Segment
LASER

- Light
- Amplification by
- Stimulated
- Emission of
- Radiation
Properties of Laser Light

- **Monochromaticity**
  - UV 40 - 379 nm
  - Visible 380 - 760 nm
  - IR 760 - 4x10^5 nm

- **High Power Density**
  - energy = number of photons
  - power = energy / sec
  - power density = energy / sec / area
Laser-Tissue Interactions

- the effect on physiologic tissue when exposed to laser light

- can alter by changing laser variables
  - wavelength
  - exposure time
  - spot size
Laser-Tissue Interactions

- Photocoagulation
- Photovaporization
- Photodisruption
- Photoablation
- Photoasepsis
- Photodynamic
- Photostimulation
Posterior Capsulotomy

• 1980
  – Aron-Rosa first to perform capsulotomy with Nd:YAG

• Hastened shift from ICCE to ECCE
Before You Begin...

• Note pupil location
• DFE
• Vitals
• Informed consent
• Pretreat
  – mydriatic
  – apraclonidine
Laser-Tissue Interaction: Photodisruption

- aka Photoionization
- large amount of energy into a small area
- warms tissue by 15,000 degrees C
- strips electrons
- tissue is reduced to plasma
Photodisruption

- the plasma formation produces a micro-explosion that causes the photodisruption or ionization

- pigment independent
Examples of Photodisruption

- capsulotomy
- stromal puncture
- iridotomy
- vitreolysis
The Procedure

- focus HeNe beams
- fire initial shot then adjust focus
- patterns?
- bigger isn’t better!
- no points for neatness
Complications of Capsulotomies

• Elevation of IOP
  – usually transient
  – as high as 60%
  – check IOP 1-3 hours post-op
  – use Iopidine

• Vitreous floaters
Complications of Capsulotomies

• Iritis
  – potential for inflammatory adhesions
  – prophylaxis
    • steroid
    • NSAIDs
Complications of Capsulotomies

• Pitting the lens
  – improper focus
  – minimize with use of laser lens

• Corneal burns
  – improper laser focus

• Iris injuries
  – improper laser focus
Complications of Capsulotomies

- Cystoid Macular Edema
  - low incidence: decreases as time increases
- Vitreous prolapse
  - 4 mm is big enough!
- Retinal Detachment
  - pre-op DFE is a must!
  - 1-2%
Treatment of Angle Closure Glaucoma
PI: Indications

- primary angle closure glaucoma
- secondary pupillary block
- plateau iris
- malignant glaucoma
- prophylaxis in narrow angles
- PDS
Which Laser?

- **Argon**
  - less bleeding
  - clean, smooth edges

- **YAG**
  - less chance of closure
  - pigment-independent
  - easier to get through iris
Treatment of the Open Angle Glaucomas
Indications for ALT

- Pseudoexfoliative
- Pigmentary glaucoma
- POAG
- Mixed mechanism glaucoma
Not for...

- angle recession glaucoma
- developmental glaucoma
- uveitic glaucoma
- neovascular glaucoma
- when the TM is not visible
When Is An ALT/SLT Indicated?

- After medications?
- Before surgery?
- Never?

- It depends!
**Laser-Tissue Interaction: Photocoagulation**

- Light energy is absorbed by pigment and converted to heat.
- Pigment dependent process.
- 10-20 degrees C causes photocoagulation.
Examples of Photocoagulation

- anterior segment
  - trabeculoplasty
  - iridoplasty
  - gonioplasty

- posterior segment
  - PRP
  - focal
  - grid
Miscellaneous Laser Procedures
Recurrent Corneal Erosion

• Nd:YAG ASP
  – laser burns into stroma
  – less scarring than needle ASP
  – grid pattern 0.5-1.0 mm larger than defect
  – look for sub-epithelial bubbles
  – long-term 5% NaCl
Additional Uses of Nd:YAG

• IOL Dusting
  – pigment
  – inflammatory cells
  – red blood cells
• Posterior synechia
• Vitreous Wick Syndrome
Trichiasis

- Argon laser
- usually anesthetize lid area
  - clip lashes first!
- stain lashes with rose bengal
- destroy follicle with ~30 shots
Punctal Occlusion

- Argon laser
- anesthetize
- mark punctum
- photocoagulate punctum
- not “permanent”
Benign Eyelid Lesion Removal

- Argon laser
- anesthetize
- burn at base of lesion
- sample intact for lab analysis