Ocular Surface Procedures in the Treatment Room

University of Toronto

Faculty

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Disclosures

• Clara Chan, MD, FRCSC, FACS: Consultant for Alcon, Allergan and Bausch & Lomb
• Neera Singal, MD, FRCSC: no disclosures
• David Rootman, MD, FRCSC: Consultant for AMO
• Allan Slomovic, MD, FRCSC: Consultant for Alcon, Allergan, Bausch & Lomb
• Mauricio Perez, MD, Randal Ulate, MD, Mario Saldanha FRCS, FRCOphth, Yakov Goldich, MD: no disclosures

• Off-label use of fibrin tissue glue, Anti-VEGF agents, and mitomycin C, will be mentioned in presentations

Superficial Keratectomy

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Indications

• Anterior basement membrane dystrophy
• Saltzmaan nodular degeneration
Indications

• In combination with other procedures
  – Band keratopathy
  – Pterygium Excision and conjunctival autograft
  – Collagen Cross Linking

Prior to procedure

• Establish the diagnosis
• Informed consent
  – Explain postop course
  – Time off work

Instruments

• Topical anaesthetic
• slit lamp/minor procedure room
• Speculum
• 12
• Beaver blade
• Bandage contact lens

Post Operative Instructions

• Bandage contact lens X 1 week
• Topical antibiotics and steroid qid X 1 week
• Oral analgesic
• FU 1 week and 1 month

Case

• 75 y.o. male referred for consideration of cataract surgery by the optometrist for declining vision
Case

- 20/80
- Saltzmaan nodules
- Irregular astigmatism
- Mild NS

Chemical Chelation of Band Keratopathy

Randall Ulate, MD
University of Toronto
Department of Ophthalmology and Vision Sciences

Chemical Chelation

- Band keratopathy
  - Calcium deposition
  - Bowman's layer
  - Symptoms:
    - DVA, Foring Body, Pain, Cosmetic, Infection
  - Causes:
    - Idiopathic, Silicone oil, Inflammation, Phthisis

Chemical Chelation

- Treatment of Band Keratopathy
- Indications
  - Pain
  - Epithelial defects
  - DVA
  - Cosmesis
Chemical Chelation

- EDTA
- S/L or Microscope
- Instrumentation
- Surgical Technique

Questions
Discussion

Recurrent corneal erosion syndrome

- Loose adhesion between corneal epithelium and underlying basement membrane
- Repeat episodes of dislodgment of corneal epithelium
- Primary or secondary

Symptoms and signs

- Pain, photophobia, tearing, redness and decreased vision
- Classically when the patient is awakened from sleep

Anterior Stromal Puncture

Mario J Saldanha FRCS, FRCOphth, DO
University of Toronto
Department of Ophthalmology and Vision Sciences
Non-surgical treatments

- Topical lubricating drops
- Autologous serum drops
- Corticosteroids
- Topical gels
- Hypertonic saline and ointments
- Inhibitors of MMP's

Surgical Intervention

- Superficial keratectomy with or without a diamond burr
- Anterior stromal puncture
- Phototherapeutic keratectomy (PTK)
- Erosions involving the central cornea

What do we need?

- Anesthetic eye drops
- Short (5/8 inch) 25 Gauge needle + 1 ml syringe
- Lid speculum
- Antibiotic drops
- BCL

Anterior Stromal Puncture

- Anesthetic eye drops
- Short (5/8 inch) 25 Gauge needle + 1 ml syringe
- Lid speculum
- Needle tip 90 degrees to corneal surface

Surgical Technique

- 25 gauge short bent needle
- 5%-10% stromal depth
- Punctures less than 1 mm apart
- No need for special equipment
- No chemicals are used
- Epithelium remains relatively intact - less discomfort
Performing the procedure with fluorescein staining and under cobalt blue light allowed the surgeon to determine that adequate treatment was complete as bubbles could be visualized.

Post-operatively

- Vigamox
- BCL- at least 6 weeks *
- Tobradex (Tobramycin 0.3% / Dexamethasone 0.1%) QID until follow-up at 1 week and then tapered over 1 month
- Continue lubrication drops 4 times daily or more as needed (preservative-free drops) and use ointment at night if BCL falls out


Potential risks

- Corneal perforation
- Corneal scarring
- Changes in refractive power
- Topographic irregularities

Questions

Discussion

Conjunctivochalasis

Clara Chan, MD, FRCSC, FACS
University of Toronto
Department of Ophthalmology and Vision Sciences
What is conjunctivochalasis?

• Consider it “inferior SLK”
• Excess conjunctival folds between globe and lid margin

Why does it happen?

• Conjunctiva is no longer adherent to tenon’s capsule
• Absence of tenon’s capsule and conjunctiva does not adhere to sclera
  WITH
• Thinning and stretching of conjunctiva

Risk Factors

• Increased age
• Chronic ocular surface inflammation
  • Dry eye, blepharitis, allergic conjunctivitis
• Post-operative chemosis
• Post-traumatic chemosis

What problems does this cause?

• Irregular tear film
• Poor tear outflow mechanism
  • Hinders lid pump function
  • Mechanical blockage of puncta
• Recurrent subconjunctival hemorrhages

What do patients complain about?

• Asymptomatic to severe discomfort
  • “My eyelids feel stuck to my eye ball”
  • “I find it hard to blink”
  • “My eyes feel so tired”
  • FBS, tearing, discomfort, pain

When do I treat?

Symptomatic and signs of:
• “Effortful” blinking
• Positive “Rub test” or “Thumb test”
  • Apply gentle upward pressure to the eyeball through lower lid, ask the patient to look in different direction to replicate symptoms
Treatment options

First:
• Optimize dry eye, MGD, allergies
• Optimize lid abnormalities (ectropion)

Surgical Intervention:
• Cautery to shrink the excess conjunctival folds
• Conjunctival resection with amniotic membrane
• Conjunctival resection with suture closure
• "Paste-Pinch-Cut" with fibrin glue*  

"Paste-Pinch-Cut”

• My preferred technique
• Fibrin glue provides hemostasis
• Much less inflammation
• Improved patient comfort
• Efficient procedure
• Faster recovery


Step by Step

1) Topical anesthetic
2) Betadine prep, drape, lid speculum
3) Weck cell pledgets soaked with topical anesthetic applied to inferior bulbar conjunctiva x 30 seconds
4) Draw up fibrinogen in 1 cc syringe with 25 gauge short needle and thrombin in another 1 cc syringe with 30 gauge short needle

Post-operatively

• Tobradex ointment and patch x 4 hours
• Tobradex and artificial tears qid x 1 week
• Tylenol PRN for pain
• Follow-up at 1 week
• Finish the Tobradex, then Maxidex 1 drop qid tapering 1 drop per week
• Follow-up again after 4-6 weeks

• Questions
• Discussion
Corneal Tattooing

Yakov Goldich, MD
Combine with DSR

When?

• To improve eye cosmetic appearance
• Reduce glare from large iridotomies

What do we need?

• Operating microscope
• Coloring agents
• Needle (21G)

Step by step

1) Topical anesthetic
2) Betadine prep, drape, lid speculum
3) Mix dye according to patient’s iris color.

Postoperative management

• Topical antibiotics and steroids (Tobradex qid) for 1 week.
• Bandage contact lens for 1 week
• Continue steroid topical drops for another 2-3 weeks
Results

Pocket Tattoo
David S. Rootman, MD, FRCSC
Professor, University of Toronto
Adjunct Professor, Ben Gurion University

Technique

- Vertical, corneal incision 50% depth
- Lamellar pocket
- Insertion of pigment on crescent knife blade

Discussion

Tarsorrhaphy
Mauricio A. Perez, MD
University of Toronto
Department of Ophthalmology and Vision Sciences
Indications

- Exposure keratitis
- Persistent epithelial defects
- Prophylactic in corneal surgery:
  - LSCD
  - KPro

Types

- Temporary
  - Mechanical
  - Pharmacological
- Permanent

Requirements

1) 2% lidocaine + epinephrine, 30G needle
2) Double-armed 5/6-0 nylon (or silk)
3) Needle driver, toothed forceps, Kelly clamp/
   Snap, Westcott scissors, blade (permanent)
4) 2 silicone tubes

Technique-trim video

Pharmacological

- Botox:
  - Botulinum toxin, produced by Clostridium botulinum

Pharmacological: Technique

- Skin cleansing
- 30G needle:
  - 5 Botox U under supraorbital rim, midline
  - 5 Botox units parallel to superior eyelid
Pharmacological

- Allows easy clinical exam
- Full effect seen 4 days post procedure
- Lasts for 6 months

Discussion
- Questions

Avastin Treatment for the Management of Corneal Vascularization

Allan Slomovic MA, MD, FRCS (C),

Owen and Marta Boris Endowed chair in Cornea and Stem Cell Research

Research Director, Cornea Service. University Health Network
President, Canadian Ophthalmological Society

DISCLOSURE

- Consultant for:
  1. Alcon Canada – Paid consultant
  2. Allergan – Advisory board
  3. Bausch and Lomb Canada – Paid consultant
  4. AMO – Research assistance

I have no financial interests that specifically pertain to my presentation

- The use of Anti-VEGF antibodies for the treatment of corneal vascularisation is currently an Off-Label use of this medication

VEGF plays a major role in Corneal angiogenesis and vascular permeability by causing a signaling cascade in endothelial cells

- Differentiation into mature Blood Vessels
- Migration
- Proliferation
- Angiogenesis
- Vascular Permeability

VEGF-Increases Vascular Permeability
Science 219:983, 1983

To address the topic of “PEARLS” for the use of Anti-VEGF antibodies for Corneal Vascularization, I would like to summarize 2 studies that we recently published on this topic and compare our outcomes with current world literature on this topic
1. Subconjunctival Bevacizumab Injection for Corneal Neovascularization
   Bahar I, KaisermanI, McAllum P, Rootman D, Slomovic AR
   Cornea 2008 Feb; 27(2): 142-7

   • 10 eyes of 10 consecutive patients with corneal neovascularization.
   • Etiology for Neovascularization:
     – Herpetic eye disease (n=3)
     – Failed graft (n=3)
     – Graft versus host disease (n=1)
     – Post infectious keratitis (n=1)
     – Chemical burn (n=1)
     – Interstitial keratitis (n=1).
   • All had extensive superficial and deep corneal vascularization and had a history of failure of regression of the vessels with the use of topical steroid drops QID.

Avastin Injection:

   • All injections were performed at the slit lamp using topical anesthetic (Proparacaine Hydrochloride drops)
   • Subconjunctival injection of 2.5 mg /0.1 ml bevacizumab was performed at the limbus, adjacent to the pathologic blood vessels growing into the cornea.

Grading of Pathologic Vessels:

   • Digital photographs of the cornea were graded by two masked observers before and after Avastin injection.
     1. density (photos given to observers)
     2. Extent (number of clock hours affected by neovascularization (score: 1-12)
     3. Centricity (distance the new vessels extended from the limbus towards the visual axis)
   • Image analysis software was used to determine the area of cornea covered by neovascularization as a percentage of the total corneal area.

Results:

   • There were no intra-operative complications.
   • Seven eyes (70%) demonstrated partial regression of vessels, whereas 3 eyes (30%) did not react to the injection.
   • Six (60%) patients had at least 1 clock hour decrease in the extent of blood vessels, and 4 (40%) had at least 2 clock hour decrease in the extent of vessels.
   • Seven (70%) patients had a decrease of 1 level in density.

Patient 1 - positive reaction (HSK):

   Pre- avastin 1 week post 4th Avastin injection
   Decrease: extent, density and proportion of vascularized cornea
   Note: significant, but not complete regression of B.V.

Patient 2 – positive reaction (Failed PKP post HSK):

   Pre- avastin 1 week post 2nd Avastin injection
   Note: significant, but not complete regression of B.V.
Patient 4 - no reaction:

Pre-avastin

Post-avastin - 1 week post 3rd avastin injection

Discussion:

- Centricity of vessels (the distance the new vessels extended from the limbus towards the visual axis) did not respond to the Sub Conjunctival Avastin injection.
  - Maybe the peri-limbal application of the drug, did not reach the more central part of the vessels.

Rationale for 2nd study:
Combined Use of Subconjunctival and Intracorneal Bevacizumab Injection for Corneal Neovascularization.

Technique:

- Eyes were anesthetized with topical proparacaine hydrochloride drops
- 0.05 ml (0.25mg) given intrastromally toward the distal end of the pathologic blood vessels
- 0.05 ml (0.25mg) given subconjunctivally near the limbus adjacent to the pathologic blood vessels

Results:

- Average of 1.7 injections (range 1-3 injections per patient)
- Vessels partially regressed in all patients
- Vessels returned as early as 2 months (range 2-18 months)
- No adverse effects - No IOP changes, Epitheliopathy or ED, stromal thinning
- Vision stabilized or improved in 11/12 patients
  - Preop BCVA 20/60 (SD 0.26)
  - Postop BCVA 20/49 (SD 0.36, p = 0.02)

Patient 3 (unknown keratitis)

PRE-INJECTION
BCVA = 20/60

1 week after 1st injection
BCVA = 20/50

Reduction of vascularity, but no change in corneal scar
How Does Our Study Compare with Other Research?

- **Avastin treatment for Corneal Vascularization in humans (N=45) and laboratory animals (N=22)**
  - Subconjunctival (1.25-5 mg)
  - Intracorneal (1.25-2.5 mg)
- **All studies have shown a beneficial effect of Avastin in reducing Corneal Vascularization**

**Conclusion**

- Our study as well as other researchers have shown a beneficial effect of subconjunctival and intra-stromal Avastin in limiting corneal vascularization in humans caused by various etiologies.
- We also showed that it was not effective in causing regression of corneal vessels in recurrent pterygia.

**3 SURGICAL PEARLS**

1. Intracorneal and subconjunctival Avastin is beneficial in regressing corneal neovascularization and lipid deposition

2. Causing regression of corneal vessels in recurrent pterygia
   - Subconjunctival Bevacizumab Injection for Corneal Neovascularization in Recurrent Pterygium

3. Based on the evidence, our current regimen consists of 3 injections (subconj and intrastral) separated by 4-6 weeks and then PRN injections.

**Conjunctival biopsy**

Clara Chan, MD, FRCSC, FACS
University of Toronto
Department of Ophthalmology and Vision Sciences
Types of conjunctival biopsy

- Excisional
- Incisional

Indications for Excisional Biopsy

Lesions that:
- Threaten vision
- Cause irritation
- Are related to systemic disease
- Possible malignancy

Indications for Incisional Biopsy

- OCP suspect
- Obtain sample to aid in diagnosing a larger area of abnormality

Step by Step

1) Topical anesthetic
2) Betadine prep, drape, lid speculum
3) Mark area of conjunctiva to be biopsied
4) Weck cell pledgets soaked with topical anesthetic (proparacaine or tetracaine) applied to area of conjunctiva x 30 seconds +/- subconjunctival injection of 2% lidocaine with epinephrine to balloon up the area
5) 0.12 forceps and westcott scissors used to excise conjunctiva
6) Place specimen onto piece of paper indicating orientation (blue paper from weck cell packaging)
7) Hemostasis with weck cells pressure +/- handheld cautery
8) Primary closure using 9-o vicryl or fibrin glue
9) If large area, then use amniotic membrane
Post-operatively

- Tobradex ointment and patch x 4 hours
- Tobradex and artificial tears qid x 1 week
- Tylenol PRN for pain
- Follow-up at 1 week
- Finish the Tobradex, then Maxidex 1 drop qid tapering 1 drop per week
- Follow-up again after 4-6 weeks

Corneal Biopsy
Mauricio A. Perez, MD
University of Toronto
Department of Ophthalmology and Vision Sciences

Indications

- Infections
- Dystrophies
- Degenerations
- Manifestations of systemic diseases
- Drug-induced changes

Requirements

- Speculum
- 2-4 mm diameter punch (skin)
- 0.12 mm forceps
- Crescent blade

Technique – cut down

Technique
Split specimen in half:
1) ½ for pathology
2) ½ for microbiology
50-70% positive results on culture negative specimens
Post-operatively

- Tobradex ointment and patch x 4 hours
- Tobradex and artificial tears qid x 1 week
- Tylenol or Ibuprofen PRN for pain
- Follow-up at 1 week

Discussion

- Questions

Pterygium Surgery with Sutured Conjunctival Autografts

David S. Rootman, MD, FRCSC
Professor, University of Toronto

Why Sutures When We Can Glue?

- More secure fixation of autograft
- Less likely to dislocate
- Stretches out a smaller autograft
- Long track record
- No bovine or foreign blood products
- Less messy
- Good suturing practice
- Less expensive

Disadvantages of Sutures

- Takes longer
- More difficult
- Sutures irritate patient
- More likelihood of bleeding
- May have to remove sutures

Seven Principles of Procedure

1. Smooth partial keratectomy
2. Release of Tenon’s capsule constriction
3. Thin autograft
4. Alignment of graft
5. Secure suturing of graft
6. Bandage contact lens
Keratectomy

- As described by Richard Abbott
- 7-0 Silk fixation suture
- Inject under pterygium with 1% xylo with epi
- Angled cut at anterior edge of pterygium
- Smooth dissection in anterior stroma
- Removal of all scar tissue on cornea
- Similar to making a phaco scleral tunnel

Keratectomy

Release of Tenon’s Capsule

- Do not over dissect
- Release medial rectus on both sides
- Allow conjuctiva to slide back to caruncle
- Mark extent of excision
- Minimal removal of conjunctiva
- Stay away from caruncle

Autograft harvesting

- Measure area of resection
- Pull eye downward
- Use Gentian violet to mark area
- Central mark to help orientation
- Rhomboidal shape, wider at posterior edge
- Make graft as thin as possible

Measure autograft
Alignment of Graft

- Slide conjunctiva on cornea, Tenon up
- Appose limbal cells to limbus at site of excision
- Secure with 10-0 monofilament vicryl
- Turn graft over after secured at limbus

Suturing of Autograft

- Secure in all four corners with scleral bite
- Avoid medial rectus to minimize bleeding
- Close nasal conjunctiva to conjunctiva of graft, no scleral bite here
- Close edge to edge superiorly and inferiorly
- No exposed Tenon capsule, prevents granuloma
- Do not advise running suture

Conclusions

- Pterygium excision with conjunctival flap is a good procedure with low complication rates
- Using sutures is a good alternative compared with tissue glue

Bandage Contact lens

- Apply at end of procedure
- More comfort for patient
- No patch needed
- Leave on for 2 weeks
- Lessens chance of Dellen
- Steroids for 6 weeks qid or until eye white

Discussion

- Questions
Pterygium Excision and Conjunctival Autograft Utilizing Fibrin Sealant

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Department of Ophthalmology and Vision Sciences

Pterygium

- Epidemiology
  - male>female
  - 20-40 age group
  - nasal-temporal
- Genetic predisposition
- Environmental risk factors

Indications for Excision

- Symptomatic (FBS, redness)
- Affecting vision (WTR astigmatism)
- Special consideration in patients undergoing cataract surgery

Perioperative Considerations

- Informed Consent
- Local anaesthetic
  - PO sedation PRN
- Environment
  - Minor procedure room
- Patient Selection

Conjunctival autograft + Fibrin Sealant

- Tisseel VH
- Evicel
  - Ethicon
  - Human component only

* surgery continues to be a theoretic risk despite inactivation techniques.
* No documented cases of viral transmission have occurred from the use of sealants

Tisseel VH 2ml
Components

- Blue vials:
  - dried (Fibrinogen)
  - Apoprotein
- Black vials:
  - Thrombin 500 IU
  - Calcium Chloride

Preheat

Reconstitute

Heat Stir and Draw up

Optional Syringe

DO NOT

- Use for more than 4 hours once reconstituted,
- Store in freezer,
- Heat above 37 degrees,
- Cool or freeze solutions after reconstitution, or
- Use solutions which are cloudy
Postoperative instructions

- Patch X 24 hours
- Instruct them to take the patch off in the morning
- Tobradex ointment qid X 1 week, then Predforte 1% qid
- F/U 1 week, 1 month, 2 months, 3 months

Summary

- Advantages
  - Shorter surgical time
  - Less postoperative pain
  - Less postoperative inflammation
  - Possible lower recurrence rate

- Disadvantages
  - Cost
  - Theoretical risk of transmission of BB pathogens

Fibrin sealants are easy to use, simplify surgery and result in better immediate postoperative outcomes

Discussion

Questions

Evidence-based approach to the management of recurrent pterygium

Allan R. Slomovic MA, MD, FRCSC
Marta and Owen Boris Endowed Chair in Cornea and Stem Cell Research
Associate Professor of Ophthalmology,
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Research Director, Cornea Service,
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President Elect, Canadian Ophthalmological Society

RECURRENT PTERYGIUM

- Generally more aggressive lesion, occurring months to years after excision of a primary pterygium

- Reported mean time to recurrence 4.5 mos. (Slomovic et al)
What is considered a recurrence?

1. Conjunctival recurrence:
   - Manifests as vascular injection and heaped up subconjunctival connective tissue in the area where the conjunctival portion of the pterygium was previously removed.

2. Corneal recurrence:
   - Any new fibrovascular regrowth across the limbus that was not present on the first post-operative day (Hirst, 2009).

What does the evidence tell us about:

1. How best to prevent recurrence from occurring?
2. How to surgically treat a recurrent pterygium if it does recur?

Recurrences - both primary and recurrent pterygium

1. Conjunctival autograft decreases the likelihood of recurrence.
2. Compared with the use of amniotic membrane, a conjunctival autograft is more effective in preventing a recurrence, lower recurrence rates, better cosmetic result, more cost effective.
3. Intraoperative MMC decreases the likelihood of recurrence.
   - 0.02-0.04% administered 2-5 minutes.
   - Most commonly used concentration/duration: 0.02% for 3 minutes.
4. A combination of a conjunctival autograft with MMC further reduces recurrence rates compared with either a conjunctival autograft or MMC alone.

2. Safety

1. Of the adjuvants studied in Kaufman et al paper only MMC was associated with vision threatening complications: scleral thinning, scleral ulceration and delayed conjunctival epithelialization.
2. Increased concentration and duration of exposure to MMC is associated with increased efficacy.
3. Increasing concentration and duration of exposure MMC associated with an increased complication rate.

Evidence-based review of some of the newer treatments to prevent pterygium recurrence:

1. anti-VEGF therapy
2. Extensive tenonectomy ("PERFECT for PTERYGIUM" technique)
3. Tissue Glue vs sutures
1. Subconjunctival Bevacizumab Injection for Corneal Neovascularization in Recurrent Pterygia

Bahar I, Kaiserman I, McAllum P, Rootman D, Slomovic AR
Current Eye Research (2008)

- VEGF is increased in patients with pterygium
- Several studies have shown that increased release of VEGF and other factors correlates with pterygium recurrence

How does this study compare with other research on the use of bevacizumab to prevent recurrent pterygium?

- 18 studies (2008-2012) on the use of bevacizumab for recurrent pterygium

**Excluding case reports, the evidence has been underwhelming with most of the studies showing no effect of anti-VEGF therapy to prevent a pterygium from recurring**

2. “P.E.R.F.E.C.T for Pterygium” Technique (HIRST)

**Pros:**
- The surgical technique looks very promising
- Very low recurrence rates and excellent cosmetic results
- Recurrence rates:
  - 0.4% pterygium (1/250 eyes)
  - 0% recurrent pterygium (0/115 eyes)

**Cons:**
- Significantly more postoperative pain
- Moderate discomfort for weeks (recurrent pterygium). Patients cannot work or drive during this period
- Requires an operating room, peribulbar block and surgical assistant
- Unfortunate use of an acronym for the procedure, perhaps instilling unrealistic expectations in our patients regarding outcomes
- Randomized clinical studies are needed to assess and compare the efficacy and safety of this procedure.

3. What about tissue glue vs sutures to adhere the conjunctival autograft?

**Management of Recurrent Pterygium with Intraoperative Mitomycin C and Conjunctival Autograft with Fibrin Glue**

AJO: July 2011
Razvan Shafii, MD; Leslie Simonson, MD; Carey Barnes; Kenneth Lee; Chien Tung Lin, MD; Alan R. Wnawer, MD, FRCSC

28 eyes of 28 patients with recurrent pterygium who underwent P.E.C.A.
- 0.02% MMC for 2 minutes
- Tissue glue to adhere the conjunctival autograft

**Conclusion:**
1. Safe and effective surgical option for treating recurrent pterygium.
2. Recurrence rate <3.5%
Evidence-Based Protocol for Managing Primary and Recurrent Pterygium

- **Primary Pterygium**
  - P.E.C.A. using Tissue Glue to adhere the graft
  - 0/65 recurrences for primary pterygia
    (Slomovic A., BJO 2009)

- **Recurrent Pterygium**
  - P.E.C.A. with 0.02% MMC for 2-4 minutes and Tissue Glue
  - 3.5% recurrence rate in recurrent pterygia
    (Slomovic et al, AJO 2011)

"Fibrin Glue Versus Sutures for Attaching the Conjunctival Autograft during Primary Pterygium Surgery" BJO 2008
S Srinivasan, M Dollin, P McAllum, Y Berger, D S Rootman, A R Slomovic

- 40 eyes 40 patients
- 20 Tisseel; 20 10-0 vicryl

**Results:**
1. The degree of postoperative inflammation was significantly less in eyes undergoing pterygium surgery with fibrin glue at 1 and 3 mos. postoperatively (p=0.5).
2. Conjunctival grafts secured with fibrin glue were as stable as those obtained with sutures.

**Conclusion:**
- The conjunctival graft secured with fibrin glue during pterygium surgery is not only as stable as those obtained with sutures, but also produce significantly less inflammation at 1 and 3 months post-operatively.

Implications

- Reduction of inflammation associated with the use of Fibrin glue may reduce Pterygium recurrence rate.
- Koranyi et al in a large retrospective study demonstrated a statistically significant decreased recurrence rate with the use of fibrin glue compared to the use of sutures.
  - Acta Ophthalmol Scand 2005

Amniotic membrane use in the minor surgery operating room

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Department of Ophthalmology and Vision Sciences
**Amniotic membrane**

- The innermost layer of the placenta
- Consists of a thick BM and an avascular stromal matrix

**Preparation**

- Caesarean section
- Screening for HIV, Hepatitis and Syphilis
- The placenta is cleaned with a mixture of BSS, Penicillin, Streptomycin, Neomycin and Ampohotericin B
- The amnion is separated from the chorion by blunt dissection under sterile conditions
- Attached to nitrocellulose paper strips and stored in glycerol solution
- Fresh use or cryopreserved at a temperature of -80 degrees C

**Indications**

**Step by step**

- Topical anesthetic
- Betadine prep, drape, lid speculum
- Weck cell pledgets soaked with topical anesthetic applied conjunctiva x 30 seconds
- Container with amniotic membrane is thawed at room temperature just before its use
- The membrane is then gently separated from the nitrocellulose paper with blunt forceps

**Surgical technique**

- Stromal side of the membrane is sticky, epithelial BM side is shiny and non-sticky
- Contradictory reports concerning the right way to place the amnion on the ocular surface
- Spread on to the ocular surface and trimmed to the appropriate shape and size
- Secured in place using 10-0 nylon/vicryl interrupted/continuous sutures
- Large therapeutic contact lens
**Post-operatively**

- Tobradex drops QID and artificial tears PRN
- Tylenol PRN for pain
- Follow-up at 1 week
- Follow-up after 2-3 weeks
- BCL removal usually after 2-3 weeks as soon as AM has dissolved

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**Risks**

- No published reports of communicable disease transmission from AMT
- One report exists of a sterile hypopyon after repeated transplantation of human amniotic membrane on cornea surface*
- Loose or dislocated as a result of loose/broken sutures
- Hemorrhage under the membrane


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**Corneal Relaxing Incisions**

Randall Ulate, MD
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**Corneal Relaxing Incisions**

- Incisional keratotomy
- Radial Incisions: central flattening
- Relaxing incisions: flattening of incised meridian
- Treatment of Astigmatism
**Corneal Relaxing Incisions**

- AK
- PCRs
- Coupling ratio 1:1
- Maximal effect in 5-7 mm zone
- Maximum of 4 incisions

**Post-Keratoplasty**

- Incisions central or in graft-host junction
- Zone <6 mm
- Length from 45-90 degrees
- Planned Keratotomy
  - Nomogram
  - Keratoscopy
  - Fixed incisions
  - Topography

**Instrumentation**

- Microscope
- Speculum
- Marking instrument
- Fixation instrument
- Cutting instrument

**Surgical Technique**

- Marking
- Fixation
- Incision
Results

- Keratometry

Complications

- Under-Overcorrection
- Infection
- Perforation
- Irregular astigmatism

Discussion

Questions

Punctal cautery

Yakov Goldich, MD

Dry eyes Treatment Flow Chart

<table>
<thead>
<tr>
<th>IFS Severity</th>
<th>Treatment Recommendations</th>
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<tr>
<td>Level 1</td>
<td>Dry treatment</td>
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<td>Punctal cautery</td>
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<td></td>
<td>Topical antibiotics</td>
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<td>Antipsychotics</td>
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<tr>
<td></td>
<td>Oral ciclosporine</td>
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<td>Level 2</td>
<td>Use of hypoallergenic</td>
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<td>Psychological support</td>
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<td>Tension of drugs</td>
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<td>contributing to dry eye</td>
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<td>Ophthalmic treatments</td>
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<td>Tissue damage</td>
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<td>Level 4</td>
<td>Punctal cautery</td>
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<tr>
<td></td>
<td>Antipsylcotics</td>
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<tr>
<td></td>
<td>Contact lenses</td>
</tr>
</tbody>
</table>


What do we need?

- Cautery pen
What do we need?

- Topical anesthetic drops (Proparacaine 0.5%)
- Weck-cel Pledgets
- Local anesthetic (2% lidocaine solution) – optional

Post op management

- Topical antibiotics qid for 1 week.
- No steroids allowing scarring
- Continue dry eye management