Ocular Surface Procedures in the Treatment Room

University of Toronto

Conjunctival biopsy

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

Disclosures

• Off-label use of fibrin glue will be mentioned in this presentation
• I have an industry relationship with Alcon (B), Allergan (A, B, D), Bausch & Lomb (B)
• I do not have any financial interest in any products mentioned in this presentation

Types of conjunctival biopsy

• Excisional
• Incisional
Indications for Excisional Biopsy

Lesions that:
• Threaten vision
• Cause irritation
• Are related to systemic disease
• Possible malignancies

Indications for Incisional Biopsy

- OCP suspect
- Obtain sample to aid in diagnosis of 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 9-0 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

Technique

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

Avastin Treatment for the Management of Corneal Neovascularization

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 Elect, Canadian Ophthalmological Society

DISCLOSURE

• Consultant for:
  1. Alcon Canada
  2. Allergan
  3. Bausch and Lomb Canada

I have no financial interests that specifically pertain to my presentation

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

Anti-VEGF Antibody Treatment of Corneal Vascularization

• Avastin is the 1st specific angiogenesis inhibitor available in North America.
• Since it’s landmark study for the treatment of Macular Degeneration, Avastin has been used in Ophthalmology to treat no fewer than 51 different disease processes, all having in common pathological vascularization
VEGF plays a major role in corneal angiogenesis and vascular permeability by causing a signaling cascade in endothelial cells.

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.

1. Subconjunctival Bevacizumab Injection for Corneal Neovascularization
   Bahar I, Kaiserman, McAllum P, Rootman D, Slomovic AR
   Cornea 2008 Feb;27(2) 142-7

   • 10 eyes/10 consecutive patients with corneal vascularization.

   • Etiology for vascularization:
     - 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 h/o 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.
Subconjunctival Bevacizumab Injection for Corneal Neovascularization
Bahar I, Kaiserman I, McAllum P, Rootman D, Slomovic AR
Cornea 2008 Feb;27(2):142-7

• All eyes had at least two Avastin injections, except for 1 patient, who refused further injections.

• The average number of Avastin injections per eye was 2.1 ± 0.8 (Rg: 1 – 4)

Grading of Pathologic Vessels:

• Digital photographs of the cornea were graded by two masked observers before and after Avastin injection.

1. density was graded on a scale from 1-4 (compared with standard photos given to observers)
2. Extent number of clock hours affected by neovascularization (score 1-12).
3. centricity the 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

“WHEN YOU HAVE A HAMMER, EVERYTHING LOOKS LIKE A NAIL”

• Up to the present there has been no effective pharma-therapy to treat corneal vascularization, despite the significant deleterious effect that it can have on vision and corneal transplant survival

• Since the advent of anti-VEGF antibodies in ophthalmology, this drug has found useful application in the treatment of pathological vascularisation: retina, iris, and now cornea.
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
  • Subconjunctival Bevacizumab Injection for Corneal Neovascularization in Recurrent Pterygium
    Bahar I, Kaiserman I, McAllum P, Rootman D, Slomovic AR
    Current Eye Research. 2008 Jan; 33(1) 23-8

3 SURGICAL PEARLS

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

2. In a separate study, we showed that it was not effective in causing regression of corneal vessels in recurrent pterygia
   • Subconjunctival Bevacizumab Injection for Corneal Neovascularization in Recurrent Pterygium
     Bahar I, Kaiserman I, McAllum P, Rootman D, Slomovic AR
     Current Eye Research. 2008 Jan; 33(1) 23-8

3. Our current regimen consists of 3 injections (subconj and intrastromal) separated by 4-6 weeks and then PRN injections.

Disclosures

• No financial disclosures

Corneal Biopsy

Mauricio A. Perez, MD
University of Toronto
Department of Ophthalmology and Vision Sciences
**Indications**
- Infections
- Distrophies
- Degenerations
- Manifestations of systemic diseases
- Drug-induced changes

**Requirements**
- Speculum
- 2-3 mm diameter punch
- 0.12 mm forceps
- Crescent blade

**Technique**
1) Topical anesthetic
2) Lid speculum
3) Use punch to trephine +/- 250 microns
4) Lift edge of trephination with 0.12 mm and use Crescent blade to remove button
5) Split in half:
   1) ½ for pathology
   2) ½ for microbiology

**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
Punctal cautery

Yakov Goldich, MD

Dry eyes Treatment Flow Chart

<table>
<thead>
<tr>
<th>Severity Level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>Mild to moderate</td>
<td>Moderate to severe</td>
<td>Severe</td>
<td>Severe</td>
</tr>
<tr>
<td>Conjunctival signs</td>
<td>Mild to moderate</td>
<td>Staining</td>
<td>Staining</td>
<td>Severe</td>
</tr>
<tr>
<td>Corneal staining</td>
<td>Mild punctate staining</td>
<td>Marked punctate staining; central staining; filamentary keratitis</td>
<td>Severe staining; marginal staining</td>
<td></td>
</tr>
<tr>
<td>Other signs</td>
<td>Tear film; vision (blurry)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Treatment Options

- Patient education
- Environmental modification
- Preserved tears
- Control allergy
- Unpreserved tears
- Gels, ointments
- Topical Anti-inflammatory
- Secretagogues
- Nutritional support
- Oral tetracyclines
- Punctal plug (once inflammation is controlled)
- Autologous serum
- Stromal anti-inflammation therapy
- Oral cyclosporine A
- Anterior 
- Moxifloxacin
- Surgery (preserved cautery)

If no improvement, add level 2 treatments
If no improvement, add level 3 treatments
If no improvement, add level 4 treatments


What do we need?

- Cautery pen
- Topical anesthetic drops (Proparacaine 0.5%)
- Weck-cel Pledgets
- Local anesthetic (2% lidocaine solution) – optional
Amniotic membrane use in the minor surgery operating room

Noa Avni Zauberman M.D
University of Toronto
Department of Ophthalmology and Vision Sciences

Post op management

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

Disclosures

- I do not have any financial interest in any products or procedures mentioned in this presentation
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 Ampophoterin 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

- Chemical injury
- Persistent epithelial defects
- Limbal stem cell deficiency (partial or total): combined with stem cell graft
- Symptomatic bullous keratopathy
- Corneal diseases
- Corneal ulceration

Indications

- Conjunctival cicatrisation/scar
- Symblepharon lysis
- Stevens-Johnson Syndrome
- Conjunctival surface reconstruction
- Pterygium surgery
- Conjunctivochalasis
- Trabeculectomy: bleb leakage or revision
- Conjunctival diseases
**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

**Movie**

**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
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
University of Toronto
Department of Ophthalmology and Vision Sciences

- Treatment of Astigmatism
- Radial Incisions: central flattening
- Relaxing incisions: Incisied meridian flattening
- AK and LRI
- Maximal effect in 5-7 mm zone
- Maximum of 4 incisions

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Post-Keratoplasty

- Incisions central or in graft-host junction
- 6 mm
- Length from 45-90 degrees
- Planned Keratotomy
- Topography
- Difference in response
Instrumentation

- Microscope
- Speculum
- Marking instrument
- Fixation instrument
- Incisional instrument

Complications

- Under-Overcorrection
- Infection
- Perforation
- Irregular astigmatism

Chemical chelation

- Band keratopathy
  - Calcium deposition
  - Bowman's layer
  - Symptoms
  - Causes

EDTA Chelation

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

- Indications
  - Pain
  - Epithelial defects
  - DVA
  - Cosmesis

EDTA

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

Pterygium Surgery with Sutured Conjunctival Autografts

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

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

**Release of Tenon’s Capsule**

**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

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
Complications
- Recurrence
- Inflammation
- Melting (more common with Mito C)
- Infection
- Bleeding
- Dellen
- Granuloma

Recurrence

Inflammation

Necrosis
Conclusions

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

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?
Options and Adjuvants in Surgery for Pterygium
A Report by the American Academy of Ophthalmology

Stephen C. Kaufman, MD, PhD,1 Deborah S. Jacobs, MD,2 W. Barry Lee, MD,3 Sophie X. Deng, MD, PhD,4 Mark I. Rosenblatt, MD, PhD,5 Roni M. Shein, MD6

1. Recurrences- both primary and recurrent pterygium

1. CONJUNCTIVAL AUTOGRRAFT DECREASES THE LIKELIHOOD OF RECURRENCE

2. COMPARED WITH THE USE OF AMNIOTIC MEMBRANE, A CONJUNCTIVAL AUTOGRRAFT 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 min.

4. A COMBINATION OF A CONJUNCTIVAL AUTOGRRAFT WITH MMC FURTHER REDUCES RECURRENCE RATES COMPARED WITH EITHER A CONJUNCTIVAL AUTOGRRAFT OR MMC ALONE

2. Safety

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

   Conclusions:
   • subconjunctival bevacizumab is well tolerated
   • subconjunctival bevacizumab did not prevent the recurrent pterygium from developing


   Pros:
   • The surgical technique looks very promising
   • Very low recurrence rates and excellent cosmetic results

   Cons:
   • Significantly more postoperative pain/transient diplopia 1-2 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.

   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
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
Raneen Shehadeh Mashor, MD; Sathish Srinivasan, MD; Corey Boimer; Kenneth Lee; Oren Tomkins, MD; Allan R Slomovic, MD,MA,FRCSC

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

Conclusion:
1. Safe and effective surgical option for treating recurrent pterygium.
2. Recurrence rate =3.5%

Evidence-Based Protocol for Managing 1e and Recurrent Pterygium

- Primary Pterygium-
  - P.E.C.A. using Tissue Glue to adhere the graft
    - 0/65 recurrences for primary pterygia (0%) (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=0.19) “
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

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

Corneal Tattooing

Yakov Goldich, MD
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

Video
Anterior Stromal Puncture

Noa Avni Zauberman M.D

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

Disclosures

- I do not have any financial interest in any products or procedures mentioned in this presentation
Non-surgical treatments

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

Surgical Intervention

- Superficial keratectomy with or without a diamond burr
- Anterior stromal puncture with or without Nd:YAG laser
- Phototherapeutic keratotomy (PTK)

What do we need?

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

Surgical Technique
**Surgical Technique**

- 25 gauge short bent needle
- 5%-10% stromal depth
- Punctures less than 1 mm apart
- The risk of corneal perforation is minimized
- 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

**Potential risks**

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

**Tarsorrhaphy**

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

**Disclosures**

- No financial disclosures

**Indications**

- Exposure keratitis
- Persistent epithelial defects
Types

- Temporary
  - Mechanical
  - Pharmacological
- Permanent

Requirements

1) 2% lidocaine
2) Double-armed 5/6-0 nylon
3) Needle driver, toothed forceps, Kelly clamp/Snap, blade
4) 2 split silicone tubes

Technique

- Video

Pharmacological

- Botox:
  - Botulinum toxin, produced by Clostridium botulinum
- Full effect seen 4 days post procedure; lasts for 6 months:
  - Allows easy clinical exam
Pharmacological: Technique

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

Technique

- Video

Conjunctival biopsy

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

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Types of conjunctival biopsy

- Excisional
- Incisional

Indications for Excisional Biopsy

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

Indications for Incisional Biopsy

- OCP suspect
- Obtain sample to aid in diagnosis of 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 9-0 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

Pterygium Excision and Conjunctival Autograft Utilizing Fibrin Sealant

Neera Singal, MD, FRCSC
University of Toronto
Department of Ophthalmology and Vision Sciences
Disclosures

- Off-label use of fibrin sealant will be mentioned in this presentation
- I do not have any financial interest in any products mentioned in this presentation

Indications for Excision

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

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)

Perioperative Considerations

- Informed Consent
- Local anaesthetic
  - PO sedation PRN
- Environment
  - Minor procedure room
- Patient Selection
Conjunctival autograft + Fibrin Sealant

- Tisseel VH
  - Baxter
  - Human/bovine components

- Evicel
  - Ethicon
  - Human component only

- Transmission of parvovirus B19, hepatitis or human immunodeficiency virus from fibrin glue use during surgery continues to be a theoretic risk despite viral inactivation techniques.
- No documented cases of viral transmission have occurred from the use of sealants

Components

- Blue vials:
  - Sealer Protein Concentrate: freeze dried (Fibrinogen)
  - Apoprotonin

- Black vials:
  - Thrombin 500 IU
  - Calcium Chloride

Preheat
Reconstitute

1. Reconstitute powders
2. Cool or freeze solutions after reconstitution, or
3. Use solutions which are cloudy

Heat Stir and Draw up

1. Heat and stir to dissolve
2. Draw up solutions
3. Use within 4 hours

Optional Syringe

1. Attach joining piece and needle
2. Use for more than 4 hours once reconstituted,
3. Store in freezer,
4. Heat above 37 degrees,
Video

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 post operative outcomes

Superficial Keratectomy

Neera Singal, MD, FRCSC
University of Toronto
Department of Ophthalmology and Vision Sciences
Disclosures

- I do not have any financial interest in any products mentioned in this presentation

Indications

- Anterior basement membrane dystrophy
- Saltzmaan nodular degeneration

Indications

- In combination with other procedures
  - Band keratopathy
  - Pterygium Excision and conjunctival autograft
  - Collagen Cross Linking
  - PTK/PRK

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