

Surgery for the Optometric Physician

Andrew Steele, OD, FAAO, FASOS

INTRO

Everting Sutures

Subconjunctival Injections

Intracameral Injections

Lesion Excision

Thermoablation for Trichiasis

Don't look if you're not ready...

7.

Basics

Injection

Procedure

3 WEEKS POST-OP

Everting suture repair for entropion

AKA Quickert Procedure

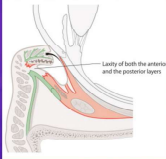
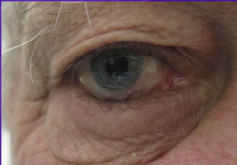
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Everting suture repair Quickert Procedure

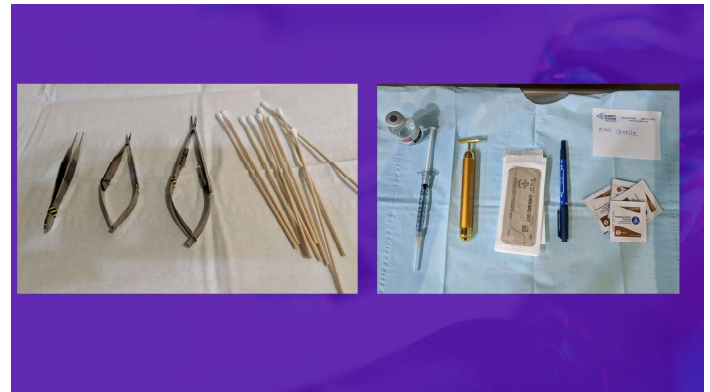
Pathophysiology

Canthal tendons and tarsal plate horizontally stabilize the lid. Lower-lid retractor dehiscence permits eversion of lid, with overridden by the preseptal orbicularis

- The everting shortens the retractors.
- Horizontal lid shortening corrects lid laxity.
- Fibrosis is key.

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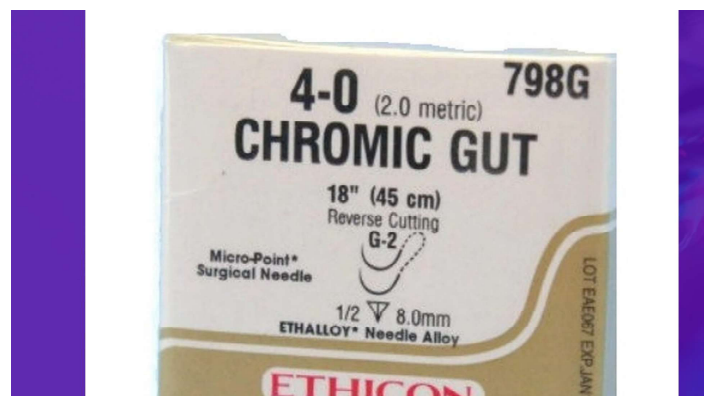
The procedure...

Double-armed 4-0 chromic gut 18" G-3

1. Grasping the lid with forceps and passing the double-armed chromic gut suture with a needle holder through the palpebral conjunctiva deep in the fornix.
2. Curving the needle upward toward inferior edge of tarsus imbricate the lower lid retractors and pass just below the inferior edge of the tarsus.
3. The sutures are to pierce through the skin approximately 2 mm below the lash line.
4. The second arm was placed using the same technique, within about 2 mm from the first.
5. The tightness of the suture should be skillfully titrated to provide slight overcorrection.
6. Utilizing the needle holder the two sutures were then tied with a 3 throw surgeons knot.
7. This procedure is repeated for two additional sutures lateral to the first, separated by 4 mm.
8. Polymyxin B/Bacitracin ointment is applied into the lower fornix and onto each suture line over the skin.

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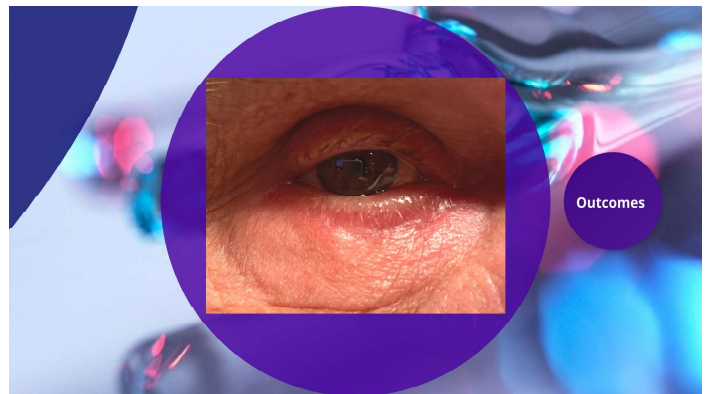
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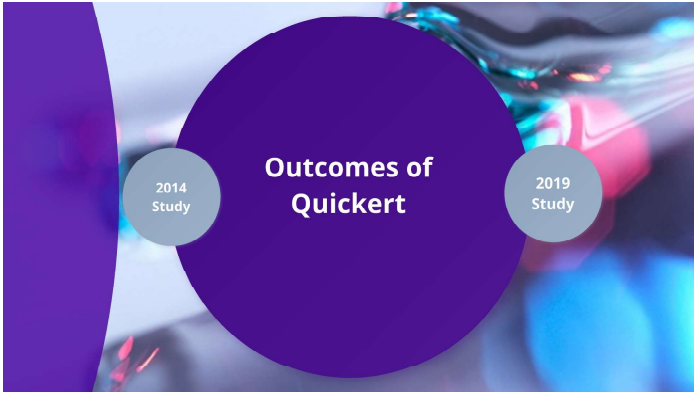
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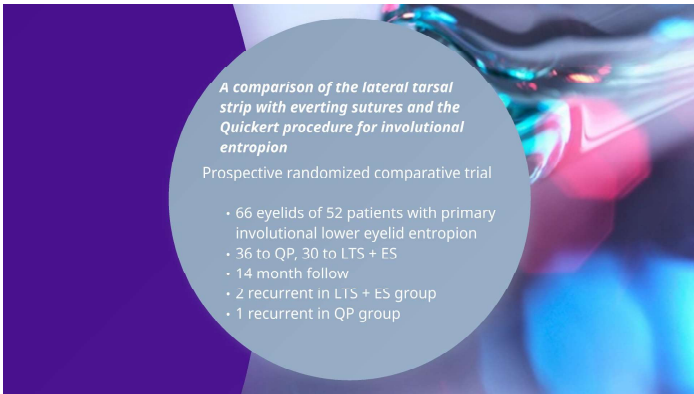
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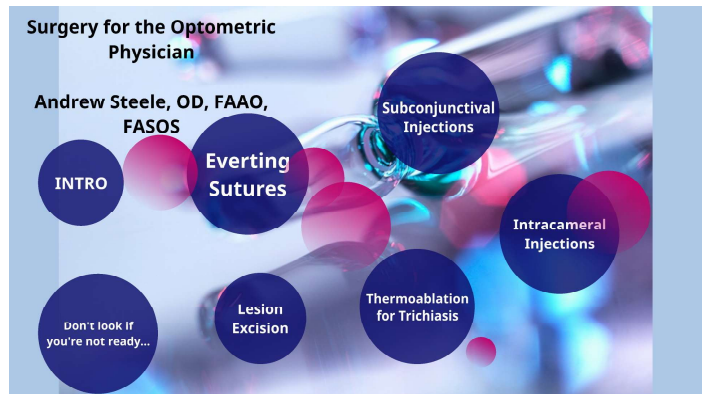
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Applications of subconjunctival injections

5-Fluorouracil

Bevacizumab

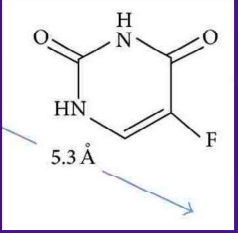
Triamcinolone



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What is 5-Fluorouracil?

- An Antimetabolite
 - Used as a chemotherapy drug to treat cancer
 - Works by inhibiting fast growing cells
- Site injection or topical cream
 - colon, breast, esophageal, pancreatic, etc
 - basal cell carcinoma, actinic keratosis, skin warts
- Side effects
 - Loss of appetite, site inflammation, low blood cell counts, hair loss



26.

Ocular applications of 5-FU: filtration


Historically used intraoperatively and post-operatively in filtration surgeries, ie trabeculectomy, tube shunts and now Xel Gel stents

The goal is to inhibit wound healing to prevent the conjunctival scarring down to the sclera, reducing or inhibiting outflow.

J Glaucoma 2016 Apr;25(4):e307-71. doi:10.1097/JG.0000000000000956

Needle Revision With 5-fluorouracil for the Treatment of Ahmed Glaucoma Valve Filtering Blebs: 5-Fluorouracil Needle Revision can be a Useful and Safe Tool in the Management of Failing Ahmed Glaucoma Valve Filtering Blebs

Conclusions: Needing over the pars of an AIV supplemented with 5-FU is an effective and safe choice in a significant proportion of PGM patients with elevated IOP due to encapsulation or fibrosis.



Curr Opin Ophthalmol 2016 Mar;27(3):164-6. doi:10.1097/OPT.0000000000000342

A role for antimetabolites in glaucoma tube surgery: current evidence and future directions

Summary: The development of small molecule therapeutics, combination therapies, and innovative drug vehicles to prevent post-surgical fibrosis and achieve better surgical outcome in glaucoma filtration surgeries is progressing.

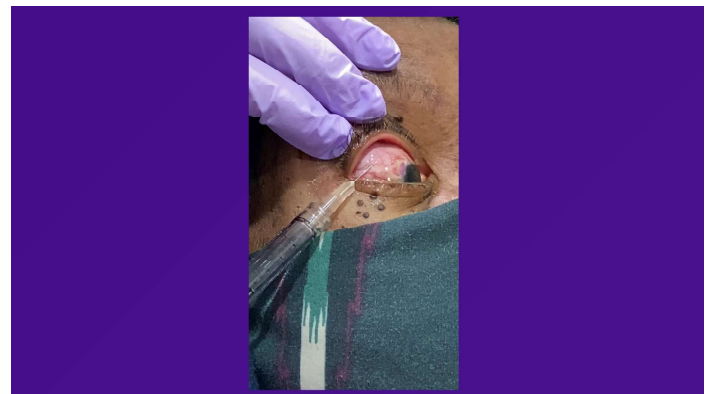
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Ocular applications of 5-FU: Pterygium

Pak J Med Sci. 2016 Jan-Feb; 32(1): 130-133.
doi: 10.12669/pjms.32.1.8169

Effect of intralesional 5 fluorouracil injection in primary pterygium
Muhammad Saim Khan,¹ Sista Malik,² and Inam Basiq³

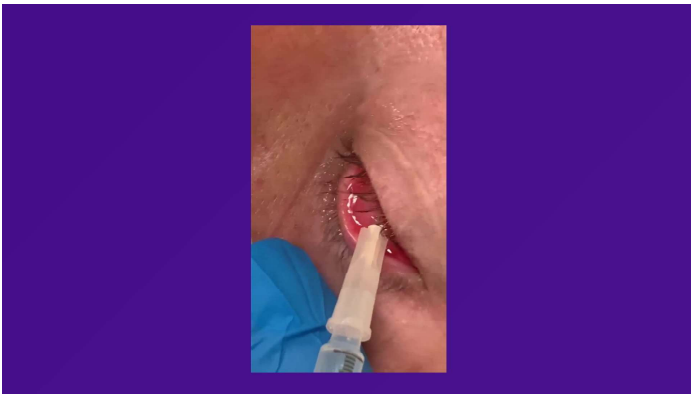
Conclusion:
Intralesional 5-FU injection results in significant clinical and cosmetic improvement of primary pterygium.

Eur J Ophthalmol. 2013 Oct;27(10):1123-9. doi: 10.1038/eye.2013.135. Epub 2013 Jun 28.

Intra-lesional 5 fluorouracil for the management of recurrent pterygium
D G Said¹, L A Faraj, M S Elafly, A Yeung, A Miri, U Fares, A M Otri, I Rahman, S Maharajan, H S Dua

Conclusion: The use of weekly intra-lesional 5FU injections for the treatment of recurrent pterygium is safe and effective in limiting the progression and inducing the regression of recurrent pterygium. The number of injections can be tailored according to clinical need.

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33.



34.

Ocular applications of 5-FU: Chalazion

ARVO Annual Meeting Abstract | June 2020

Use of 5-Fluorouracil in Chalazion Treatment
Joshua Michael Moran¹, Yasaman Mohadjer, Abdel-Rahman Zakheh, Mira Shikacho, Marian Maccaui, Paul Phelan

138 cases of chalazions treated with injections of a 9:1 mixture of 5-FU:triamcinolone from two institutions

64% completely resolved with 1 injection. There were no cases of hypopigmentation, increased IOP, or CRAO

Demographics		
Chalazia treated (patients)		138 (128)
Gender		
	Male	64 (46%)
	Female	73 (53%)
Age (years) (± SD)		52.7 (± 17.7)
Duration of Chalazion prior to injection (months) (SD)		4.0 (4.8)
Location		
	Upper Lids	44 (47%)
	Lower Lids	50 (53%)
Previous treatments:		
	Warm Compress (%)	97 (90%)
	IKD (%)	8 (6%)
	Antibiotics (%)	60 (44%)
	Topical steroids (%)	56 (41%)
Outcomes		
Number of Injections:		
	1	103 (75%)
	2	20 (15%)
	3	8 (6%)
	4	4 (3%)
Mean Injections		1.41
Success in one injection (%)		64%

35.

Subconjunctival Anti-VEGF: Corneal Neovascularization

- Bevacizumab was initially FDA to treat meta-static colon cancer, but primarily used "off-label" to treat various neovascular ocular diseases including neovascular AMD
- Corneal neovascularization may occur secondary to chemical burns, ischemia, infection, trauma, and inflammation
- Series of 1.25% Bevacizumab subconjunctival injections
- Low side effects: corneal defects, subconjunctival hemorrhages
- Increases in the corneal graft survival rate after anti-VEGF therapy have been demonstrated in animal models.
- "off-label", special consents needed
- Topical anti-VEGF also reviewed

Invest Ophthalmol Vis Sci. 2014; 55(12):4111-4114. doi: 10.1167/14.12.4111

Corneal Neovascularization: An Anti-VEGF Therapy Review
Jin-Hwan Chang, PhD, Seil-Ki Gwon, MS, Euna Lee, MS, You-Young Park, PhD, Seonmi Jang, MD, and Dongil Lee, MD, MBA

Invest Ophthalmol Vis Sci. 2014; 55(12):4111-4114. doi: 10.1167/14.12.4111

Treatment of Corneal Neovascularization Using Anti-VEGF bevacizumab

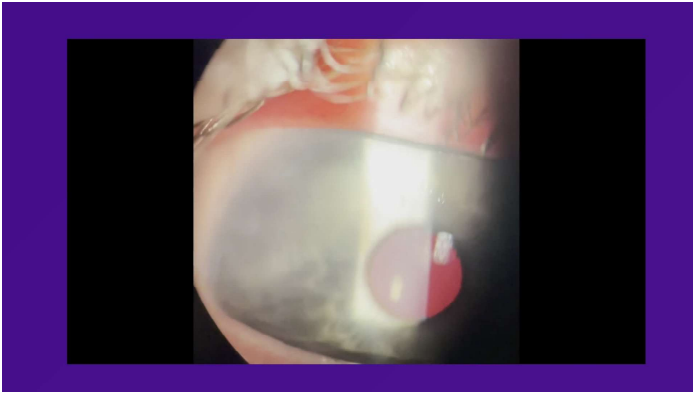
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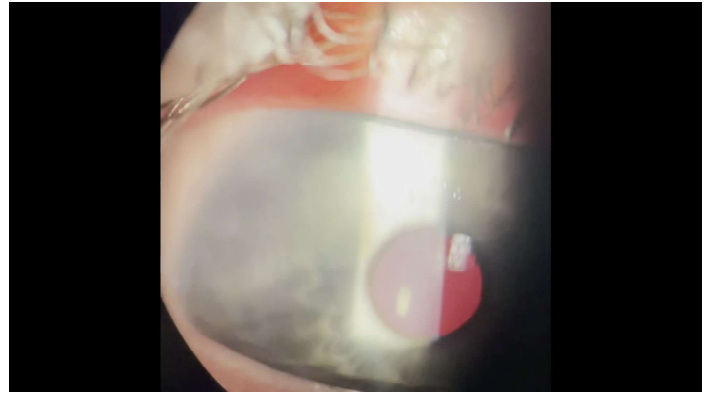
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Subconjunctival Anti-VEGF: filtration

Several studies evaluate the use of subconjunctival anti-VEGF as adjunct therapy to filtration surgeries

Many of the reports have shown a difference in bleb morphology in eyes treated with anti-VEGF agents. Early postoperative results have shown less vascular and more diffuse blebs compared to MMC or 5FU.

Conclusion: use both 5 FU (MMC) and Anti-VEGF

26. Grewal D. S., Jain R., Kumar H., Grewal S. P. Evaluation of subconjunctival bevacizumab as an adjunct to trabeculectomy: a pilot study. *Ophthalmology*. 2008;115(12):2141-2145. doi: 10.1016/j.ophtha.2008.06.009. [PubMed] [CrossRef] [Google Scholar]
27. Fakhraie G., Ghadimi H., Eslami Y., et al. Short-term results of trabeculectomy using adjunctive intracameral bevacizumab: a randomized controlled trial. *Journal of Glaucoma*. 2016;25(3):e182-e188. doi: 10.1097/JGJ.0000000000000707. [PubMed] [CrossRef] [Google Scholar]
28. Akhoo J. U., Chinn S. Role of subconjunctival bevacizumab as an adjunct to primary trabeculectomy: a prospective randomized comparative 1-year follow-up study. *Journal of Glaucoma*. 2015;24(1):1-8. doi: 10.1097/JGJ.0b013e3182878b5. [PubMed] [CrossRef] [Google Scholar]
29. Pro M. J., Freidl K. B., Neylan C. J., Sawchyn A. K., Wiew S. S., Mosier M. R. Ranibizumab versus mitomycin C in primary trabeculectomy—a pilot study. *Current eye Research*. 2015;40(5):510-505. [PubMed] [Google Scholar]
30. Kiddlee W., Orapiriyakul L., Kittigoonpaisan K., Tantissarasart T., Wangsupadilok B. Efficacy of adjunctive subconjunctival bevacizumab on the outcomes of primary trabeculectomy with mitomycin C: a prospective randomized placebo-controlled trial. *Journal of Glaucoma*. 2015;24(8):600-606. doi: 10.1097/JGJ.0000000000000194. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

41.

Subconjunctival Triamcinolone (Kenalog)

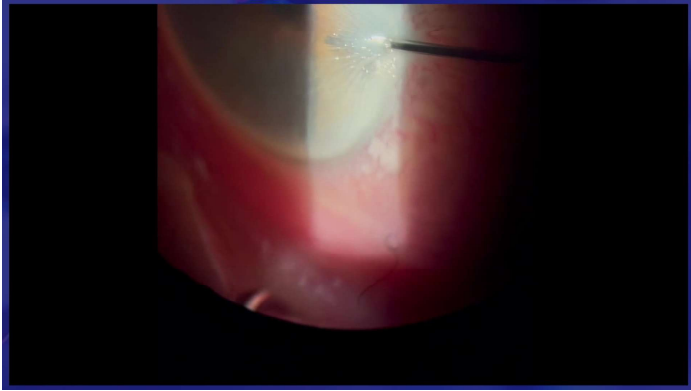
vs subtenon: absorbs quicker

Used for

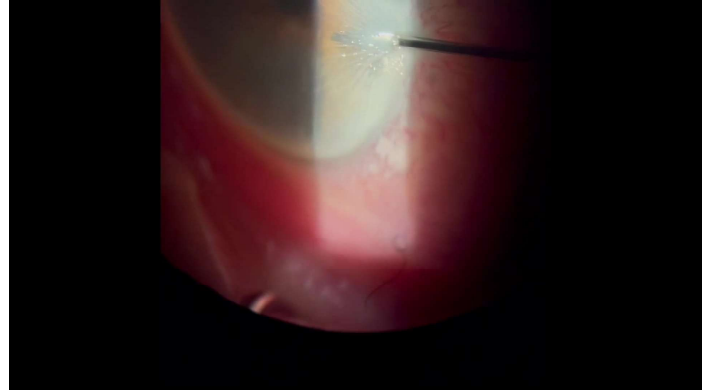
- PIK
- Transplant rejection, graft failure
- Post-operative corneal transplant
- Uveitis
- CME

WATCH STEROID RESPONSE!

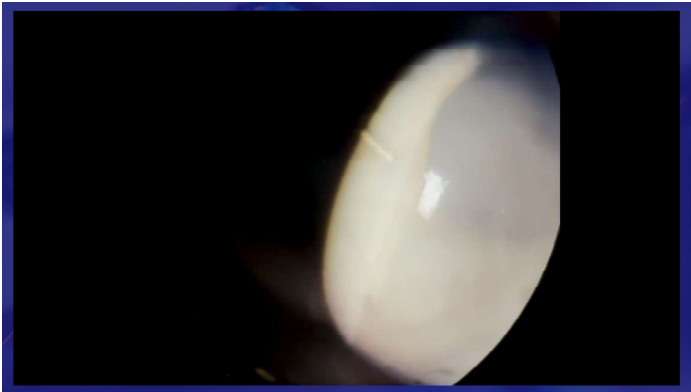
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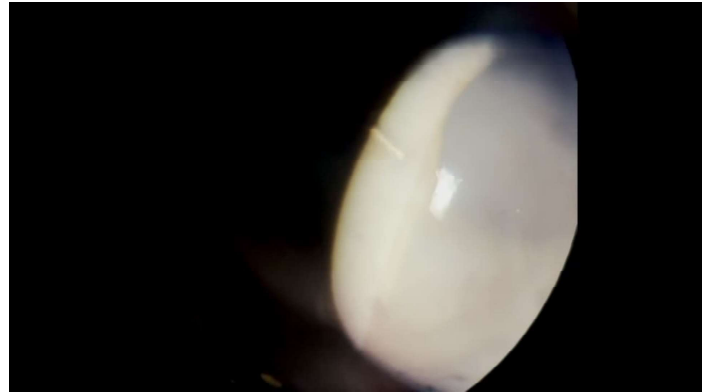
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Surgery for the Optometric Physician

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- INTRO
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- Lesion Excision
- Everting Sutures
- Subconjunctival Injections
- Intracameral Injections
- Thermoablation for Trichiasis

53.

Thermoablation utilizing Argon Laser for Trichiasis

- Goal to create a 2-3 mm crater at lash follicle
- Under local anesthesia (lidocaine only)
- Pigment dependent.
 - For lighter lashes, use a surgical marker
- Antibiotic unq post-operatively x 1 week

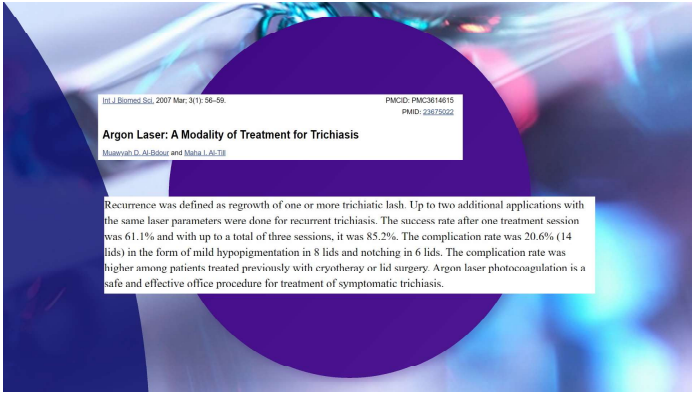
Settings:

- 200 micron spot size
- 500 mW power
- 500 ms duration
- 300 ms interval

Outcomes

The Procedure

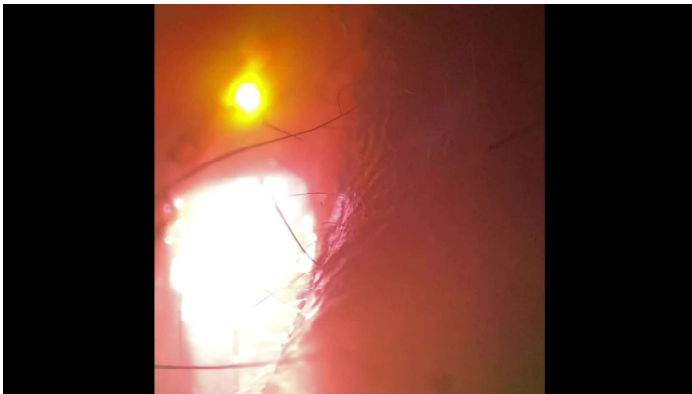
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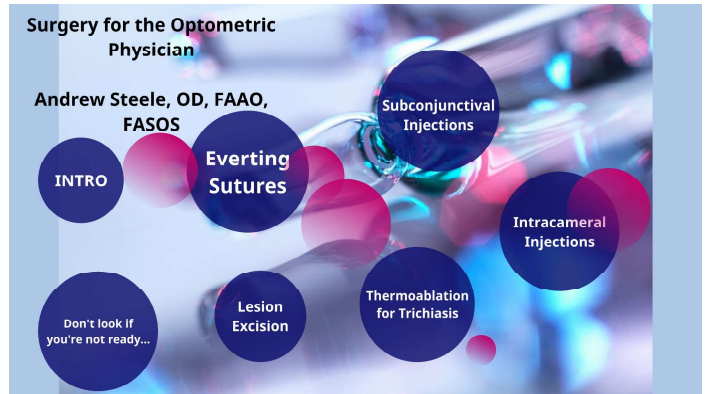
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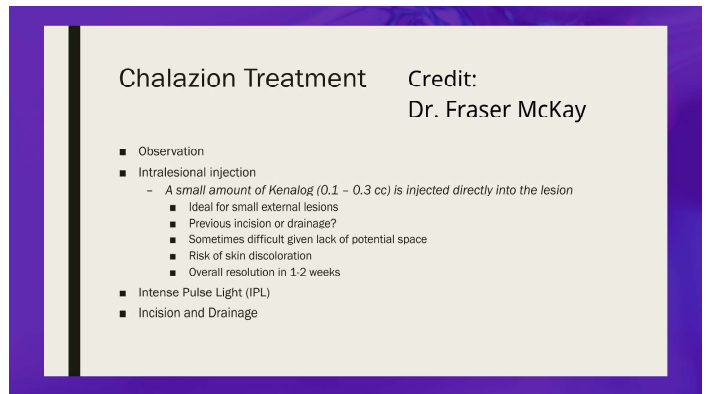
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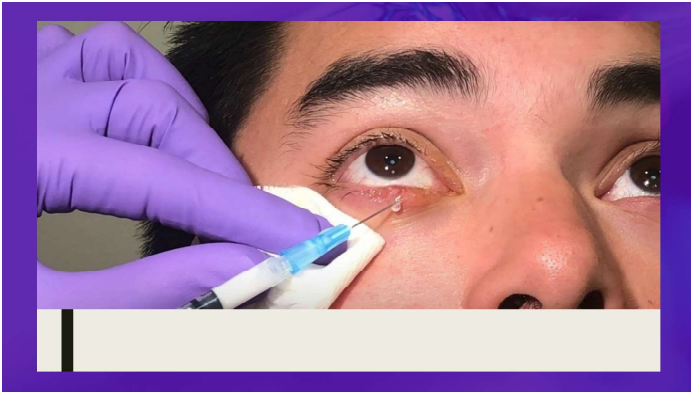
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61.

Chalazion Treatment

- Observation
- Intraslesional injection
- Intense Pulse Light (IPL)
 - *New non-invasive method of treating local inflammation*
 - Specially focused light helps kill bacteria
 - Heat melts away meibomian plug
 - Improvement in little as 24 hours
- Incision and Drainage

L.M. Perriman MD
3.6 x 1.8 chronic chalazion
3.15 weeks after IPL
0.00-10 weeks after IPL

62.

Chalazion Treatment

- Observation
- Intraslesional injection
- Intense Pulse Light (IPL)
- Incision and Drainage
 - *Remains standard of care for medium to large lesions*
 - *Make your mark!*
 - *2% lidocaine with epinephrine injected pretarsal and (sub conjunctively?)*
 - 30 gauge needle
 - Allow medicine to settle for 5-10 minutes

63.

Chalazion Treatment

- Observation
- Intraslesional injection
- Intense Pulse Light (IPL)
- Incision and Drainage
 - *Clean periorbital area with antiseptic solution*
 - *Place chalazion clamp (orientation is important)*
 - *Evert the lid*
 - *Using 11 blade, stabbing vertical incision along the affected meibomian gland*
 - Then consider "crossing the t"

64.

Chalazion Treatment

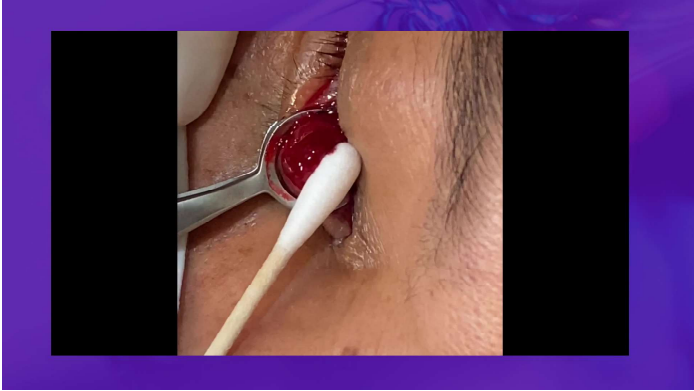
- Observation
- Intraslesional injection
- Intense Pulse Light (IPL)
- Incision and Drainage
 - *Using a small curette, gently scrape out the contents of the cyst*
 - Curettes have sharp edges, useful in scoring the inner surface of the cyst wall
 - *Excise the corners of the cross-shaped incision with Westcott scissors*
 - *Topical antibiotic (Rx for TID for 3 days)*
 - *Pressure patch vs thermal cautery*
 - *Typical resolution 1 week (due to anesthesia swelling)*

65.

Equipment

- Lidocaine 2% with Epinephrine
- 30 gauge needle
- Chalazion Clamp
- 11-Blade
- Curette
- Westcott scissors
- Surgical gauze, sterile gloves, sterile cotton tips, tape, eye patch
- Autoclave!!!

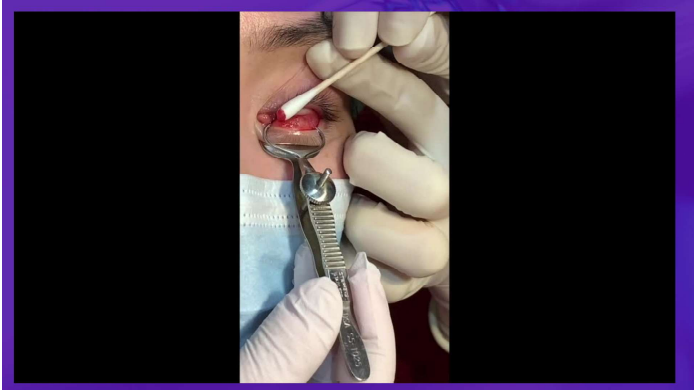
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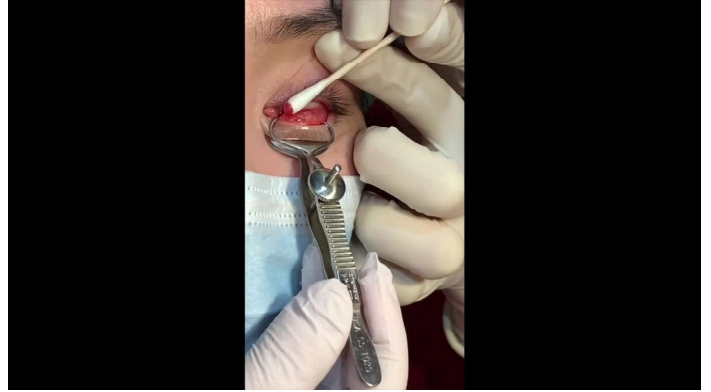
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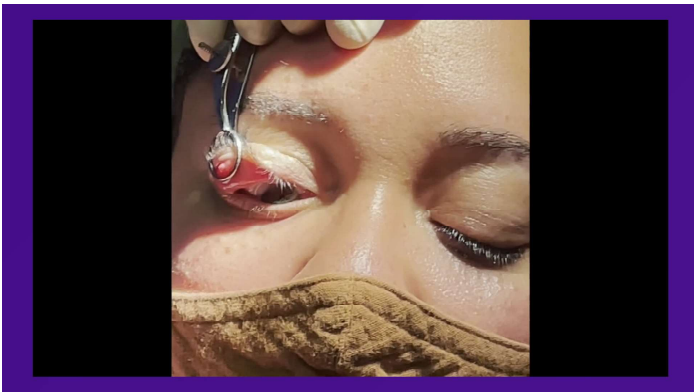
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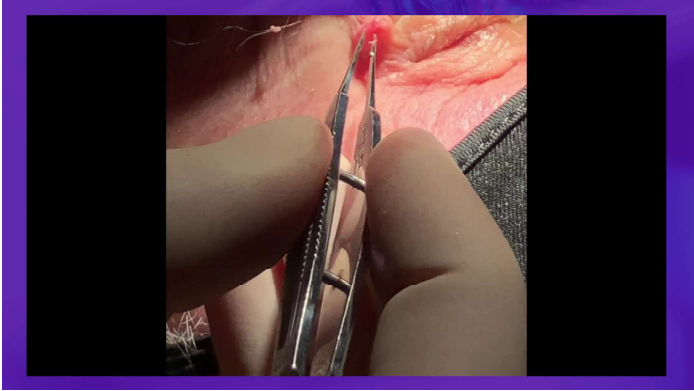
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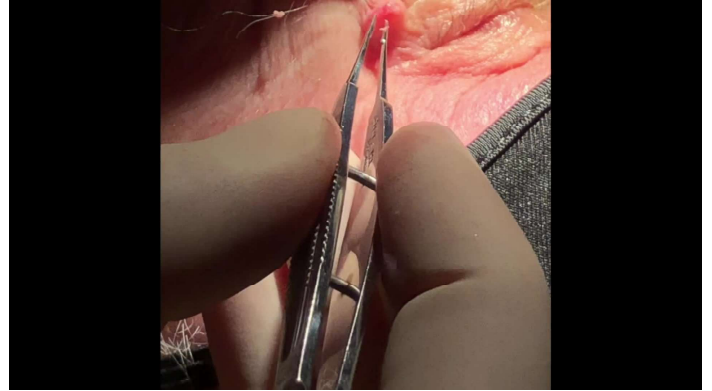
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Surgery for the Optometric Physician

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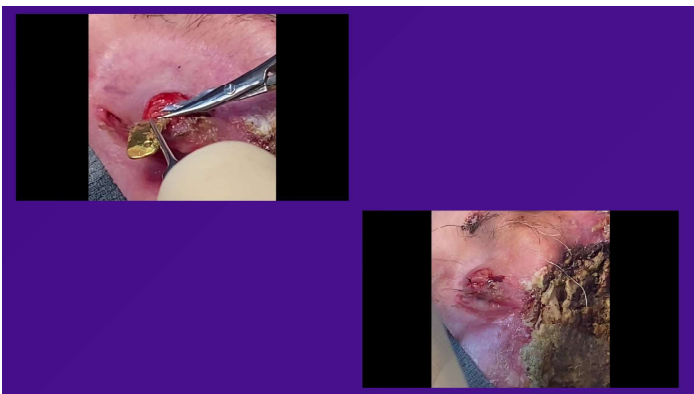
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- Thermoablation for Trichiasis
- Intracameral Injections
- Everting Sutures
- Subconjunctival Injections

75.

Let's get it out...

A composite image featuring a patient's face with a large, dark, crusted lesion on the right eye. An inset shows a close-up of the surgical site where the lesion is being removed. A purple circle with the text "Let's get it out..." is overlaid on the right side.

76.



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Questions?

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80.

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81.