The Expanding Optometric Scope:
Minor Surgical Procedures
Needles, Blades and Radio - Waves

Jason Duncan, OD, FAAO
Diplomate, American Board of Optometry
Associate Professor, Southern College of Optometry

The Way We Were
1045-02.12 PRIMARY EYE CARE PROCEDURES. For the
purpose of 1993 Public Acts Chapter 295
• The performance of primary eye care procedures rational to the
treatment of conditions or diseases of the eye or eyelid is
determined by the board to be those procedures that could be
performed in the optometrist’s office or other health care facilities
that would require no more than a topical anesthetic. Laser
surgery and radial keratotomy are excluded.
• Authority: T.C.A. §§4-5-202, 4-5-204, 63-8-12, and Public
• History: Original rule filed February 14, 1993; effective April

The New Style
• The use of a local anesthetic in conjunction with the primary care
treatment of an eyelid lesion; provided, however, no optometrist
shall use a local anesthetic for this purpose unless that optometrist
has met the certification requirements set forth in 63-8-112(4) and
in the rules of the board of optometry for the administration of
pharmaceutical agents in the performance of primary eye care
procedures.
• Nothing in this subdivision shall be construed as allowing an
optometrist to perform any reconstructive surgical procedure on
the eyelid.
• Nothing in this subdivision shall be construed as allowing an
optometrist to perform any procedure not approved by the board
of optometry prior to the enactment of this subdivision.
• An optometrist who uses a local anesthetic in the
manner allowed by this subsection shall provide to the
board of optometry proof that the optometrist
has current CPR certification by an organization
approved by the board; provide, that the optometrist
may meet this requirement by providing proof to the
board that another person who has current CPR
certification will be present in the office of the
optometrist at all times that a local anesthetic is used
by the optometrist in conjunction with the treatment
of an eyelid lesion.
• Compliance with this provision shall also require that
the optometrist maintain in the optometrist’s office
an AED at all times that a local anesthetic is
administered by the optometrist.

Always Get an Informed Consent
• Description of the diagnosis
• Description of all available management options
• Description of risks (with likelihood of
occurrence)
• Description of potential benefits
• State who will perform the procedure

Always Ask About Allergies!
OSHA in 5 Slides...

1. Standard Precautions
   - Developed by the CDC and accepted by OSHA
   - All blood, body fluids, secretions, excretions, mucous membranes, non-intact skin and soiled items are potentially infectious
     - Excludes sweat

2. Personal Protective Equipment
   - Specialized clothing or equipment worn by an employee for protection against a hazard

3. Latex?
   - Nitrile?
   - Neoprene?
   - Vinyl?
   - Powdered?
   - Sterile?

4. Sharps
   - Any items capable of piercing skin
   - Must be placed in OSHA compliant sharps container
     - Closeable, puncture-resistant, leak-proof on sides and bottom
     - Accessible, maintained upright, and not allowed to overfill
     - Labeled or color coded
     - Colored red/labeled with the biohazard symbol
     - Labeled in fluorescent orange/orange-red with lettering and symbols in contrasting color

5. Biohazard/Biomedical Waste
   - Regulated wastes, other than sharps, that contain blood, fluid, or tissue which may transmit disease must be disposed of in red biohazard bags

Be Prepared

- Defibrillator
- Breathing equipment/air supplies
- Emergency drugs
- IV supplies and tubing
Quick Needle Review...

Gauges

- Easiest to withdraw medications from vials with smaller gauge needles (larger lumens)
- 20g easier to draw with than 27g


Safety

http://www.bd.com/hypodermic/products/integra

My Weapon of Choice


The Draw
Types of Injections

- Intradermal
- Infiltrative/Subcutaneous
- Intraliesional
- Subconjunctival
- Intramuscular
- Intravenous
  - Requires the most training with regard to technique
  - Fastest acting delivery method
- Retrobulbar

Infiltrative/Subcutaneous Injections

- Focal subcutaneous infiltration of the eyelid
  - Shallow injection into loose connective tissue
- Use of local anesthetic to block impulses of the nerves
- 25 – 27 gauge needle

Infiltrative/Subcutaneous Injections: Medications

<table>
<thead>
<tr>
<th>Anesthetic</th>
<th>Equivalent concentration</th>
<th>Onset (minutes)</th>
<th>Duration (hours)</th>
<th>Maximal dose (mg per kg)</th>
<th>Maximal dose (ml per 70 kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lidocaine</td>
<td>1% or 2%</td>
<td>&lt;2</td>
<td>1.5 to 2</td>
<td>4 mg per kg, not to exceed 280 mg</td>
<td>48 mg (2%) 4 mg (2%)</td>
</tr>
</tbody>
</table>
| Lidocaine with epinephrine | 1% or 2% | 1:200,000 | 1:20,000,000 epinephrine | <2 | 2 to 6 | 7 mg per kg, not to exceed 500 mg | Based on Table from Achar S and Kundu S. Principle of office anesthesia: part I. Infiltrative anesthesia. Am Fam Physician. 2002 Jul 1;66(1):
Potential Adverse Effects

- Contraindicated in patients with a known history of hypersensitivity to local anesthetics of the amide type.
- CNS manifestations may be characterized by lightheadedness, nervousness, apprehension, euphoria, confusion, dizziness, drowsiness, tinnitus, blurred or double vision, vomiting, sensations of heat, cold or numbness, twitching, tremors, convulsions, unconsciousness, respiratory depression and arrest.
- Drowsiness following the administration of lidocaine HCl is usually an early sign of a high blood level of the drug and may occur as a consequence of rapid absorption.

Potential Adverse Effects

- Cardiovascular manifestations are usually depressant and are characterized by bradycardia, hypotension, and cardiovascular collapse, which may lead to cardiac arrest.
- The administration of local anesthetic solutions containing epinephrine or norepinephrine to patients receiving monoamine oxidase inhibitors or tricyclic antidepressants may produce severe, prolonged hypertension.
- Concurrent administration of vasopressor drugs with epinephrine is CI.
- The intramuscular injection of lidocaine HCl may result in an increase in creatin phosphokinase levels.

Infiltrative/Subcutaneous Injections: Technique

- 1 ml syringe
- 27g, ½ inch needle
- Asepsis
- Medication draw
- Pull skin slightly taut
- Introduce the needle, bevel up
- Inject the medication
- Apply pressure post – injection

Papilloma

Chalazion

Epidermoid Cysts

Photos: Jason Duncan, OD, FAAO
Chalazion

Epidermoid Cyst

Hidrocystoma

Cyst of Zeiss

Conjunctival Lymphangiectasia

Conjunctival Concretions
Infiltrative/Subcutaneous Injections: When not to inject…

…nor this.

Malignancies

• Typical signs of malignancy?
  – Ulceration
  – Color change
  – Size change

• Chalazia recurring in the same location should be suspected as being: SEBACEOUS CELL CARCINOMA

• BCC is most common eyelid malignancy while squamous cell carcinoma is more invasive

Malignancies

BCC

SqCC

SCC
Radiofrequency Basics

- **Electrosurgery** – passes high frequency current through tissue, using the tissue as the heating element
- Radiofrequency Surgery
- Cell-specific interaction enables extremely precise dissection with surrounding tissue preservation
- Electric field causes vibration of water molecules in tissue
  - Higher power = more violent vibration
  - Vibration causes heat buildup between molecules
  - Once enough heat, water vaporizes to steam, which
    - Depending on rate of heating, either:
      - Explodes the cell = CUT
      - Desiccates (dries) the cell = COAG

Radiofrequency Basics

- The radiofrequency electrode does not provide resistance, & it remains cold. The tissue provides the resistance.
- Incision without applying pressure
  - Simultaneous hemostasis
  - Artifact reduction in biopsy vs. electrocautery
  - Ability to bend or shape the cutting electrode for anatomical variation or working in cavities
  - Produces scarring ≤ scalpel or laser incisions
Radiofrequency Basics

- Precision cutting with minimal applied pressure
- Versatility for both surgical & non-ablative procedures.
- Minimal lateral heat, minimal charring effect
- Allows for readable histological results
- Provides a clear & improved view of the operative site
- Reduces surgical time vs. traditional scalpel surgery
- Minimal (if any) postoperative pain, bruising, edema

Radiofrequency Basics

- Cut
  - 90% cut and 10% coagulation
  - Micro-smooth cutting and negligible lateral heat
- Cut/Coag
  - 50% each cut and coagulation
  - Cutting with simultaneous hemostasis
- Coag
  - 10% cut and 90% coagulation
  - Optimal for subcutaneous tissue dissection with maximum hemostatic control
- Fulguration
  - Tissue destruction

Radiofrequency Basics

Papilloma Surgery Equipment

Photo: Jason Duncan, OD, FAAO

Photo: Jason Duncan, OD, FAAO
Papilloma Excision Coding and Billing

- Benign neoplasm of skin of right eye, including canthus
  - D23.11

- Benign neoplasm of skin of left eye, including canthus
  - D23.12

Papilloma Coding and Billing

- External photography with interpretation and report for documentation of medical progress
  - 92285
    - 18.97
    - 20.72

- Excision of eyelid lesion (except chalazion) without closure or with simple direct closure
  - 67840
    - 235.99
    - 279.67

- Removal of skin tags, multiple fibrocutaneous tags, any area: up to and including 15 lesions
  - 11200
    - 82.54
    - 90.17

1144x and 1164x Codes

- 11440/11640 (excision, other benign lesion [unless listed elsewhere], face, ears, eyelids, nose, lips, mucous membrane; lesion diameter 0.5 cm or less)
  - 118.65/203.66
- 11441/11641 (lesion diameter 0.6 – 1.0 cm)
  - 170.73/242.70
- 11442/11642 (lesion diameter 1.1 – 2.0 cm)
  - 191.05/276.66
- 11443/11643 (lesion diameter 2.1 – 3.0 cm)
  - 228.16/326.59
- 11444/11644 (lesion diameter 3.1 – 4.0 cm)
  - 287.31/402.44
- 11446/11646 (lesion diameter over 4 cm)
  - 399.54/526.57

Infiltrative Injections: Potential Complications

Photos: Jason Duncan, OD, FAAO

Epidermoid Cysts

Photos: Jason Duncan, OD, FAAO
Epidermoid Cyst

- 67840
  - 109.41
  - 283.22
- 10060 (Incision and drainage of abscess, carbuncle, suppurative hidradenitis, cutaneous/subcutaneous abscess, cyst, furuncle, or paronychia); single or single
  - 121.87
- 10061 (complicated or multiple)
  - 231.50
  - 211.90
- 10160 (puncture aspiration of abscess, hematoma, bulla, or cyst)
  - 121.20
  - 132.41

Chalazion

- Treatment Options
  - Observation
  - With heat
  - With medication
    - Oral medication
    - Topical medication
  - Intralesional Injection
  - Incision and Drainage

Chalazion Surgical Management

Incision and Drainage

Chalazion Incision and Drainage: Equipment

Chalazion Anesthesia
Chalazion
Incision and Drainage

Chalazion Before and After

Chalazion Complication

Chalazion Coding and Billing

- Right upper eyelid
  - H00.11
- Right lower eyelid
  - H00.12
- Left upper eyelid
  - H00.14
- Left lower eyelid
  - H00.15

Chalazion Coding and Billing

- Excision of chalazion; single
  - 67800
    - 119.35
    - 130.39
- Excision of chalazion; multiple, same lid
  - 67801
    - 152.90
    - 167.05
- 67800-50 (single, different lids)
- Excision of chalazion; multiple, different lids
  - 67805
    - 189.64
    - 207.19

Intralesional Injections

- Injecting medication directly into the lesion
  - Chalazion
  - Capillary hemangioma
  - Keloid scar
Intralesional Injections

- Administer topical anesthetic
- Apply chalazion clamp q
- Use 27 gauge, ½ inch needle
- Insert needle directly into center of lesion
- Inject contents of syringe (.1cc-.2cc) & remove needle

Rule of Sixes
- If the chalazion is smaller than 6 mm and/or less than 6 months in duration, there is a 60% chance that the lesion will positively respond (60% reduction) to an intralesional steroid injection
  - Inject ~0.1cc

Intralesional Injections: Medications

Intralesional Injections: Technique Review

Intralesional Injections: Kenalog Risks

- Pain on injection
- Depigmentation of the lid
- Delayed wound healing
- Temporary ptosis

Intralesional Injection: Coding and Billing

- Chalazion intralesional injection
  - 11900
  - 63.00
  - 57.71
Hidrocystoma Incision and Drainage or Excision and Drainage?

Hidrocystoma Before and After

Hidrocystoma
Coding and Billing

- Incision and drainage of abscess (e.g., carbuncle, suppurative hidradenitis, cutaneous or subcutaneous abscess, cyst, furuncle, or paronychia); simple or single
  - 10060
    • 110.19
    • 120.38
- Incision and drainage of abscess; complicated or multiple
  - 10061
    • 194.03
    • 211.98
- You could also consider 10160 (puncture aspiration of abscess, hematoma, bulla, or cyst).
  - 121.20
  - 132.41

Cyst of Zeiss

- Cysts of right upper lid
  - H02.821
- Cysts of right lower lid
  - H02.822
- Cysts of left upper lid
  - H02.824
- Cysts of left lower lid
  - H02.825

Cyst of Zeiss
Coding and Billing

- 10060, incision and drainage of abscess (e.g., carbuncle, suppurative hidradenitis, cutaneous or subcutaneous abscess, cyst, furuncle, or paronychia); simple or single
  • 110.19
  • 120.38
- 10061, incision and drainage of abscess; complicated or multiple
  • 194.03
  • 211.98
- You could also consider 10160 (puncture aspiration of abscess, hematoma, bulla, or cyst).
  • 121.20
  • 132.41
Conjunctival Lymphangiectasia Coding and Billing

• Right eye
  – H11.441
• Left eye
  – H11.442
• Bilateral
  – H11.443

Conjunctival Lymphangiectasia Coding and Billing

• Incision and drainage procedures of the conjunctiva
  – 68020
  • 112.92
  • 123.37

Conjunctival Concretion Removal Coding and Billing

• Conjunctival concretions
  – Right Eye
    • H11.121
  – Left Eye
    • H11.122
  – Both eyes
    • H11.123
• Removal FB, conjunctiva, embedded
  – 65210
  • 63.80
  • 69.70

Subconjunctival Injections

• Refractory uveitis
• Non – compliance
• CME
  – Deep subconjunctival/sub-Tenon's
• 1 ml syringe
• 27g, ½ inch needle
• Instill anesthetic
• ?Brimonidine or Phenylephrine
• Tent vs inferior fornix
• Inject medication forming a bleb within the subconjunctival space
Subconjunctival Injections: Equipment

Subconjunctival Injections: Medications

Potential Complications

- Hemorrhage
- Increased IOP
- Conjunctival necrosis
- Globe perforation
- Cataract

Subconjunctival Billing and Coding

- Subconjunctival injection
  - 68200
  - 38.54
  - 42.10

Intramuscular Injections

- Injection of medication directly into muscle
- Faster rate of absorption
- Common sites
  - Deltoid
  - Ventrogluteal
  - Vastus lateralis
  - Dorsogluteal

Smith et al., 2000, p. 387
**Intramuscular Injections**

- Proper asepsis
- Spread skin of the administration site taut between thumb and forefinger of your “other” hand
- Insert needle decidedly at 90 degree angle and inject the medication
- Withdraw the needle and hold pressure with gauze

- 1 – 3 cc syringe
- 20 – 25g needle
- Needle 5/8 – 1.5 inch long
  - Under 130 lbs
    - 5/8 – 1”
    - 130 – 152 lbs
    - 1”
    - 152 – 260 lbs
    - 1.5”
    - Over 260 lbs
    - 1.5”

**IVFA**

- NaFl
  - Biological dye
  - Water soluble
  - Adjusted to pH of 8+
  - Ideal for angiography

- Prepare IV tray.
- Wash hands and don Gloves.
- Advance infusion line into vein (bevel up) watching for blood return.
- Remove tourniquet.
- Attach syringe.
- Inject medication.
- Remove needle and apply gauze.
- Inspect injection site and apply bandage.
- Discard gloves/Waste
- Check vitals
IVFA Complications

- Nausea
- Vomiting
- Pruritis
- Urticaria
- Anaphylaxis
- Syncope
- Tachycardia
- Extravasation
- Death

Fluorescein Financials

- 92235
  - 97.57
  - 106.59

Intravitreal Injections

- Injection of medication into the vitreous cavity
  - Anti – VEGF therapy
  - CSME
  - Endophthalmitis
- Injection site is 3.5 – 4 mm inferior temporal or inferior nasal to the limbus
- Behind the lens
- 30g, 0.5” needle

Intravitreal Complications

- Common
  - Conjunctival hemorrhage
  - Retinal hemorrhage
  - Vitreous detachment and floaters
  - Pain and irritation
  - Foreign body sensation
- Rare
  - Thromboembolism
  - Inflammation and increased IOP
  - CVA
  - Endophthalmitis
  - Cataract
  - Retinal detachment

Intravitreal $$

- 67028
  - 96.72
  - 105.66

Retrobulbar Injections
Thank ya. Thank ya very much

- jduncan@sco.edu