Top 10 Cosmetic Procedure Complications and How to Fix Them

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DISCLOSURES

• Dr. Chapas: Consults for Solta, Syneron, Allergan, Galderma, Merz, DUSA, L’Oreal Investigator for Watson, DUSA, Restorsea, Alastin, Endymed, Syneron, Galderma, Athenex, SkinCeuticals, Dr. Rogers Restore, Endo Pharmaceuticals, Inc.

• Dr. Chwalek: Consults for Merz
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Violations of this policy will result in removal from the session and possible revocation of meeting registration.
Session directors will be closely monitoring such occurrences.

FOTOGRAFIA E FILMANDO SÃO ESTRITAMENTE PROIBIDOS EM TODAS AS SESSÕES EDUCACIONAIS

TELEFONES CELULARES DEVEM SER COLOCADOS EM VIBRAR OU DESLIGADOS

Violações desta política resultará na remoção de sessão e possível revogação do registo da reunião.
Diretores de sessão irão acompanhar de perto tais ocorrências.
GOALS

• Increasing popularity of cosmetic dermatologic procedures also increases the greater number of complications from these procedures.

• As dermatologists we must:
  - Take measures to avoid these complications
  - Prompt recognition when they happen
  - Treat effectively to minimize long term sequelae
TOP 10 COSMETIC PROCEDURE COMPLICATIONS

INJECTABLES
- BRUIISING
- EYELID/EYEBROW PTOSIS
- THE “SPOCK”
- LUMPS AND BUMPS
- VASCULAR OCCLUSION

LASER
- BURNS
- INFECTIONS
- PARADOXICAL REACTIONS
- OCCULAR COMPLICATIONS
- BODY CONTOURING IRREGULARITIES
Post-procedure Ecchymoses

- Reported in up to 68% of injectable filler treatments\(^1\)

- Always occur:
  - At the most inconvenient time
  - To family members
  - Staff members
  - Physician patients

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BRUISE PREVENTION

- AVOID for 2 weeks prior to injections: NSAIDS, Vitamin E, Omega 3-fatty acids, gingko biloba, ginseng, or garlic and alcohol. **DO NOT STOP ANTICOAGULANTS, ASA OR ANTIPLATELET THERAPY FOR COSMETIC PROCEDURES**

- Injections techniques: vein light, blunt tip cannula, anterograde injections, slow flow with smaller alliquots

- No controlled clinical studies have shown a benefit to oral arnica or bromelain in bruise prevention prior to facial injections
Pulsed Dye Laser (PDL) Can Reduce Bruised Appearance

- **DeFatta et al (2009)**
  - 20 patients s/p cosmetic surgical facial procedures treated POD 5-6 with PDL settings: 595nm, 10 mm spot size, 6 J/cm², 6 ms, cryo spray 30ms, 20 ms prior to pulse. 3 passes.
  - 63% improvement within 48-72 hour later

- **Karen et al (2010)**
  - 10 adults with traumatic forearm bruises treated 2-3 days later PDL settings: 595nm, 10 mm spot size, 7.5 J/cm², 6 ms, cryo spray 30ms, 20 ms prior to pulse.
  - 62% improvement at 24 hrs, 76% improvement at 48 hours

Healing Phases of Bruises

- **Extravasated Blood Cells (OxyHb, Red)**
  - Immediate – Few hours
  - PDL Tx

- **Extravasated Blood Cells (deoxyHb, Blue)**
  - 2-4 days
  - PDL Tx

- **Cell breakdown (metHb, Purple-Black)**
  - 2-5 days
  - PDL Tx

- **Further Decomposition (Verdin, Green)**
  - 5-7 days
  - PDL Tx

- **Further Decomposition (Bilirubin, Yellow)**
  - 7-10 days
  - PDL Tx

- **Denatured (colorless) Erythematous (Pink-red)**
  - 3-7 days Post-Tx
  - PDL Tx (Karen’s study)

- **Fully Cleared**
  - 2-4 Weeks
  - PDL Tx (Defatta’s Study)

- **Natural Healing**

Karen’s study

DeFatta’s Study
Don’t Make a Bad Situation Worse

- PDL is not without risks

- Levine and Geronemus (1995) reviewed 500 cases of PDL treatment of vascular lesions and found:
  - 0.1% atrophic scarring
  - 0.04% dermatitis
  - 1% hyperpigmentation
  - 2.6% transient hypopigmentation

SUMMARY

- Post-procedure bruising can be treated from 2 hours to 6 days post procedure.
- Consider depth of bruising as superficial bruising can be treated earlier than deep bruising.
- Use conservative settings on dark or concentrated bruises to avoid complications.
NEUROMODULATOR COMPLICATIONS
LID PTOSIS

Backroom Botox made my face grotesque!
By Mackenzie Dawson October 12, 2015

Adverse Events: eyelid ptosis (1.8%), eyelid sensory disorder (2.5%)
LID PTOSIS

- **WHY:** Neuromodulator diffusion after placement too inferiorly within the corrugator.
  - Weakens Muller muscle and the levator palpebrae superioris that raises the lid.
  - PREVENTION: Keep injections 1 cm above orbital rim.
    - Evaluate forehead compensation for lid/brow laxity prior to treatment.
  - TREATMENT: apraclonidine (0.5%), naphazoline, phenylephrine 2.5%, all alpha adrenergic agonist ophthalmic eye drops stimulate the Muller’s muscle to elevate the lid. Dose is 2 drops 2-3 x/ day to affected lid until ptosis resolves. **HAVE ON HAND!**
BROW PTOSIS

- The dreaded “HEAVY BROW”

**WHY:**
- Frontalis is the only brow elevator
  - Too high of a dose injection too low on corrugators or frontalis
  - Diffusion to frontalis when treating corrugator

**PREVENTION:**
- Keep corrugator injections small and >1cm above orbital rim and medial to mid-pupillary line and frontalis > 2 cm above mid-pupillary line.
- NO massage
- Consider 2 stage procedure

**TREATMENT:**
- Time
“SPOCK” BROW

- Mephisto brow or “Dr. Spock” brow occurs when the patient activates the frontalis and causes lateral elevation of the brow. Treat with 1-2 units of Botox/Dysport at peak of brow where lines appear strongest.
DERMAL FILLER COMPLICATIONS
LUMP AND BUMPS

- NONINFLAMMATORY
  - POOR TECHNIQUE
    - Usually present within days or weeks of injection
    - Pea size or smaller
    - Single or few
    - Eye and lips (filler migration)
    - Too much filler
    - Too superficial
    - Wrong product

- INFLAMMATORY
  - Infectious
    - Acute: Staph, Strep, HSV
    - Late onset: *M. chelonae*
  - Foreign Body/Chronic
    - Granulomatous
    - Biofilms
    - Reactions can be localized or systemic
Inflammatory Lumps and Bumps

- **PREVENTION**

SKIN PREP:
- Remove makeup and cleanse face
- Etoh, Hypochlorous acid\(^1\)

Rx PROPHYLAXIS: valcyclovir

Treatment: Avoid infected tissue

Post tx AVOID: Facial trauma, dental surgery, sinus surgery immediately after injection

Inflammatory Lumps and Bumps: Dx/Tx

- If fluctuant and acute:
  - I and D, Cx for bacteria and fungus.
  - Start 1\textsuperscript{st} gen cephalosporin or trimethoprim-sulfamethoxazole if MRSA suspected\textsuperscript{1}
  - No hyaluronidase

- If inert and delayed\textsuperscript{2}:
  - Hyaluronidase injection
  - 2 week trial of dual antibiotic therapy: 3\textsuperscript{rd} generation macrolide and quinolone
  - If no response: monthly intralesional corticosteroids/5 fluorouracil
  - Final option: surgical excision-tissue for PCR/FISH

Hyaluronidase (HYAL)

- Naturally occurring enzyme that degrades HA
- Hydrolyzes HA by splitting the β1,4-glucosaminidic bond between C1 of the glucosamine moiety and the C4 of the glucuronic acid.

Hyaluronic acid
## Commercially Available Hyaluronidase

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SOURCE</th>
<th>PRESERVATIVE</th>
<th>OTHER</th>
<th>SKIN TESTING</th>
<th>FORMULATION</th>
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</thead>
<tbody>
<tr>
<td>Amphadase</td>
<td>Bovine</td>
<td>Thimerosal</td>
<td></td>
<td>Yes</td>
<td>Solution 150 Units/mL</td>
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<tr>
<td>Vitrase</td>
<td>Ovine</td>
<td>None</td>
<td>Lactose</td>
<td>Yes</td>
<td>Solution 150 Units/mL</td>
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<tr>
<td>Hylenex</td>
<td>Recombinant human DNA</td>
<td>None</td>
<td>Albumin</td>
<td>Yes</td>
<td>Solution 200 Units/mL</td>
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Adverse Effects of Hyaluronidase

- Local site reactions are most common.
- Fewer than 0.1% have urticaria or angioedema.
- Anaphylaxis has never been reported after subepidermal injection.
Skin Testing

- Amphadase (bovine), Vitrase (ovine), Hylenex:
  - 0.02mL (3 Units of a 150 Unit/mL solution) intradermally
  - positive reaction within 5 minutes
  - persists for 20 to 30 minutes with itching

- Caution in patients with history of allergy to bee or vespid stings.
  - 1 of 8 biologically active components in bee venom.
Technique for Non-urgent Dissolution

- Perform skin testing
- Inject 5-10 Units of HYAL for each 0.1 ml of HA. Longer lasting, more cross-linked fillers may require more.
- Significant reduction in 24 hours but may take up to 2 weeks\(^1\).
- Endogenous HA will regenerate rapidly and patient should not be concerned

Sodium Thiosulfate (STS) and Calcium Hydroxypatite (CaHA)

- 12 porcine samples injected with 0.4-0.8 mL CAHA, then randomized to receive 0.2 ml (STS 12.5g/50ml) or 1-2 g topical NA metabisulfite.

- 4 mm punch bxs performed 24 hrs post tx

Microscopic findings 24 hours after injection of porcine skin with calcium hydroxylapatite (CaHA) followed by intralesional sodium thiosulfate (STS) or topical sodium metabisulfite (SMB). (A) Control, CaHA injection only (note the bright purple deposits of CaHA) ×10 magnification. (B) Calcium hydroxylapatite plus intralesional STS, no CaHA is visible, ×10 magnification. (C) Calcium hydroxylapatite plus topical SMB, some CaHA remains visible, ×20 magnification. (D) Calcium hydroxylapatite plus intralesional STS and topical SMB, no CaHA is visible, ×20 magnification. All sections were stained with hematoxylin and eosin.

<table>
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<tr>
<th>TABLE 1. Percentage of Calcium Hydroxylapatite (CaHA) Degraded 24 hours After Treatment With Sodium Thiosulfate (STS), Sodium Metabisulfite (SMB), or a Combination of the 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
</tr>
<tr>
<td>Percentage of CaHA degraded 24 h after treatment</td>
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</table>

Robinson, Deanne M.
Dermatologic Surgery44:S5-S9, November 2018
VASCULAR OCCLUSION

- ARTERIAL OCCLUSION
  - Anterograde: pain, blanching distal to injection site
  - Retrograde followed by anterograde
    Dizziness, blindness, CVA, pain

- VENOUS OCCLUSION
  - livedo, lack of pain

Beleznay et al. Dermatol Surg 2015;41:1097-1117

PREVENTION

- Know your anatomy and danger zones. Greatest risk near the angular artery and supratrochlear artery
- Large bore cannulas
- Aspiration
- Slow retrograde injections
- Avoid volumes larger than 0.1 ml unless in avascular area such as bone
TREATMENT

- Train staff to recognize warning signs:
  - Skin blanching
  - Livedo
  - **Pain**
  - Blanchable pupura
  - Skin breakdown

- When treated within 48 hours, better chance of full resolution
Why the lip??

- “Inferior Labial artery follows a tortuous route”
- It’s found:
  - 77% in the submucosa
  - 18% intramuscular
  - 2% subcutaneous

HA Retinal Artery Occlusion

Injection site location in post HA filler vision loss
- Nose = 18
- Glabella = 05
- Glabella + Nose = 07
- Glabella + NLF = 01
- Glabella + Cheek = 01
- Forehead = 05
- NLF = 02
- Upper Eyelid = 01
- Eyebrow = 01
- Periocular = 01
- Temple = 01
- Mid Face = 01
Total Cases = 44

Restoration of Visual Loss with Retrobulbar Hyaluronidase Injection After HA Filler

**Filler First Aid Protocol**
Hyaluronidase - Hylenex - this is kept in the small fridge outside of the procedure room, usually 10-20 units per 0.1 cc of hyaluronic acid filler injected, liberal amounts if signs of true vascular occlusion. Even Radiesse can benefit from hyaluronidase if occlusion occurs.
Aspirin 325mg - Have patient chew this or the aspirin may be placed sublingually
Nitropaste gel - apply liberally to the affected area 2 to 3 times daily provided that the patient does not develop symptoms such as headaches or light headedness.
Hot Packs - apply this to the area of decreased blood flow; you may microwave a gel cold pack to warm it.
Massage the area to help promote blood flow.
If the above steps do not show increased signs of blood flow - call and schedule the patient for Hyperbaric treatments: Insert preferred hyperbaric oxygen center Phone

If signs/symptoms of visual changes, ophthalmoplegia, blindness, ocular pain occur (usually immediately), in addition to prior, above measures:
Have staff call ophthalmology: Insert physician and cell phone number or on-call ophthalmology at nearest center with on-call ophthalmology.
Commence hyaluronidase high dose to treatment area.
Retrobulbar hyaluronidase 300-600 units at inferior, lateral orbital rim through orbital septum with 1-1.5 inch 27 gauge needle avoiding globe.
Ocular massage.
Look for neuro symptoms, make stroke team aware if signs/symptoms.
After above measures, expedite to emergency room, the retina can tolerate approximately 90 min of ischemia until damage becomes permanent.

MY TIPS:
- Should be painful, and immediate
- Assess visual acuity by reading material
- Pupil assessment
- Timolol gtts to both eyes
- Bring 2000 Units of HYAL with you to optho specialist
- Massage is firm

Conclusions

- As dermatologists we will likely see and be asked to treat complications from increasingly popular cosmetic procedures.
- Preventing, recognizing and effectively treating this complications are essential to the practice of dermatology.