Trends in Facial Rejuvenation
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The Aging Face: Clues to Facial Aging
• Sun Damage
• Smoking
• Gravity
• Soft tissue aging
• Changes in facial activity and skeletal remodeling

The Aging Face: Characteristic Signs of Facial Aging
• Visibility of tiny blood vessels in the skin
• Visibility of bony landmarks
• Hollowing of the cheek and mouth (loss of fat)
• Descent of facial fat pads
• Thinning lips
• Drooping corners of the mouth
• Drooping of the nasal tip
• Decreased support of the lower third of face

Youthful Brow vs. Aging Brow
Youthful Eyes vs. Aging Eyes
Youthful Lips vs. Aging Lips

Youthful Malar Area vs. Aging Malar Area

Statistical Significance

- Plastic surgery is not merely for a select and wealthy few
- In 2012, in the U.S. alone, 14.6 million cosmetic procedures – both surgical and non-surgical - were performed
- This represents a 446 percent increase since 1997

Statistical Significance cont…

- Approximately 13 million minimally invasive cosmetic procedures which require no surgery were performed in 2012
- The top two most popular non surgical procedures in 2012 were Botox with 6.1 million and Soft Tissue Fillers with 2 million

Botox Overview

- What is Botox?
- History
- Clinical Applications
- Technical Details
- FAQ’s
- Conclusions
What is Botox?

- Botox is diluted Botulinum Toxin Type A, initially used to control spasms of the eye muscles.
- Cosmetically it is used to smooth and eliminate forehead lines, crow’s feet and neck bands by weakening or paralyzing the active muscles responsible for the wrinkles.

History

- Late 1960’s
  - Alan B. Scott & Edward J. Schantz
- 1989: Botulinum Toxin Type A
  - Strabismus & blepharospasm associated with Dystonia
  - Allergan acquires rights: Oculinum® now Botox®

Official clinical indications

- Botox
  - Blepharospasm
  - Strabismus
  - Cervical torticollis
- Botox Cosmetic 4-15-2002
  - Temporary improvement in the appearance of moderate to severe glabellar lines associated with corrugator and/or procerus muscle activity in adult patients <65 years of age.

Important Muscles of the Face

1) Frontalis Muscle: raises the eyebrows
2) Corrugator: draws eyebrow downward and medially
3) Procerus: forms a horizontal crease in the bridge of the nose
4) Orbicularis oculi: closes eyelids, aids passage and drainage of tears
5) Orbicularis oris: narrows mouth orifice, purses lips and puckers lip edges
6) Depressor Anguli Oris: pulls the corners of the mouth down causing marionette folds
7) Platysma: depresses the lower lip and forms ridges in the skin of the neck.
Contraction of the Orbicularis Oculi

Contraction of The Orbicularis Oris

Contraction of the Depressor Anguli Oris

Contraction of the Platysma Muscle

Duration

- Although results may vary, Botox lasts for 3-4 months
- Effects are not immediately seen but occur around 2-5 days after injection
- Repeated injections are recommended at 2 ½ months as muscles begin to recover
- This concept is known as “disuse atrophy”
- Muscle will slowly waste away, allowing for reduced number of injections (after one year)

How is Botox Supplied?

- Botox is supplied in a single 100 unit vial
- Dilutions are physician dependent, however 0.9% sodium chloride is the only recommended diluent
- Reconstituted Botox should be clear, colorless and free of particulate matter
- Unopened Botox should be stored in a refrigerator/freezer for up to 24 months
- Botox should be used within 4 hours of reconstitution
### How is Botox Administered?

- Several tiny injections are administered into the muscles responsible for the wrinkles
- Injections in the forehead require around 8-10 injections
- Injections in the frown lines require around 4-10 injections
- Injections in the crow’s feet require around 3-4 injections on each side
- No anesthesia is required

### Botox: Forehead Wrinkles and Frown Lines

![Forehead Wrinkles and Frown Lines](image)

### Botox: Crow’s Feet

![Crow’s Feet](image)

### Contraindications of Botox

- Proposed injection site infection
- Pregnant or breast feeding patients
- Allergy to eggs or known hypersensitivity to any of the ingredients in the formulation

### Side Effects

- Blepharoptosis
- Nausea
- Localized pain
- Infection
- Inflammation
- Tenderness
- Swelling
- Bleeding
- Severe reactions include anaphylaxis, urticaria, soft tissue edema and dyspnea

### Botox Competitors

- **Dysport** (abobotulinumtoxinA)
  - US FDA approved for cosmetic use 5/2009
  - Used to treat cervical dystonia in adults
  - Used to improve moderate to severe frown lines/glabellar line in adults younger than 65 yrs of age
Dysport Continued
- Lasts approximately 3-4 months
- Each vial contains 300 to 500 units
- Side Effects/Risks similar to Botox

Botox Competitors
- Xeomin (incobotulinumtoxinA)
  - US FDA approved 7/2010 for the treatment of adults with cervical dystonia and blepharospasm
  - Blocks nerve activation in the muscles
  - Not yet approved for cosmetic indications—many physicians use it off-label to treat facial lines treated by Botox and Dysport

Xeomin Continued
- Does not require refrigeration before use
- No additional additives, just botulinum toxin type A
- Side effects/Risks similar to Botox and Dysport

Soft Tissue Fillers
- Hyaluronic Acid (Restylane, Perlane, Juvederm, and Belotero)
- Radiesse
- Sculptra

What is Hyaluronic Acid?
- Hyaluronic Acid - a natural complex sugar found in all living organisms and creates volume and elasticity in the skin

Types of Hyaluronic Acid Fillers
- Restylane
- Perlane
- Juvederm
- Belotero
What is Restylane?
- FDA approved December, 2003
- Safe and natural cosmetic filler that restores volume and fullness to the skin to correct moderate facial wrinkles and nasolabial folds
- Enhancing fullness of the lips
- Non-animal based

How Does Restylane Work?
- Maintains its shape using the body’s own moisture
- Hydrophilic or “water loving”
- As hyaluronic acid degrades, each molecule binds to make water, and over time, the same volume can be maintained with less hyaluronic acid

Duration
- Restylane lasts approximately 4-6 months
- After about 3 weeks, repeat injections are often desired to achieve ideal results

Restylane: Before and After

What is Juvederm?
- FDA approved June 5, 2008
- Injectable hyaluronic acid of non-animal origin used to smooth wrinkles and folds especially around the nose and mouth

Types of Juvederm
- **Juvederm Ultra**- used for fine lines, wrinkles, and lip enhancement
- **Juvederm Ultra Plus**- a thicker substance useful for volume deficiency such as depressions, correction of nasolabial folds and mid-face collapse
Juvederm vs. Restylane

- Juvederm has the highest concentration of hyaluronic acid available in a dermal filler which results in longer duration
- Juvederm contains 24mg of hyaluronic acid per ml, whereas Restylane contains 20 mg of hyaluronic acid per ml

Duration

- Juvederm Ultra lasts approximately 6-9 months
- Juvederm Ultra Plus lasts approximately for one year

What is Perlane?

- Just like Restylane – is a clear gel formulation of hyaluronic acid that is specifically formulated to act like your body’s own hyaluronic acid, adding volume and fullness to skin
- Differs from Restylane primarily b/c of the particle size and depth of the required injection

Perlane Continued

- Used for deeper wrinkles
- Not approved for lip enhancement
- Lasts approximately 6 months

What is Belotero?

- US FDA approved 11/2011
- Used to treat moderate to severe facial wrinkles and folds such as nasolabial folds
- Lasts approximately 9 months

Side Effects of Hyaluronic Acids

- Temporary injection site reaction
- Redness
- Bruising
- Swelling
- Tenderness
- Moderate pain
- Side effects are infrequent and typically resolve within a few days
What is Radiesse?

- **Radiesse** – is a cosmetic dermal filler for moderate facial wrinkles and nasolabial folds
- Made from a completely synthetic compound comprised of microspheres of calcium hydroxylapatite combined in an aqueous gel
- FDA approved December 27, 2006

What is Calcium Hydroxylapatite?

- Normal constituent of bone
- Biosynthetically produced, therefore no skin testing is required

How does Radiesse Work?

- Initial injection causes an inflammatory response and the cellulose gel breaks down
- Cellulose gel is absorbed by the body within 6-8 weeks
- As absorption occurs with the surrounding tissue, new collagen is formed
- Collagen replaces the cellulose gel, and is added to the calcium hydroxylapatite which makes the skin plumper and fuller

Benefits of Radiesse

- Reduces lines between the nose and mouth
- Fills in “smile lines” and “frown lines”
- Diminishes blemishes like acne scars
- Renews fullness in the lips
- Restores the natural contour of the cheeks

Radiesse: Marionette Lines and Drooping Corners of Mouth

Radiesse: Nasolabial Folds
Radiesse: Lip Lines

Duration
• Typically lasts 2-5 years
• Individual results may vary and are often affected by age, skin type, lifestyle, and muscle activity

Radiesse: Nasolabial Folds, Marionette Lines, and Facial Creases

Pearls of how to use Radiesse
• Radiesse does not contain lidocaine, therefore some patients will tolerate numbing with a topical anesthetic followed by ice
• Use a 26 or 27 gauge needle with a threading technique and inject into the deep dermis
• Do not over correct, you can always touch up
• Following injection mold and massage area of injection

Side Effects
• Side Effects are rare but may include:
  – Bruising
  – Skin redness for a few days
  – Palpable firmness at the injection site
  – Since Radiesse is made from the same material as bone, it is visible on x-ray

Sculptra
• US FDA approved 2004
• Made up of poly-L-lactic acid
• Initially designed for the restoration and or correction of facial fat loss in people with HIV
• Is a synthetic and biocompatible material injected below the surface of the skin in area of fat loss
Sculptra Continued
- Visible results appear in the first few treatments
- Typically 3-6 sessions are conducted and additional touch up treatment maybe needed, scheduled 3 weeks apart
- Number of treatment will vary depending on the degree of correction
- Must be premixed 24-48 hours prior to injection

Side Effects of Sculptra
- Injection site discomfort
- Redness
- Bruising
- Tenderness
- Swelling
- Allergic Reaction
- Granulomas

Sculptra Aftercare
- Patient needs to massage the treated area for 5 minutes 5 times daily for 5 days

Complications of Facial Plastic Injectables
- Infection at the injection site
- Risk of clumping due to granular substances
- Acne like eruptions
- Anti-bodies to injectable material – reducing the effectiveness of future injections
- Asymmetry
- Bleeding, Bruising
- Filler material may migrate from original site
- Skin necrosis
- Rash

Nursing Considerations
- Patients on anticoaguants, aspirin, NSAIDS, vitamin E supplements, St John’s Wort, green tea, or any substance that can prolong bleeding, should discontinue use one week prior to injection
- Pregnant/ Nursing mothers not recommended
- Under 18 years of age not recommended
- Use caution in those on immunosuppressive therapy as they may be at increased risk of infection

CO2 Laser Resurfacing
Tough Medicine for Tough Lines
Successful Skin Resurfacing

- Basic Principles
- Initial Consultation
- Operative Technique
- Complications
- Results
- Conclusions

CO2 Laser Resurfacing

- The carbon dioxide laser was one of the earliest gas lasers to be developed (1964) and is still one of the most useful
- Used to resurface skin and treat wrinkles, uneven skin coloration, acne, and other skin disorders
- Co2 laser effects are similar to those of chemical peels and dermabrasions, except the laser removes skin layers by vaporization rather than sanding device.

CO2 Laser Resurfacing

- Uses very short pulsed light or beams that are delivered in a scanning pattern to remove thin layers of skin with minimal heat damage
- Designed to remove surface level and moderately deep lines and wrinkles of the face, neck, chest and hands
- Benefit is minimal burning of surrounding tissue, causing fewer side effects
- Recovery usually about a week

Skin Anatomy

- Epidermis
- Dermis
  - Papillary Dermis
  - Reticular Dermis
    - Upper reticular dermis heals by reorganization
    - Lower reticular dermis heals by scar formation
- Subcutaneous Tissue

Facial Analysis

- Skin Type
- Defect Analysis
- Epidermal & Dermal Thickness
- Patient profile

Fitzpatrick

- 1 very white freckled always burns
- 2 white usually burns
- 3 white to olive sometimes burns
- 4 brown rarely burns
- 5 dark brown very rarely burns
- 6 black never burns
Relative Contraindications

- Hypertrophic Scarring/Keloid Formation
- Hyperpigmentation
- Hypopigmentation
- Fever Blisters-EVER?
- Dermabrasion
- Chemical Peels
- Accutane
- Retin A/ Other
- Prednisone

1 Month Pre-treatment Regimen

- Retinoic Acid bid
  - May apply after 10% AHA if desire increased penetration
  - hydrocortisone 1% if irritated
- Pigment Gel bid
  - 4% hydroquinone, kojic acid
- Topical antioxidant

Perioperative Meds/Instructions

- Famvir 500 tid : begin day before
- Medrol Dose Pack
- Biaxin 500 bid
- Wash face with phisohex in AM
- wear NO MAKE-UP
- review consent/instructions
- Acetone pre-wash

Anesthetic Techniques

- Topical?
- Nerve blocks with 1% lidocaine with epi bicarb mixture
- Perioral done local anesthesia only

Early Complication

- Herpes Simplex Virus
- Staphylococcus Aureus
- Milia
- Candida Infection
- Acne Flares
- Allergic Rxns

Post-Inflammatory Hyperpigmentation

- Allergic Rxns
Post-Inflammatory Hyperpigmentation

Late Complications
- Persistent Erythema
- Hyperpigmentation
- Hypopigmentation
- Scarring
- Persistent Rhytids

Results: periorbital

Results: Perioral

Results: Perioral

Results-full face
**Intense Pulsed Light**

- Commonly abbreviated IPL.
- Focused, broad-spectrum light applied to the surface of the skin by a hand-held wand or an articulated arm.

**IPL**

- Used to treat
  - Sun Damage
  - Acne Rosacea
  - Broken Capillaries
  - Vascular Lesions
  - Pigmented Lesions (freckles, liver spots, birthmarks)
  - Hair Removal (on light to medium skin tones – works best with darker hair)

**Contraindications of IPL**

- Recent waxing
- Contagious skin diseases
- Herpes
- Skin trauma
- Hypertrophic scar
- Skin cancer
- Suntan (real or fake)
- Epilepsy or seizures caused by flashing light
- Breast feeding/Pregnancy
- Photosensitive topicals (Doxycycline, Tetracycline)

**Questions??????**

**Research!!!!!**

- When choosing a plastic surgeon for soft tissue augmentation, remember that the surgeon’s experience and your comfort with him or her are just as important as the final cost!

**In Conclusion…………..**
In Conclusion

References


