

# Hyaluronic Acid Injections: Incorporating Advanced Microinjection Techniques Into Practice

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# Faculty Information

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Dr. Palm has disclosed that she is a consultant for Allergan, BTL, Galderma, ISDIN, Lumenis, Lutronic, and Merz; receives fees for non-CME services from Allergan, BTL, Galderma, Lutronic, and Merz; and conducts contracted research from Allergan, Ampersand, and Galderma.

# Learning Objectives

- Identify optimal application sites for microinjection, including the face and neck
- Outline global best practice for microinjection for optimal results and patient safety

# Physiologic Changes of Aging

Appearance	Physiologic Changes
<ul style="list-style-type: none"> <li>• Thin</li> <li>• Transparent</li> <li>• Dry</li> <li>• Unevenly pigmented</li> <li>• Marked loss of elasticity</li> <li>• Sagging</li> <li>• Wrinkles</li> <li>• Deepening of tissue folds</li> </ul>	<ul style="list-style-type: none"> <li>• Atrophy of the dermal extracellular matrix</li> <li>• Reduction in collagen content → skin volume loss and strength = wrinkles</li> <li>• Shortening and disappearance of elastic fibers and microfibrils = skin laxity</li> <li>• Reduced levels of glycosaminoglycans and proteoglycan macromolecules impact cell signaling and hydration</li> <li>• Extracellular matrix changes trigger cellular aging:               <ul style="list-style-type: none"> <li>• Cell senescence</li> <li>• Increased reactive oxygen species</li> <li>• Up-regulation in proteolytic enzyme production</li> </ul> </li> </ul>

# The Goals of Micro Injections

- Micropuncture injections of small particles of stabilized HA into the dermis of the lower cheeks in 3 monthly sessions significantly<sup>1,2</sup>:
  - Increased skin elasticity
  - Created positive impact on skin surface roughness
  - Enhanced biosynthesis of new dermal compounds
- Field treatment restores extracellular dermal scaffold in a more diffused and homogeneous fashion than localized injections for wrinkles or volume correction<sup>1</sup>
- One monthly treatment followed by 2–3 repetitions is optimal to improve skin quality<sup>1</sup>

# Hyaluronic Acid Benefits

## Hyaluronic Acid

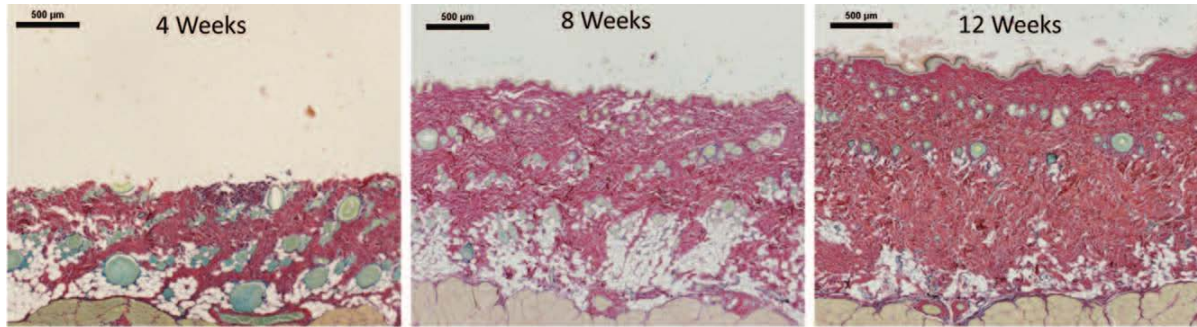
- Naturally occurring substance that helps keep skin plump and hydrated
- Adds volume and fullness
- Enhances synthesis of new dermal compounds
- Effective to
  - plump up thinning lips
  - enhance or fill in shallow areas on the face
  - decrease or remove wrinkles under the eyes
  - fill in or soften the look of recessed scars
  - fill in or soften static wrinkles

Effects last up to 24 months

Most common side effects include:

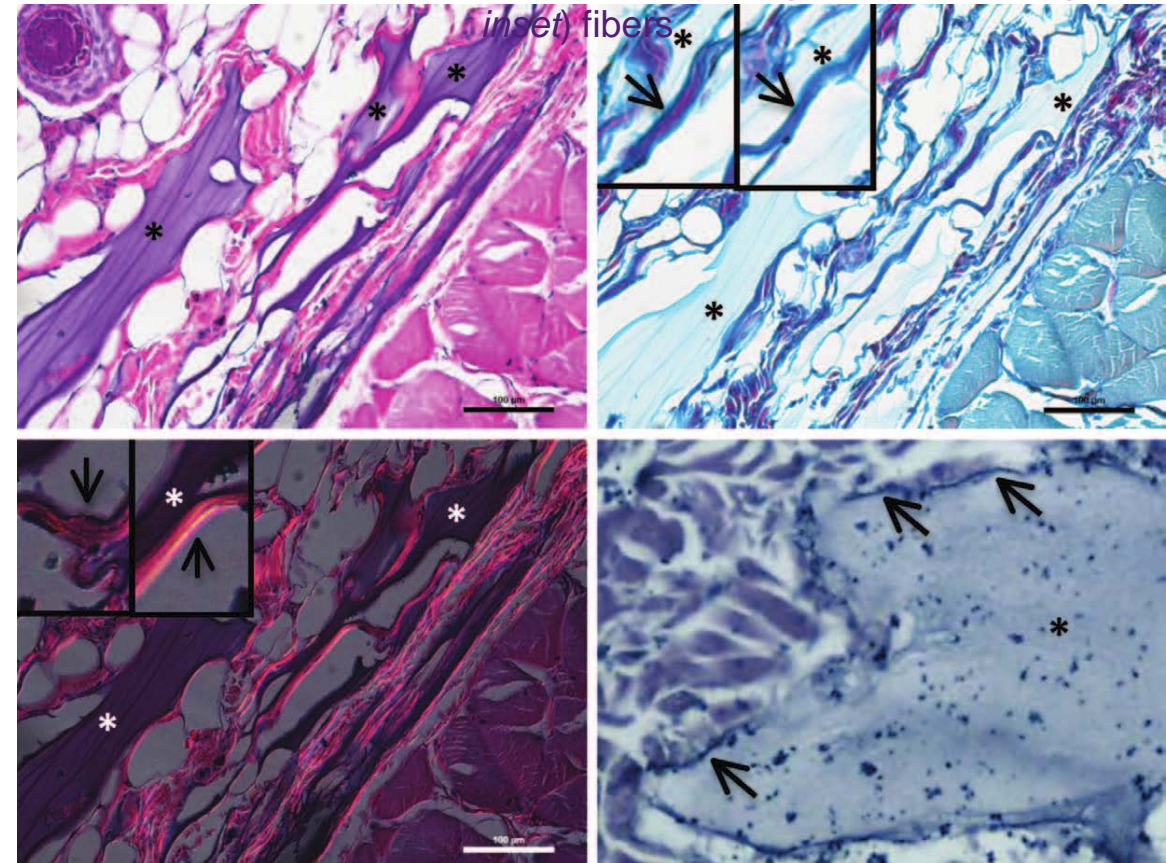
- skin rash, itching, or pimple-like eruptions
- redness, bruising, bleeding, or swelling
- asymmetry, lumps, or overcorrection of wrinkles
- skin damage that causes a wound, infection, or scarring
- blindness or other vision problems
- death of skin cells due to loss of blood flow to the area

# Hyaluronic Acid Fillers Stimulate Cellular and Molecular Changes



Consistent increase in dermal thickness over 12 weeks

Integration of HA-based filler with dermal tissue: mature collagen (*fuchsia; left*) and newly synthesized procollagen (*dark blue; right*) fibers



Organized (right inset) and unorganized, loosely packed (left inset) collagen fibers



# Best Practices for the Micro Injection Treatment Continuum

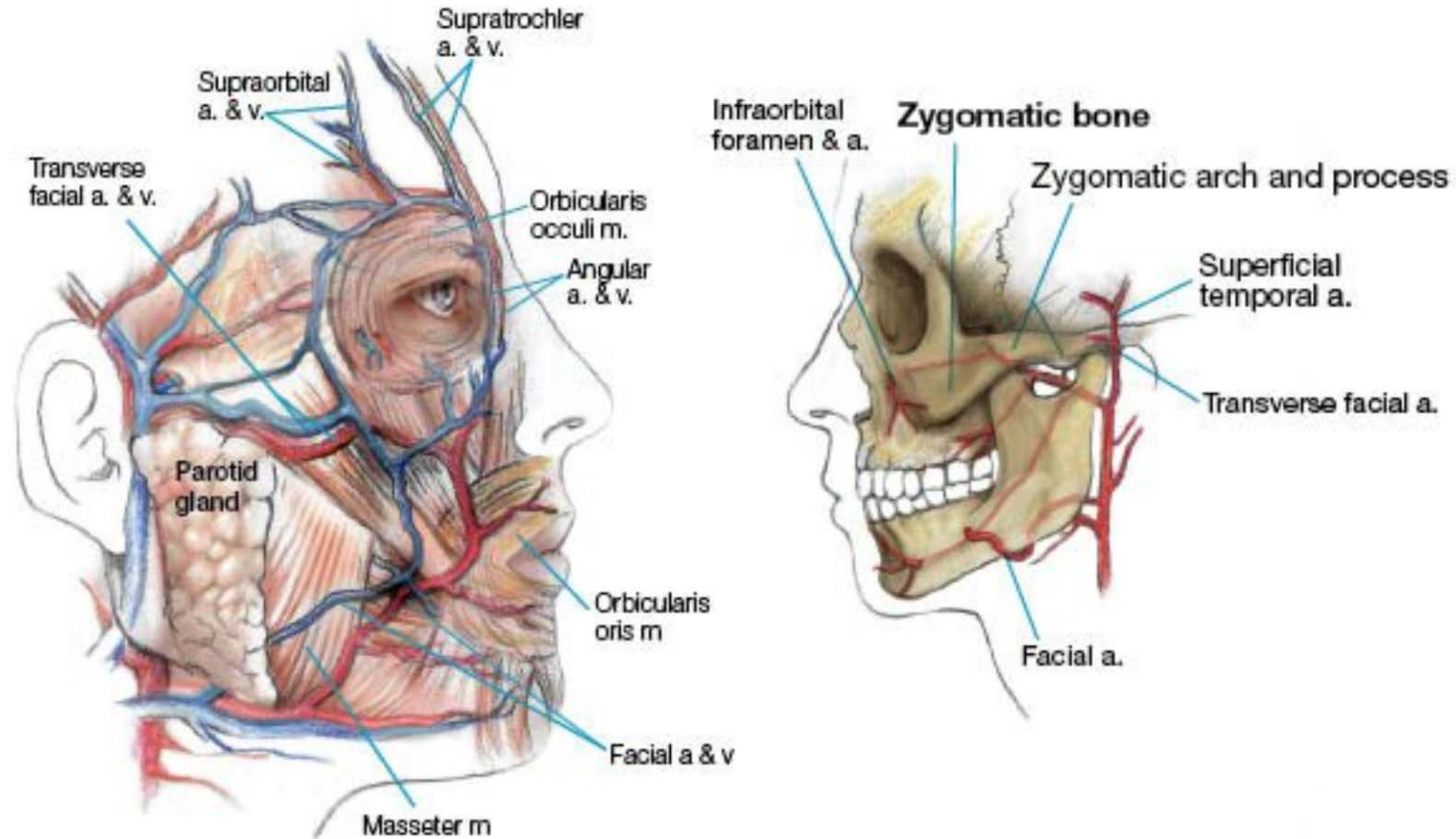
1. Patient assessment
  - a) Facial anatomy
  - b) Anesthesia and sterile measures
2. Product selection
3. Injection technique
4. Preventing and managing adverse events
5. Maintenance plan
6. Useful tools for your practice



# Key to Safety and Balanced Result: Patient Assessment

- Full history of previous cosmetic treatments and procedures: contraindications; allergies; previous complications
- Medical conditions: medications, specifically anti-coagulants & supplements
- Specific attention to:
  - Upper face: local anatomy (arteries, veins, and nerve bundles) critical for minimizing complications
  - Midface: central face at particular risk for blindness and necrosis, especially when injecting near the nose and midcheek (infraorbital artery)
  - Lower face: maintaining balance; anterior view; chin is often neglected, but reshaping the jawline can provide dramatic improvement

## Detailed Knowledge of Facial Anatomy is Important



LENA/Lein Fichtman

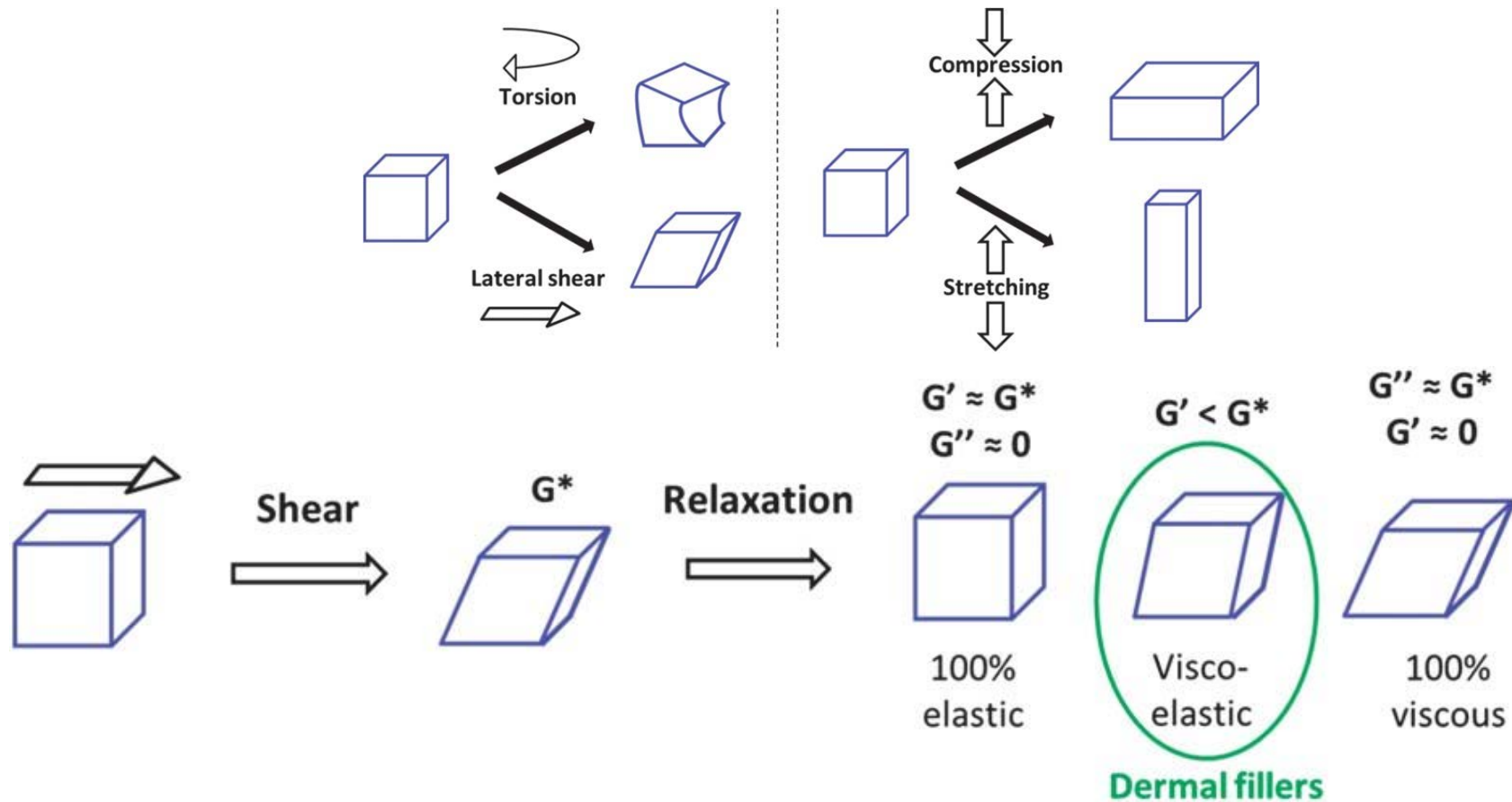
The Aesthetic Channel

# Choosing the Right Product is Critical for Natural Results and Avoiding Complications

- Depends on desired effect and site of injection: facial analysis
- Different agents:
  - Concentration
  - Manufacturing processes (eg, purification)
    - Obtain hyaluronic acid fillers from reputable manufacturers that ensure the quality of source material and practice high manufacturing standards
  - Rheologic & physical properties
    - G' – Hardness of gel
    - Particle vs cohesive gel
    - Concentration
    - Degree of cross-linking

Product	Density	Injection Level	Duration (mos)	FDA-Approved Use	Target Areas
Belotero Balance	Moderate	Superficial dermis	6	Smooth wrinkles, nasolabial folds	NLF, perioral rhytides
Hydrelle (Eleveess)	High	Mid to deep dermis	up to 12	Moderate to severe facial wrinkles	NLF, lip augmentation
Juvéderm Ultra	Moderate	Mid to deep dermis	Up to 12	Moderate to severe wrinkles	Temporal hollowing, NLF
Juvéderm Voluma	High	Deep dermis to suprapariosteal	Up to 24	Cheek augmentation	Cheek augmentation
Juvederm Vollure XC	Balance of gel firmness and low cohesivity	Mid to deep dermis	Up to 18	Moderate to severe facial wrinkles and folds	NLF
Juvederm Volbella XC	Soft smooth gel	Lips, superficial dermis	Up to 12	Augmentation and for correction of perioral rhytides	Lips, perioral rhytids
Juvederm Ultra Plus XC	High	mid-to-deep dermis	12	Moderate to severe facial wrinkles and folds	Lower face NLF
Juvederm Ultra XC	Moderate	mid-to-deep dermis	12	Moderate to severe facial wrinkles and folds	Lower face NLF
Restylane	Moderate	Dermis	9	Moderate to severe facial wrinkles	Perioral rhytides, NLF, Temporal hollowing
Restylane Silk	Low	Superficial dermis	6 to 12	Lip augmentation, perioral rhytides	Lip volumization, perioral rhytides
Restylane Refyne	Moderate	mid-to-deep dermis	12	Moderate to severe facial wrinkles and folds	Lower face; NLF; Marionette line
Restylane Defyne	High	mid-to-deep dermis	12	moderate to severe deep facial wrinkles and fold	Lower face; NLF; Marionette line
Restylane Lyft with Lidocaine	High	Deep dermis to superficial subcutis	9	Moderate to severe facial folds and wrinkles	Temporal hollowing, NLF

# Shear Stress and Filler Selection



# Injection techniques

- Individualize injection techniques to maximize volume and limit contour deformity
  - Linear threading
  - Crosshatching
  - Fanning
  - Serial puncture
- Careful consideration of injection techniques
  - Minimize expected adverse events, bruising, and swelling

# Preventing and Managing Adverse Events

Type	Cause
Technical Errors	Volume
	Depth
	Location
	Product choice
Inflammatory Reactions	Infectious agent (bacterial, fungal, viral, biofilm-mediated)
	Immune-mediated

- Knowledge of facial anatomy and product selection can help prevent most complications
- Patient preparation and use of sterile techniques and injection devices are critical
- Hyaluronidase can correct most vascular-related HA-based filler complications



# Vascular Compromise & Blindness

- Most serious complications
- A review from reports published between 1906 and 2015 found 98 cases of reported blindness, with most cases being reported in the last 5 years
  - The sites that were high risk were the glabella (38.8%), nasal region (25.5%), nasolabial fold (13.3%), and forehead (12.2%)
  - Autologous fat (47.9%) was the most common filler type to cause this complication, followed by hyaluronic acid (23.5%)
  - Central nervous system complications were seen in 23.5% of the cases
  - Most cases permanent; emerging, rare reports of visual restoration with retrobulbar or pulsed intra-arteriolar hyaluronidase injection

# Maintenance Plans for Micro Injection Techniques

- Determine treatment goals at the outset
- Set clear expectations for timing of results and plans for continued correction
- Full correction may require a series of treatments
  - Consider gradual volume repletion over megafiller session
- Importance of maintenance treatments should be stressed at time of consultation
  - Longevity of correction is multifactorial:
    - Product: duration of filler, amount of product used
    - Patient: age, degree of volume loss, metabolic interaction with filler, lifestyle
- General tenets for maintenance of treatment outcomes
  - Reassess: 3-6 months
  - Treatment: likely every 6-9 months, product needs may be diminished over time