Dermal Filler from basic to practice

Moch Kurniawan

OVERVIEW

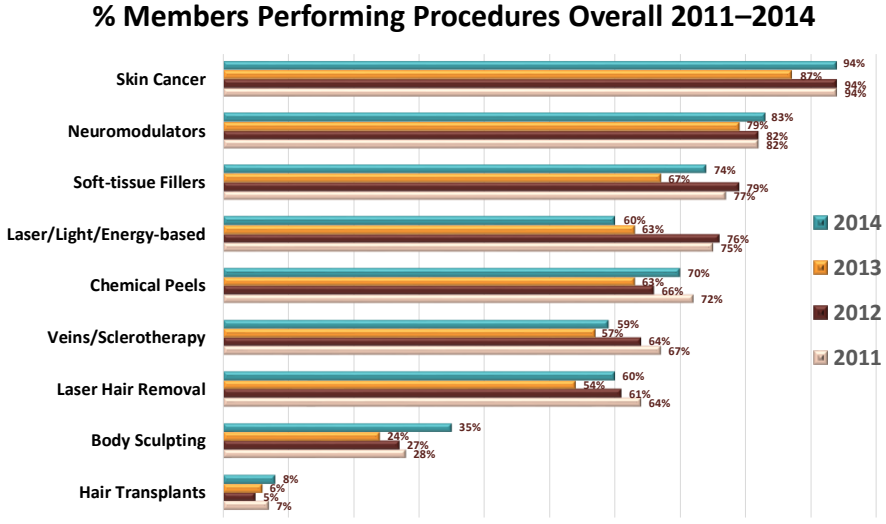
- Dermal filler theory
- Type of dermal filler
- Injection techniques
- Dermal filler complication
- How to differentiation HA dermal filler



Dermal Fillers Theory

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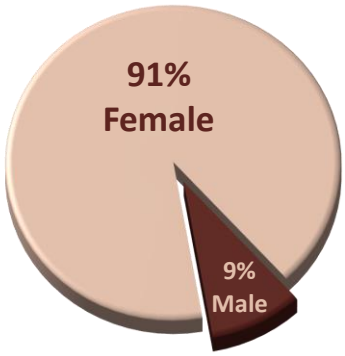
BREAKDOWN OF PROCEDURES OVERALL



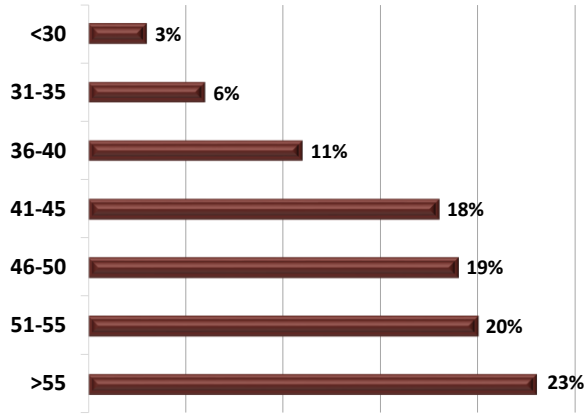
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SOFT-TISSUE FILLERS

Gender Breakdown



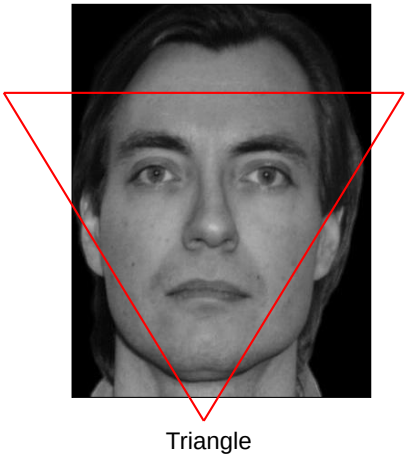
Patient Age Range



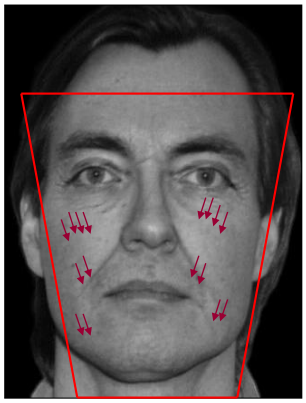
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FACIAL OUTLINE CHANGES DUE TO AGING



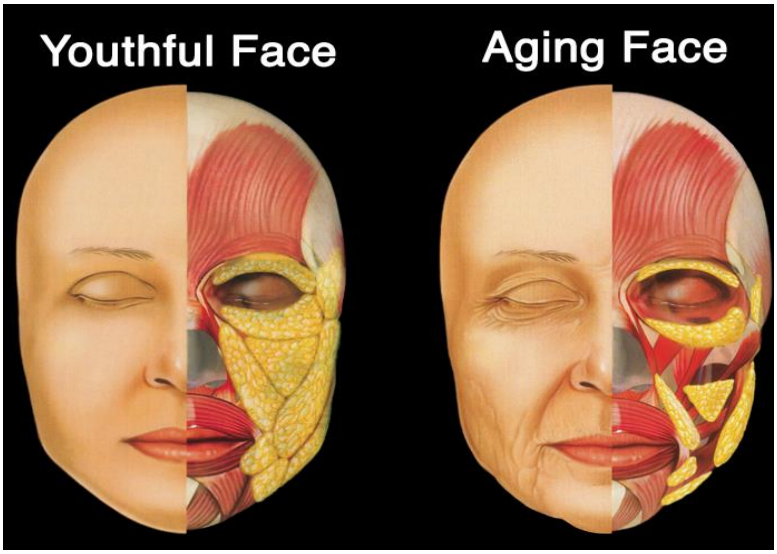
Triangle



Trapezoid or Rectangle

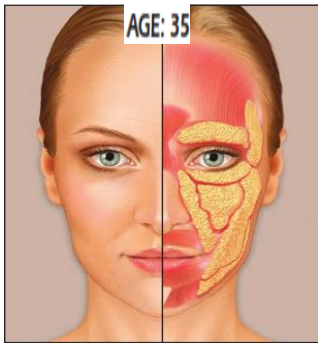
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VOLUME LOSS DUE TO AGING



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FAT



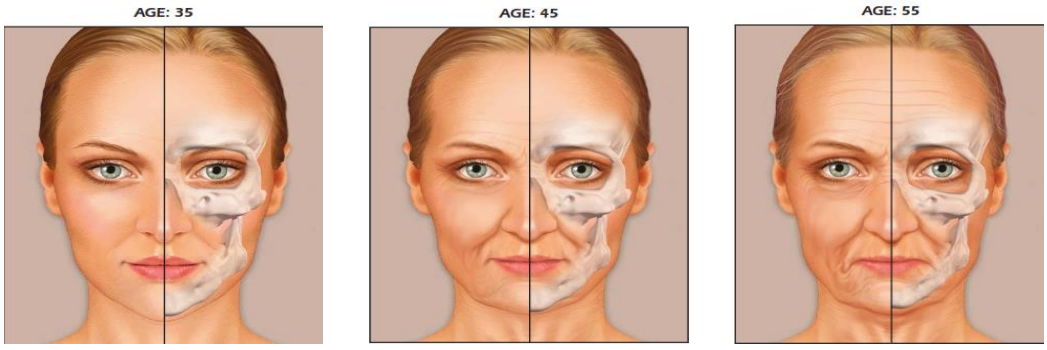




A youthful look depends on having the right amount of facial fat in right places.
Redistribution, accumulation, and atrophy of fat lead to facial volume loss.
- **Some areas lose fat (forehead and cheeks).**
- **Other areas gain fat (mouth and jaw).**
- **Modification of the fat pads leads to contour deficiencies.**

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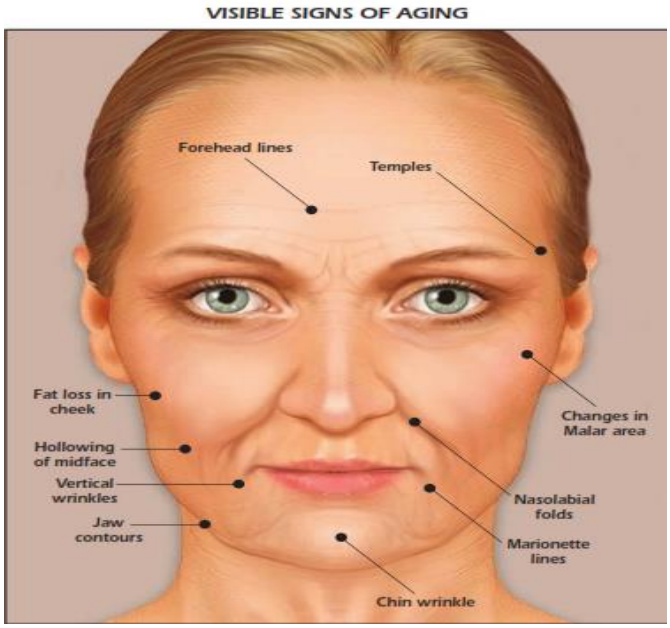
BONE



•There is a significant loss of facial bone with age.
•Aging of the craniofacial skeleton may be due to changes in relative dynamics of bone expansion and bone resorption.
•Bone resorption leads to biometric volume loss.
•Without the structural support of bone, there are noticeable changes in the other layers of overlying soft tissue and skin

SIGNS OF FACIAL AGING

- Greater visibility of bony landmarks, lines and wrinkles
- Prominence of transverse forehead lines
- Nasolabial folds become more prominent
- Hollowing of the mid-face (loose skin)
- Changes in area around the mouth (vertical wrinkles, lip thinning and flattening)
- Development of prejowl depression

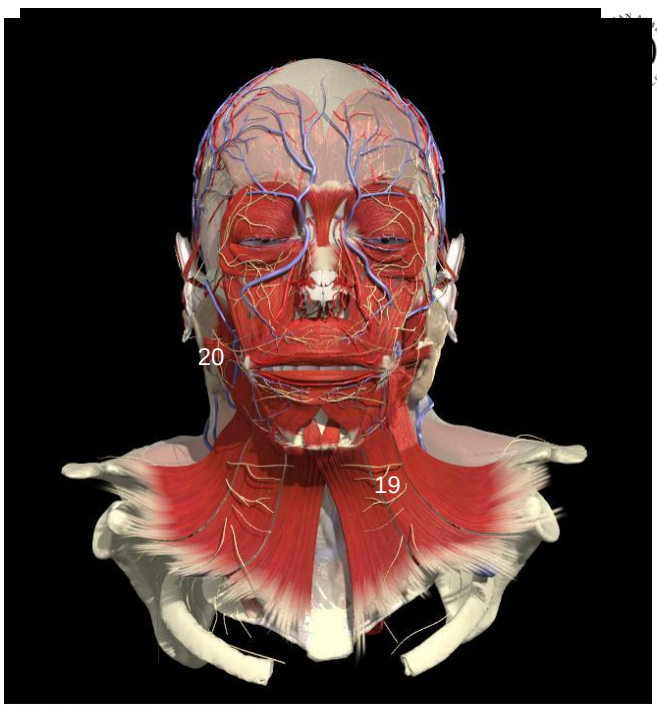


WSRS = WRINKLE SEVERITY RATING SCALE

5	**Extreme**	**Extremely deep and long folds, detrimental to facial appearance.** **2-4mm Visible V-shaped fold when stretched** **Unlikely to have satisfactory correction with injectable implant alone.**
4	**Severe**	**Very long and deep folds; prominent facial feature.** **Less than 2mm visible fold when stretched.** **Significant improvement is expected from injectable implant.**
3	**Moderate**	**Moderately deep folds.** **Clear facial feature visible at normal appearance but not when stretched.** **Excellent correction is expected from injectable implant.**
2	**Mild**	**Shallow but visible fold with a slight indentation; minor facial feature.** **Implant is expected to produce a slight improvement in appearance.**
1	**Absent**	**No visible fold, continuous skin line.**



1. FRONTALIS
2. PROCERUS
3. CORRUGATOR SUPERCILII
4. DEPRESSOR SUPERCILII
5. **TEMPORALIS***
6. ORBICULARIS OCULI
7. NASALIS
8. LEVATOR LABII SUPERIORUS ALAEQUE NASI
9. **LEVATOR LABII***
10. **ZYGOMATICUS MINOR***
11. **ZYGOMATICUS MAJOR***
12. ORBICULARIS ORIS
13. **MODIOLUS***
14. DEPRESSOR ANGULI ORIS
15. **DEPRESSOR LABII INFERIORIS***
16. MENTALIS
17. DEPRESSOR SEPTI
18. MASSETER
19. PLATYSMA (pictured in next slide)
20. RISORIUS

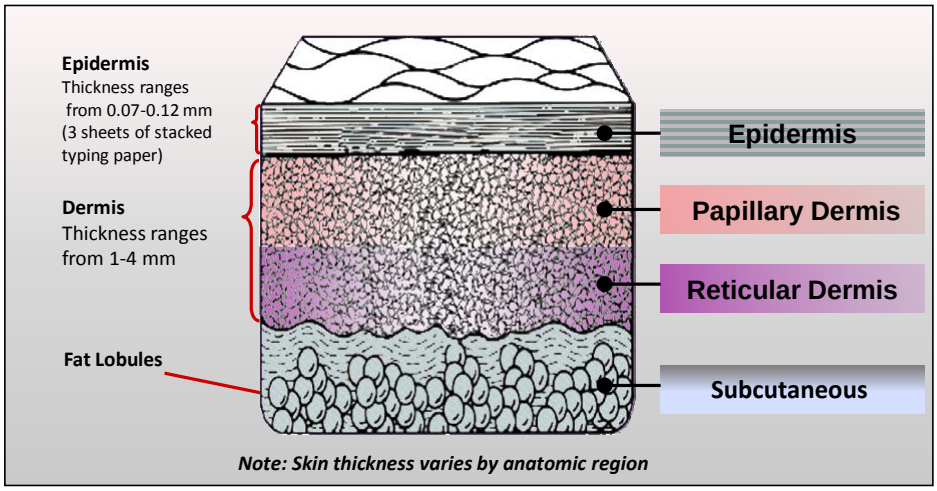


© 2003 Primal Pictures Ltd.

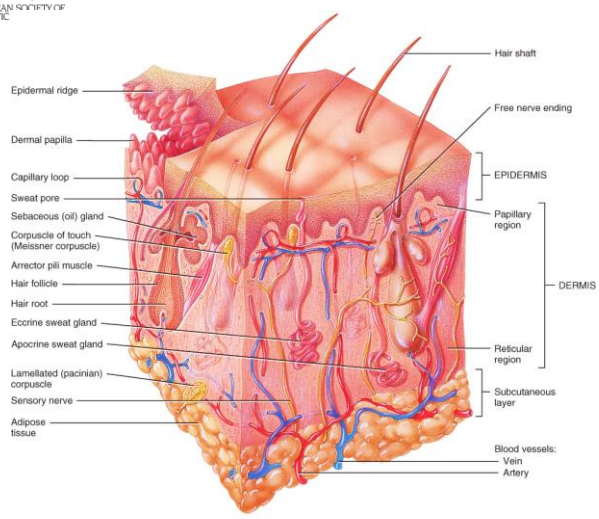


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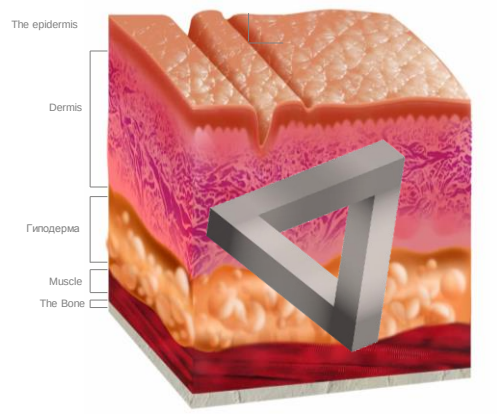
ANATOMICAL LAYERS OF THE SKIN



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(a) Sectional view of skin and subcutaneous layer



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AGING SKIN



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WHAT ARE DERMAL FILLERS?

- Dermal fillers are a non-invasive treatment used to restore youth and volume to the face. As we age, our skin begins to lose its elasticity and natural hydration. This, combined with the effects of gravity, can lead to lines, wrinkles and sagging of the skin
- Dermal Fillers are injected into the skin to replace Hyaluronic Acid that has dissipated over time.

SWISS INNOVATION APPLIED TO BEAUTY

HA-KNOWLEDGE „Skin Aging – Key Factors"

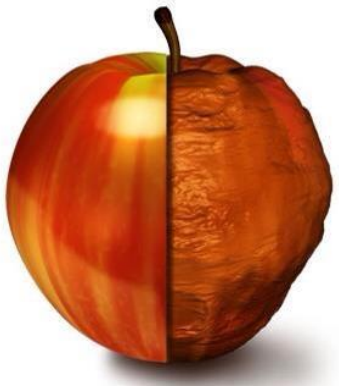
Skin aging is devided into two categories:

- **Intrinsic factors:**

Hyaluronic acid is produced naturally by the body. This acid decreases in the body with age involving shrinking water-holding capacity. As skin loses its elasticity grooves become permanently etched on the face as fine lines and wrinkles.

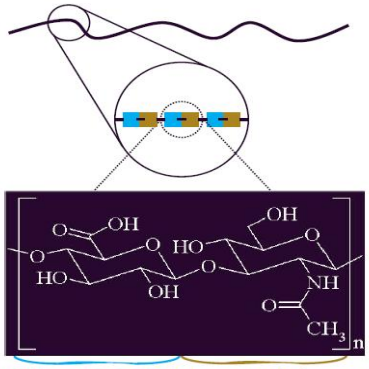
- **Extrinsic factors:**

The sun, tanning booths, stress, drugs (nicotine and alcohol), lack of sleep and an unbalanced diet (under-supply of vitamins and minerals) may boost free-radical production that fasten our skin aging.



HYALURONIC ACID – A UNIQUE MOLECULE

Composed of two sugar units:



Glucuronic acid *N*-acetylglucosamine

Found throughout the body:



In the eye –
Vitreous humor



In the joints –
Synovial fluid

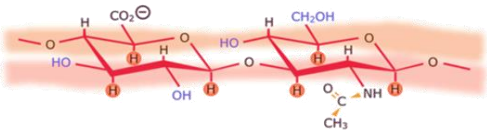


In the skin –
~ 1/3 of total HA

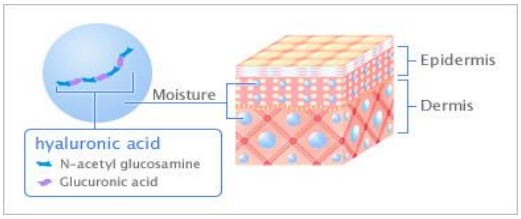
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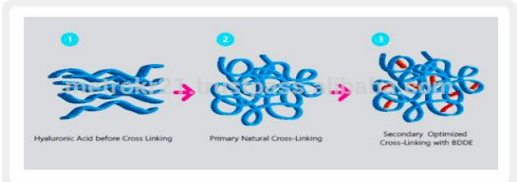
WHAT IS HYALURONIC ACID (HA)?

- Naturally-occurring linear polysaccharide (sugar)
- HA is a primary component of the extracellular matrix (ECM) of the human connective tissues
  - Binds water at 1000x its own weight
- Identical chemical structure across all species
  - No need for skin allergy test
- Short life span in natural form (4 days)
  - Cross-linking extends life span
- Enzymatic degradation
  - Naturally occurs in body
  - Manufactured Hyaluronidase for HA products



Hyaluronic Acid

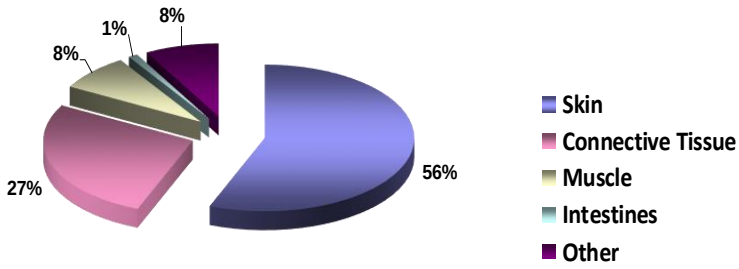




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CONCENTRATION/DISTRIBUTION OF HA

- Average concentration of HA in human body: 200mg/kg
- Largest distribution of HA is in skin: 56%



Distribution of HA

HYALURONIC ACID FOR DERMAL FILLERS

Hyaluronic Acid (HA's)- Approved 2004, a natural occurring substance in human and animal tissue, lasts 6-12+ months, hydrophilic. Produced from avian staphylococcus equine bacterium, possible allergy testing indicated

Juvederm®, Restylane®, Perlane®, Belotero®,Teosyal®

Calcium Hydroxylapatite (CaHA)- Approved 2007, found naturally in human bones and is a mineral-like compound, long lasting (1+ years), no allergy testing

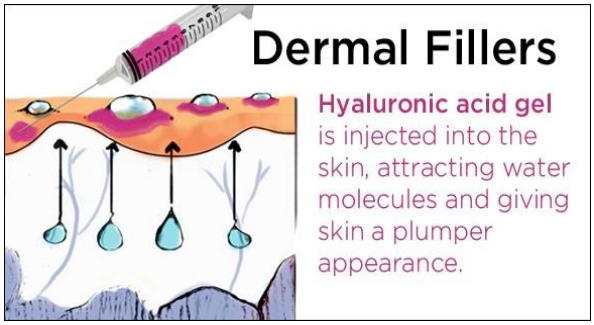
Radiesse®

*Most combined with Lidocaine
** HA's may be dissolved with the enzyme Hyaluronidase

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HYALURONIC ACID FILLERS

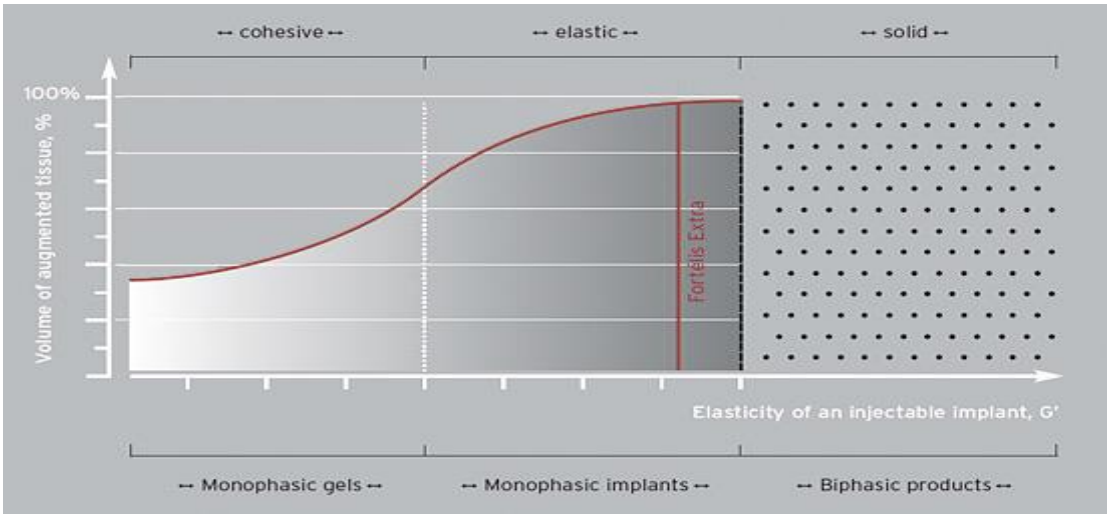
- Can be classified as monophasic or biphasic
  - Monophasic HA fillers are manufactured as cohesive gels
    - Ability of the products to last longer and not migrate
  - Biphasic HA fillers are manufactured in particle form
    - Ability to customize particle size per indication and anatomic area being treated



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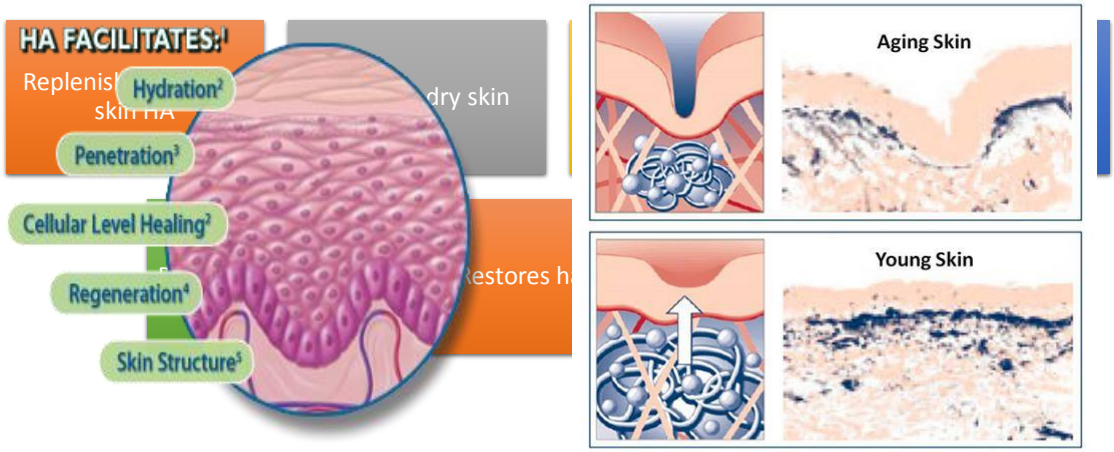
VOL. 25 NO. 4 • APRIL 2012 • Cosmetic Dermatology

MONOPHASIC VS BIPHASIC



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BENEFITS OF HYALURONIC ACID



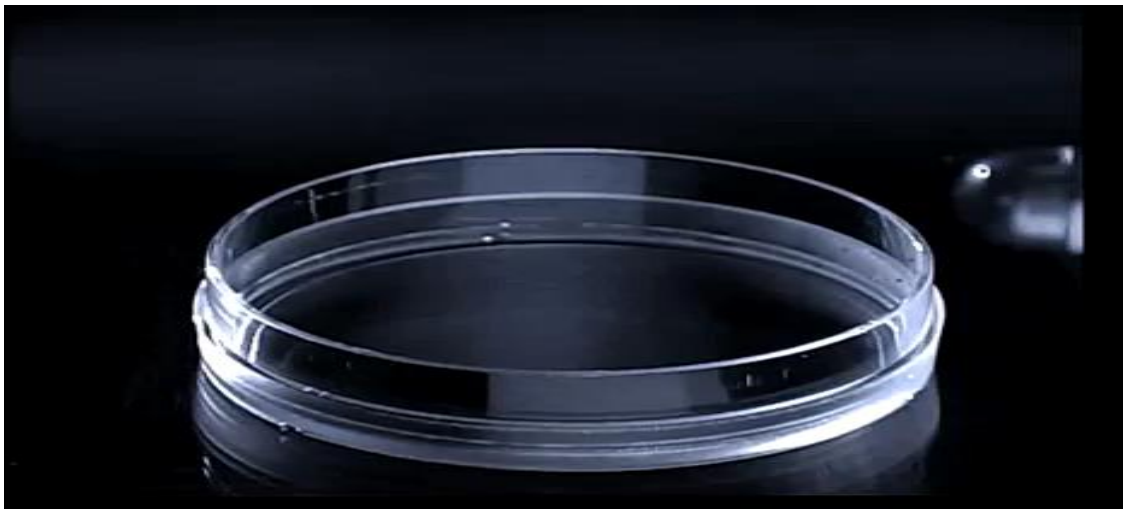
Sources:
Brown, MB etal. Hyaluronic acid: a unique topical vehicle for the localized delivery of drugs to the skin. JEADV 2005; 19: 308
Kazuaki Kakehi et al. Hyaluronic acid: separation and biological implications. Journal of Chromatography 2003; 797: 347

HYALURONIC ACID



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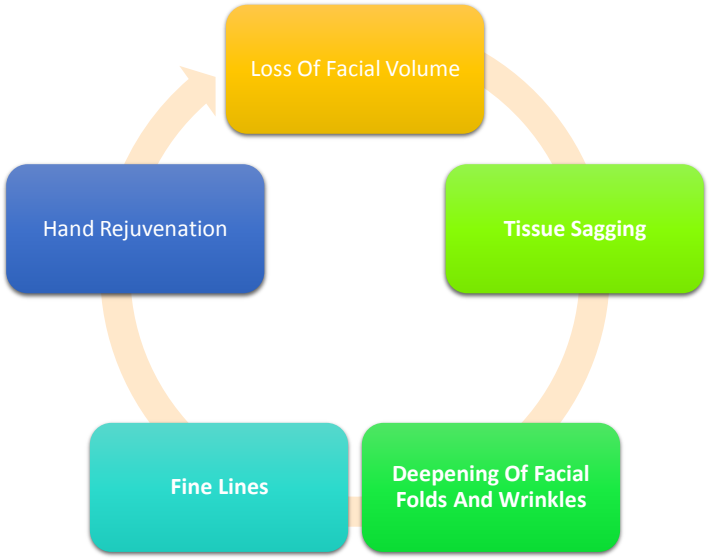
MONOPHASIC GEL



WHAT KIND OF IMPROVEMENTS CAN BE MADE WITH DERMAL FILLERS?



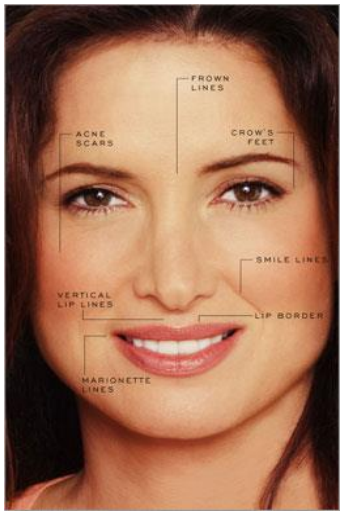
WHAT KIND OF IMPROVEMENTS CAN BE MADE WITH DERMAL FILLERS?



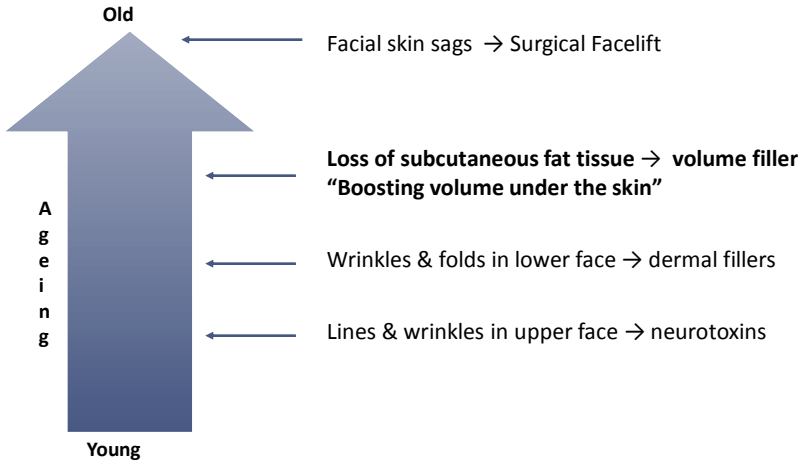
http://www.skinjectables.ca/dermal-fillers/#improv

DERMAL FILLERS FROM CLASSIC TO ADVANCED INDICATIONS

- Classic indications:
  - Nasolabial folds
  - Mouth area: corners, vermilion border and body
  - Marionette lines
- Volume indications:
  - Cheeks, chin
  - Scars
  - Lipoatrophy
- *"Advanced" indications (difficulty)*
  - *Tear trough*
  - *Glabellar and crow's feet*
  - *Ears and nose*
  - *Brow*
  - *Body indications: neck, hands*



NEW TREND: VOLUME FILLING AND FACIAL SCULPTING



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IDEAL DERMAL FILLER

Dermal filler characteristic checklist
Optimal characteristics-Temporary fillers

- Long duration / persistence
- Performance promise
- Painless
- Reasonable cost
- Nontoxic
- Noninflammatory
- Noncarcinogenic
- No migration
- Non-animal origin
- Easy to inject
- Easy to store
- Ease of learning how to inject
- Minimal side effects
- Biodegradable (in case of temporary and semipermanent fillers)

	Characteristics
Composition	Nonantigenic, noncarcinogenic, nonteratogenic, nontoxic
Delivery	Simple, reproducible, consistent, nonmigratory, safe
Outcomes	Minimal side effects, predictable outcomes, minimal downtime
Sensibility	Cost-effective, versatile, easily stored, durable shelf-life

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LONGEVITY OF CORRECTION

Factors Contributing to Absorption of Product

Characteristics of product

- Molecule size
- Percent of active ingredient*
- Cross-linking agent
- Viscosity of product

Characteristics of individual/injection technique

- Metabolism
- Mobility of treatment site
- Depth of product deposit into the skin (deeper = more product needed)

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**most significant factor*

KEYS TO PROVIDING SUCCESSFUL DERMAL FILLER TREATMENTS

- Thorough understanding of skin anatomy and aging process
- Thorough comprehensive consultation
- Proper patient selection
- Proper filler selection
- Proper injection technique
- Appropriate combination of treatments

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DERMAL FILLERS

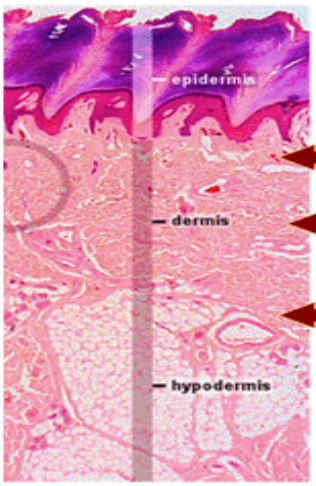
- Non-permanent
  - Hyaluronic acid
- Semi-permanent
  - Calcium hydroxylapatite
- Poly-l-lactic acid
  - Polycaprolactone
- Permanent
  - Polymethylmethacrylate
  - Polyacrylamide hydrogel
  - Silicone

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Focus on Fillers



Replacement Fillers

- Collagen
- Hyaluronic Acid (HA)

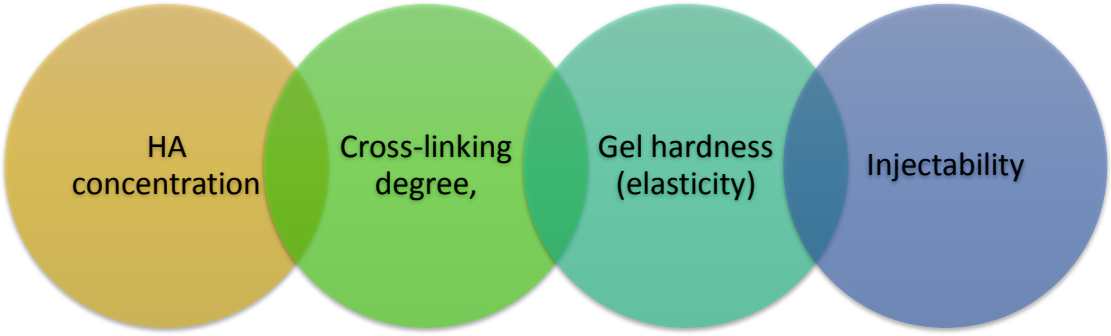
Stimulatory Fillers

- Poly-L-lactic acid (PLLA)
- Polymethylmethacrylate (PMMA)
- Calcium hydroxylapatite (CaHA)

MedscapeCME

09/04/2016

THE PHYSICAL PROPERTIES OF HA DERMAL FILLERS



09/04/2016

Magazin für ästhetische Chirurgie 2|12 6. Jahrgang 2012

DERMAL FILLER PRODUCT COMPARISON CHART

Manufacturer	Product(s)	Key Component	Description	Regulatory Status
Allergan	CosmoDerm	Purified Human-based Collagen + Lidocaine	Purified human-based collagen 35 mg/ml.	Worldwide.
	CosmoPlast		Purified human-based collagen 35 mg/ml, cross-linked with glutaraldehyde. *All collagen products contain 0.3% lidocaine.	Worldwide.
	HydraFill – Softline	Non-animal Hyaluronic Acid	Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	HydraFill – Softline Max		Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Surgiderm 18	Non-animal Hyaluronic Acid	Non-animal, cross-linked cohesive hyaluronic acid 18 mg/g.	CE marked.
	Surgiderm 30	Non-animal Hyaluronic Acid	Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Surgiderm 24XP	Non-animal Hyaluronic Acid	Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Surgiderm 30XP	Non-animal Hyaluronic Acid	Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Juvéderm Ultra Smile	Non-animal Hyaluronic Acid plus lidocaine	Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Juvéderm ULTRA 2	Non-animal Hyaluronic Acid + Lidocaine	Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Juvéderm ULTRA 3		Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g.	CE marked.
	Juvéderm ULTRA 4		Non-animal, cross-linked cohesive hyaluronic acid 24 mg/g. *All Juvéderm ULTRA products contain 0.3% lidocaine.	CE marked.
	Juvéderm VOLUMA	Non-animal Hyaluronic Acid	Non-animal, cross-linked cohesive hyaluronic acid 20 mg/g.	Worldwide.
	Juvéderm HYDRATE	Non-animal Hyaluronic Acid	13.5 mg/g plus mannitol 0.9%; 1 x 1 mL syringe.	CE marked.

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DERMAL FILLER PRODUCT COMPARISON CHART

Manufacturer	Product(s)	Key Component	Description	Regulatory Status
AQTIS Medical	Ellansé (-S, -M, -L, -E) Ellansé Hands (-S, -M)	PCL PCL	Synthetic, non cross-linked PCL microspheres, homo-genously suspended in a tailor-made aqueous CMC gel-carrier. Synthetic, non cross-linked PCL microspheres, homo-genously suspended in a tailor-made aqueous CMC gel-carrier.	CE marked. CE marked.
Croma GmbH	Princess Filler Princess Volume Princess Rich	Hyaluronic Acid	Princess delivers immediate, natural and long lasting results. Princess Filler is indicated for the correction of moderate wrinkles and folds and the augmentation of lips. Princess Volume is designed for treating deep facial wrinkles and folds, restoring volume of the face, improving receding chins and facial contours. Princess Rich is formulated for mesotherapy treatments.	CE marked. Available in more than 60 countries worldwide.
Laboratoires FILORGA	X-HA3 X-HA Volume M-HA18 NCTF135 NCTF135HA	Non-animal Hyaluronic Acid Non-animal Hyaluronic Acid + Glycerol Non-animal Hyaluronic Acid + nutritive ingredients	Biodegradable cross-linked hyaluronic acid (23 mg/mL). Biodegradable highly cross-linked hyaluronic acid (23 mg/mL). Biodegradable hyaluronic acid (18 mg/mL) + Glycerol (20 mg/mL). Native hyaluronic acid (0.025 mg/mL) + vitamins, amino acids, coenzymes, minerals, nucleic acids. Native hyaluronic acid (5 mg/mL) + vitamins, amino acids, coenzymes, minerals, nucleic acids.	CE marked. CE marked. CE marked. CE marked. CE marked.
Galderma	EMERVEL Restylane Restylane Touch Restylane Perlane Restylane Sub-Q Restylane Lipp Restylane Vital Macrolane VRF30 Macrolane VRF20	Hyaluronic Acid NASHA Non-animal Hyaluronic Acid	20 mg/ml. NASHA gel – a non-animal hyaluronic acid, stabilized with BDDE. The differentiation is in the size of the NASHA particles, to assure a tissue-tailored range of products. Restylane – 100,000 particles per ml. Restylane Touch – 500,000 particles per ml. Restylane Perlane – 10,000 particles per ml. Restylane Sub-Q- 1,000 particles per ml. Concentration 20 mg/ml.	CE medical marked 0459. Restylane is approved worldwide with the exception of Japan. Restylane Perlane, Restylane Sub-Q and Restylane Touch are approved worldwide with the exception of Japan and U.S. U.S. approval in progress. Restylane Lipp approved in Europe.

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DERMAL FILLER PRODUCT COMPARISON CHART

Manufacturer	Product(s)	Key Component	Description	Regulatory Status
Merz Pharmaceuticals GmbH	Belotero Soft – 20 mg/ml Belotero Basic – 22.5 mg/ml Belotero Intense – 25.5 mg/ml Radiesse	Hyaluronic Acid CaHA	Non-animal double phase cross-linked hyaluronic acid – via biofermentation – with CPM (Cohesive Polydensified Matrix) technology. Synthetic calcium hydroxylapatite (CaHA- 55.7%) microspheres, 25 – 45 microns, suspended in an aquaeous polysaccharide gel (1.3% sodium carboxymethylcellulose USP, 6.4% glycerin USP and 36.6% water USP).	CE marked. U.S. approval pending. FDA approved. CE marked in Europe.
Zimmer MedizinSysteme Germany	ZFill refresh² ZFill contour² ZFill deep²	Non-animal Hyaluronic Acid	Hyaluronic acid gel with glycerin. For mesotherapy, lasting hydration and revitalization. Hyaluronic acid gel implant. For correction of superficial and deeper facial lines, lip contours and lip volume. Stabilized with BDDE. Hyaluronic acid gel implant. For correction of deep lines and wrinkles, sunken areas of skin, facial contours and increased volume.	CE marked.

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DERMAL FILLER PRODUCT COMPARISON CHART

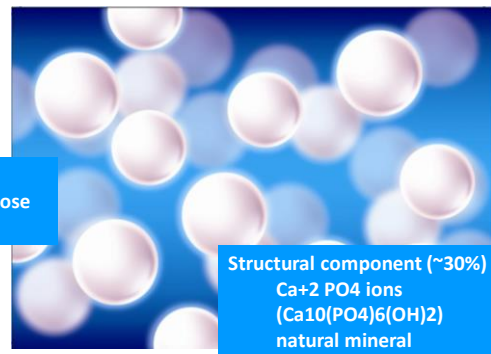
Manufacturer	Product(s)	Key Component	Description	Regulatory Status
TEOXANE Laboratories	Teosyal Ultimate	Cross-linked Hyaluronic Acid	Non-animal, cross-linked hyaluronic acid 22 mg/g.	CE Marked.
	Teosyal Ultra Deep	Cross-linked Hyaluronic Acid	Non-animal, cross-linked hyaluronic acid 22 mg/g.	CE Marked.
	Teosyal Kiss	Cross-linked Hyaluronic Acid	Same as above.	CE Marked.
	Teosyal Deep Lines	Cross-linked Hyaluronic Acid	Same as above.	CE Marked.
	Teosyal Touch Up	Cross-linked Hyaluronic Acid	Same as above.	CE Marked.
	Teosyal Global Action	Cross-linked Hyaluronic Acid	Same as above.	CE Marked.
	Teosyal First Lines	Cross-linked Hyaluronic Acid	Non-animal, cross-linked hyaluronic acid 20 mg/g.	CE Marked.
	Teosyal Meso	Non Cross-Linked Hyaluronic Acid	Non-animal, cross-linked hyaluronic acid 15 mg/g.	CE Marked.
	Teosyal PureSense Ultimate	Cross-Linked Hyaluronic Acid + Lidocaine	Non-animal, cross-linked hyaluronic acid 22 mg/g + 0.3% lidocaine.	CE Marked.
	Teosyal PureSense Ultra Deep	Cross-Linked Hyaluronic Acid + Lidocaine	Non-animal, cross-linked hyaluronic acid 25 mg/g + 0.3% lidocaine.	CE Marked.
	Teosyal PureSense Kiss	Cross-Linked Hyaluronic Acid + Lidocaine	Same as above.	CE Marked.
	Teosyal PureSense Deep Lines	Cross-Linked Hyaluronic Acid + Lidocaine	Same as above.	CE Marked.
	Teosyal PureSense Global Action	Cross-Linked Hyaluronic Acid + Lidocaine	Same as above.	CE Marked.
	Teosyal PureSense First Lines	Cross-Linked Hyaluronic Acid + Lidocaine	Non-animal, cross-linked hyaluronic acid 20 mg/g+ 0.3% lidocaine.	CE Marked.
	Teosyal Redensity R1 PureSense	Non Cross-Linked Hyaluronic Acid + Lidocaine + Dermo Restructuring Complex	Non-animal, cross-linked hyaluronic acid 15 mg/g + 0.3% lidocaine + eight amino acids, three antioxidants, two minerals and one vitamin.	CE Marked.
	Teosyal PureSense Redensity II	Semi Cross-Linked Hyaluronic Acid + Lidocaine + Dermo Restructuring Complex	Same as above.	CE Marked.
Laboratoires VIVACY	STYLAGE S STYLAGE M STYLAGE L STYLAGE XL STYLAGE *Special Lips*	Non-animal Hyaluronic Acid IPN-like + antioxidant agent (Mannitol)	Biodegradable, single-phase, cross-linked HA based gels of non-animal origin with an innovative cross-linking technology IPN-like (InterPenetrated Networks) incorporating natural antioxidants, Mannitol and Sorbitol.	CE marked.
	STYLAGE Hydro	Non-animal, non cross-linked Hyaluronic Acid + Mannitol		
	STYLAGE HydroMax	Non-animal Hyaluronic Acid IPN-Like + antioxidant and hydrating agent (Sorbitol)		
	STYLAGE M Lidocaine STYLAGE *Special Lips* Lidocaine	Non-animal Hyaluronic Acid IPN-like + Mannitol + 0.3% Lidocaine		

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WHAT IS CALCIUM HYDROXYLAPATITE (CaHa)?

- Naturally occurring mineral form of calcium apatite
  - Belongs to group of phosphate minerals known as apatites
  - Composed of calcium, phosphate and hydroxide
- Major component of bones and teeth
- Pure hydroxylapatite powder is white



Gel carrier (~70%)
Na carboxymethylcellulose
Glycerine + H2O

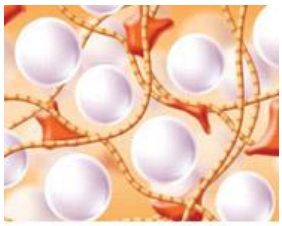
Structural component (~30%)
Ca+2 PO4 ions
(Ca10(PO4)6(OH)2)
natural mineral
(identical to teeth & bone)

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MECHANISM OF ACTION



RADIESSE® Volumizing Filler is composed of Calcium Hydroxylapatite (CaHA) microspheres suspended in an aqueous gel carrier.



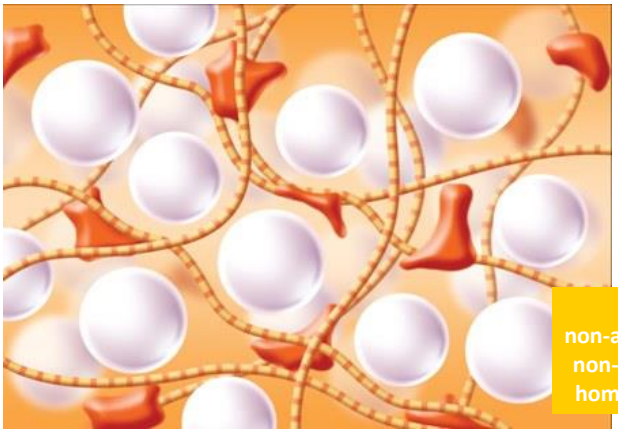
Once injected, it provides immediate volume and correction but continues to work by stimulating the body to produce its own natural collagen.



Over time, the gel is absorbed and the body metabolizes the CaHA microspheres leaving behind only your own natural collagen.

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CALCIUM HYDROXYLAPATITE



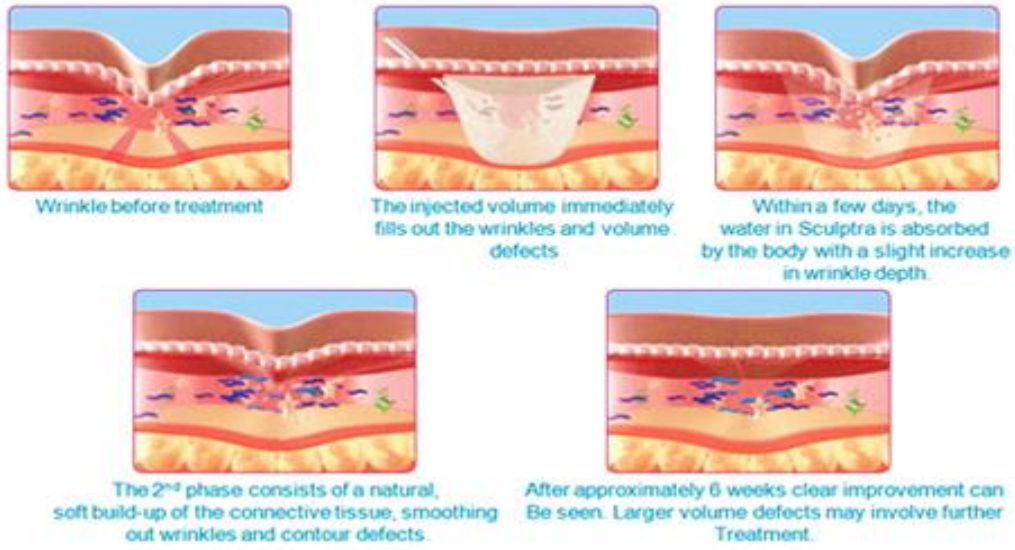
Natural mineral non-antigenic, non-irritant, non-toxic metabolizes via homeostatic mechanisms

Macrophages dissolve gel carrier & fibroblasts form new collagen.

WHAT IS POLY-L LACTIC ACID (PLLA)?

- Synthetic Polymer from the Alpha Hydroxy Acid family
  - Byproduct of sugar fermentation
- 40 - 60 Micron Particles
- Irregularly Shaped
  - "Spikey" i.e. sharp edges under scanning EM
- Used in dissolvable sutures and implants for decades
- Biodegradable and biocompatible
  - Breaks down into $C0_2$ and water
  - Nontoxic effects on biological function
- Stimulates the fibroblast cell to produce collagen
- Gradually restores volume to targeted areas

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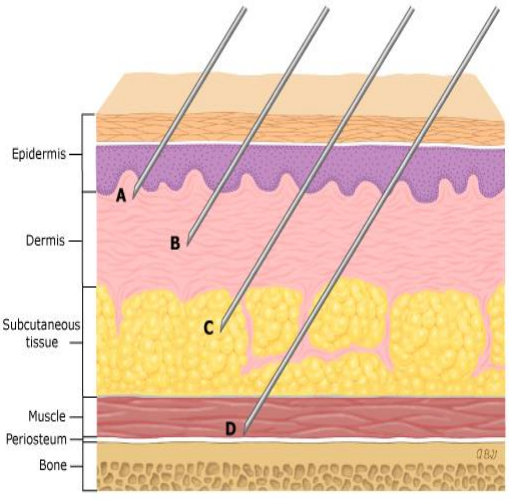
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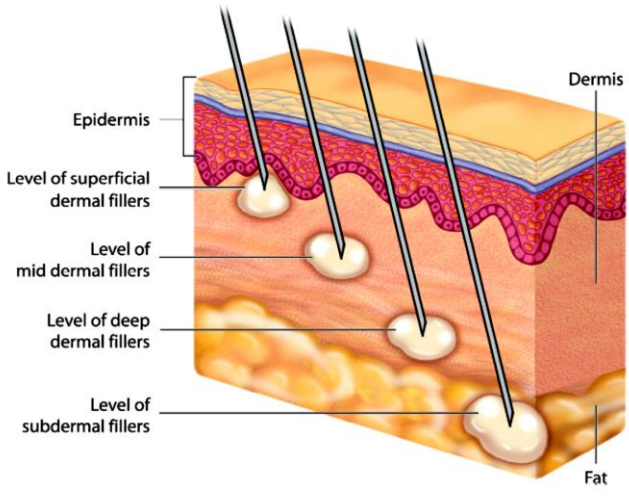
Injection Technique



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RECOMMENDED FILLER INJECTION DEPTHS.





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Adapted from Keyvan N, Susana L-K, eds. Techniques in Dermatologic Surgery. United Kingdom: Mosby; 2003

PROPER PRODUCT PLACEMENT

Papillary Dermis

Needle Angle:	10-25 ˚
Appearance of needle under the skin:	Hint of color, no reflection
Resistance:	Will feel resistance against the needle
Immediate reaction of skin to injection:	Immediate blanch

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PROPER PRODUCT PLACEMENT

Reticular Dermis

Needle Angle:	45-90˚
Appearance of needle under the skin:	shape of needle, no color
Resistance:	Will feel resistance against the needle
Immediate reaction of skin to injection:	Delayed or no blanch

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PROPER PRODUCT PLACEMENT

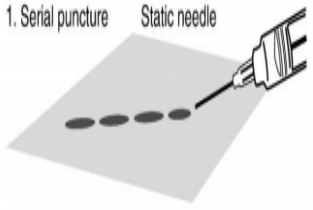
Subdermal Plane

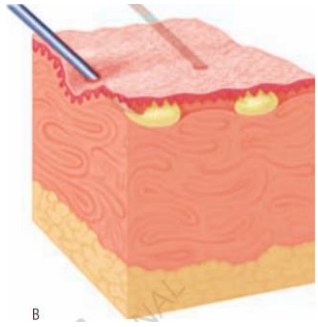
Needle Angle:	45-90˚
Appearance of needle under the skin:	Generalized elevation of entire area
Resistance:	No resistance against the needle
Immediate reaction of skin to injection:	No blanch

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INJECTION TECHNIQUES

- Serial pucture
  - Needle is inserted into appropriate depth of skin
  - Needle is advanced the entire needle length, maintaining consistency in depth
  - Product is injected as needle is withdrawn (retrograde)
  - Procedure repeated the length of desired correctior
  - Overlap end to end threads
  - Lay down foundation above the periosteum
  - Continue to layer into subcutaneous layer (aka: "tenting") with the goal of restoring natural contou
  - Medial cheek – inject in subcutaneous space
  - Lateral cheek – supraperiosteal and subcutaneous
  - Dose
    - Mild – 0.5cc – 1cc per side
    - Medium – 1cc -2cc per side
    - Severe – 3+ cc per side

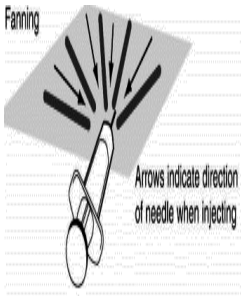


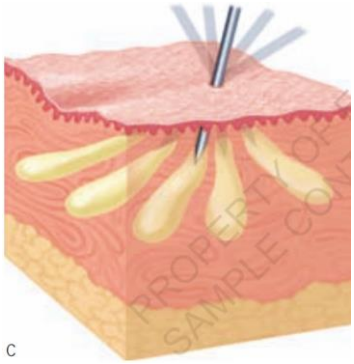


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INJECTION TECHNIQUES

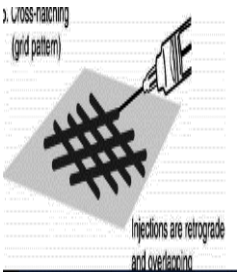
- **Fanning**
  - Product is deposited into several pathways from one injection site

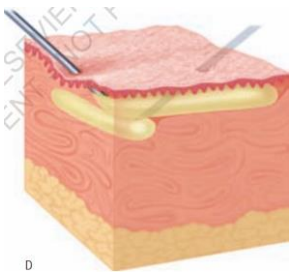




INJECTION TECHNIQUES

- Cross hatching
  - Multiple adjacent threads are laid down in area of defect in one trajectory
  - Perpendicular threads are laid across initial threads
  - Adds significant volume





USE OF BLUNT TIP CANNULAS FOR DERMAL FILLER INJECTIONS

CANNULA USAGE

- Not a new concept
- Have been used for fat injections for years
- They are more flexible than fat injection cannulas to allow for better contouring around the facial structures
- Flexibility, unlike a rigid cannula
- Blunt tip with a precision laser-cut lateral side port for product extrusion
- Fits on any Leur lock syringe
- Made of stainless steel

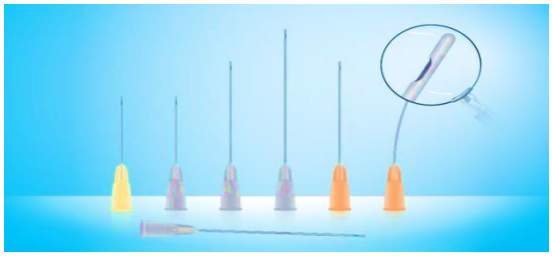


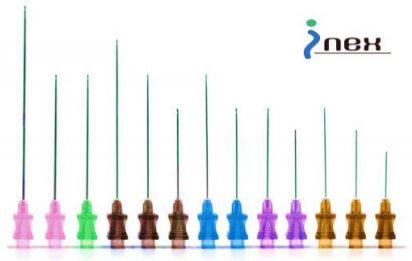
- Minimized bleeding and bruising
- Less patient discomfort and needle phobia
- Faster recovery
- Decreased risk of intra-arterial injection and adverse events



09/04/2016
Facial Plast Surg Clin N AM 20(2012) 215-220

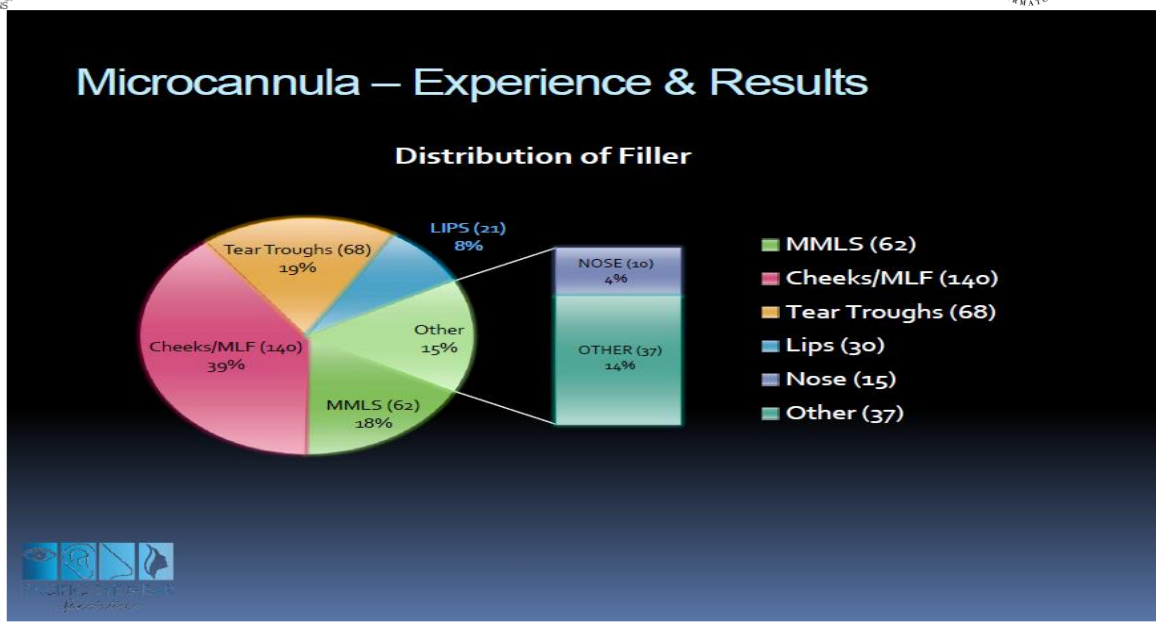
AVAILABILITY OF CANNULAS



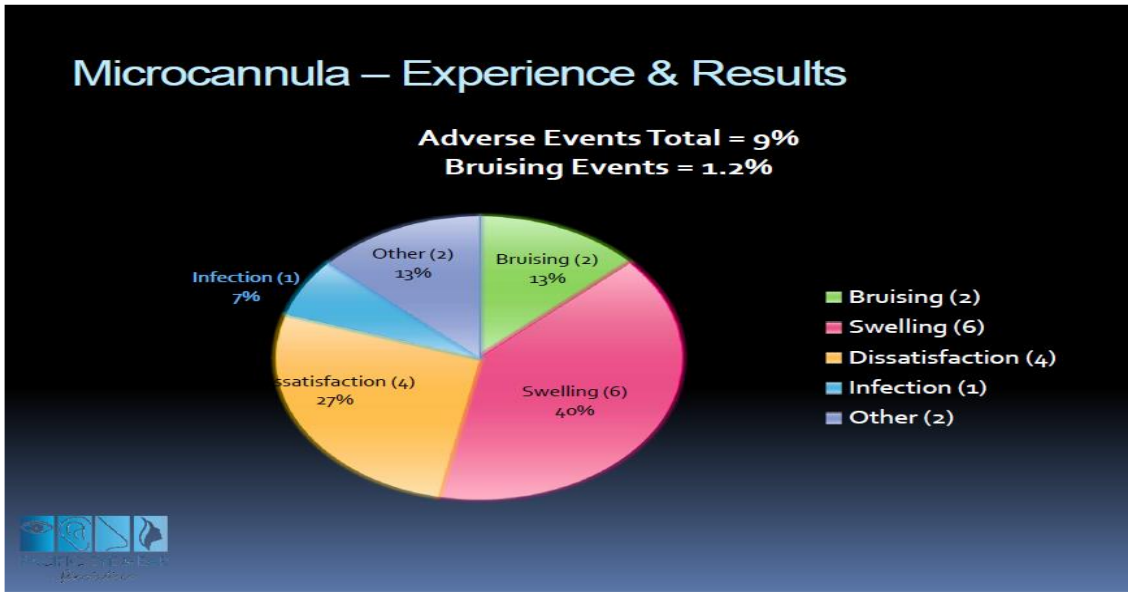




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INJECTION TECHNIQUE

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WHAT IS THE BEST SEQUENCE OF INJECTIONS FOR YOUR PATIENT?



Point 1: Zygomatic arch
Lifting point of lateral cheekbone. It is the first anchoring point, and reduces the volume requirement of points 2 and 3.

Point 2: Cheekbone
Projection of cheekbones and shortening of palpebral-malar sulcus.

Point 3: Mid-cheek region
Improvement of the medial lid-cheek junction and consequent softening of the tear trough.

Point 4: Canine fossa and nasolabial fold
Less volume is needed after areas 1, 2 and 3 are treated.

Point 5: Marionette lines
Start from top to bottom to strengthen and lift the mucosa of the oral commissure.

Point 6: Pre-jowl sulcus
Small bolus or linear/retrograde techniques are suitable here. Do not inject the jowls.

Point 7: Jawline
Linear and retrograde technique is preferable at this level. Post-jowl, mandible body and angle may be injected.

Point 8: Sub-malar region
Addresses the sunken area at this site and also comprises the sub-malar volume loss. It is ancillary to the lifting effect. Bolus or fan injection technique will depend on the size of the area.

The sequence of injection and specific sites should be adapted based on each patient's profile to achieve the optimal outcome.

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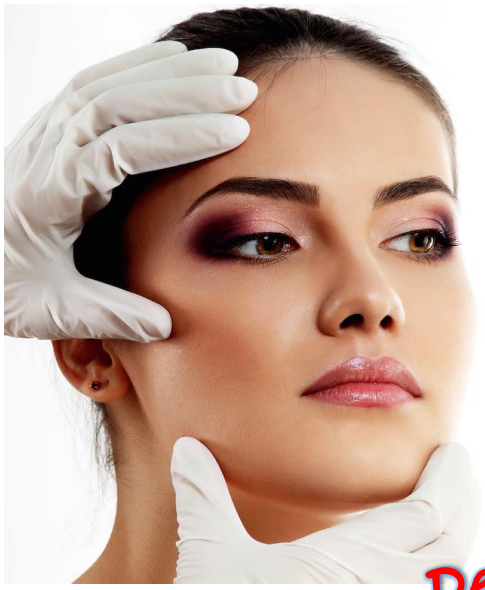
Image courtesy of Dr De Maio

THE FOLLOWING SPECIFICATIONS OF HA DERMAL FILLERS STRICTLY AFFECT THEIR FINAL CLINICAL PERFORMANCE

- Concentration of HA
- Degree of cross-linking
- Quantity of HA cross-linked vs. non-cross-linked
- Duration of filling effect
- G' (elastic modulus)
- Injectability (extrusion force)

09/04/2016

Magazin für ästhetische Chirurgie 2|12 6. Jahrgang 2012



Is your face in the right hands?

Dermal filler complication

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MOVING ONTO ADVERSE EVENTS…



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EARLY COMMON RESPONSES

Swelling

Bruising

Needle marks

Remember that:

- Extent of responses vary in degree and duration
- Technical and patient variables may influence response

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MANAGEMENT OF TREATMENT RESPONSES

- Swelling
  - Ice
  - Antihistamines
  - Temporary immobility of area
- Transient painless bruising or discoloration
  - Direct pressure
  - Cold compresses
  - Arnica Montana
  - Bromelin
  - BBL or Q switch laser

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BRUISING AFTER HA INJECTION FOR TEAR TROUGH DEFORMITY



(Cox, S.E., & Lawrence, N., 2007)

HYPERSENSITIVITY

- Incidence with bovine collagen 3% (Artefill)
- Incidence with HA is .02% and often self resolving
- Symptoms
  - Pain
  - Redness
  - Swelling at injection sites

SIGNS OF VASCULAR OCCLUSION

Venous Occlusion

- Does not produce immediate pain or blanching
- Process is slower
- Venous Congestion (intradermal bleeding)
- Gradual area of darkening; dusky appearance

Arterial Occlusion

- Immediate pain
- Blanching, followed by darkening of tissue

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MANAGEMENT OF VASCULAR OCCLUSION

- Action
  - **FIRST** Stop injection
  - Immediate pressure and icing **ONLY** if hematoma suspected
  - Hyaluronidase to dissolve HA
  - Massage
  - Warm compresses
  - If blanching/dusky appearance continues, apply 2% nitroglycerine paste to the skin
- Sloughing may occur within 2 days to 1 week
  - manage with gentle wound care
- Most wounds will heal without scarring

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(Narins et al, 2006)

NECROSIS

- Extremely rare less than 0.001% worldwide (Narins et al, 2006)
- Reports with every type of filler
- At risk locations:
  - Glabella and forehead
  - Nasolabial groove
  - Acne scars (i.e., cheeks)
  - Lips

See Vascular Anatomy Diagram in "General Information" section of manual

CAUSES OF NECROSIS

- Pressure occlusion of cutaneous vessels
  - Emerging hematoma; will not cause arterial occlusion but can still result in necrosis of overlying dermis
  - Excess product volume
- Cannulation and direct injection into vessels resulting in occlusion and ischemia

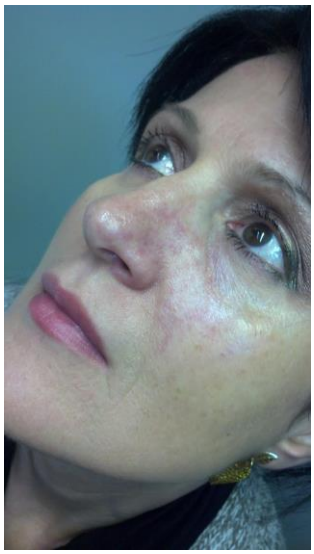
(Carruthers & Carruthers, 2007)

POST INJECTION NECROSIS
NASO-LABIAL FOLDS WITH HA



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POST INJECTION VASCULAR OCCLUSION
TEAR TROUGH WITH HA



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INFECTION

- Occurrence rate is rare
  - Prevent by appropriate pre-injection skin cleansing
  - Biofilms
- Post injection antibiotic ointments shouldn't be routinely used
- History of oral herpes
  - Consider prophylactic treatment with antiviral prior to filler tx
- Do not inject in presence of active herpes or bacterial infection

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PRODUCT VISIBILITY

- Underlying causes:
  - Malposition of product (superficial placement)
  - Excess product
- Exhibits as noninflammatory
- Appearance
  - Opaque products: white or papular
  - HA products: light blue or steel gray, "glass-like" (Tyndall effect)

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PRODUCT VISIBILITY

- Management
  - Massage area to disperse product
  - Incision with needle (i.e., 25g) to attempt to express product (this is possible as long as the product is visible)
  - QS 1064 nm laser also reported to be effective for HA visibility
  - Hyaluronidase (HA only)
    - Temporarily decreases viscosity of intercellular cement, promoting diffusion and absorption

HYALURONIDASE CONSIDERATIONS

- Off-label use for all brand names
- Some elect to perform skin test and wait 15 minutes
  - proceed if no reaction
- Inject directly into area of undesired product
- Dosing ranges
  - 5-20 units per site
- Resolution has been noted within 24 to 48 hours of injection
- Dilute with NaCl to increase dispersion and decrease tissue reactivity

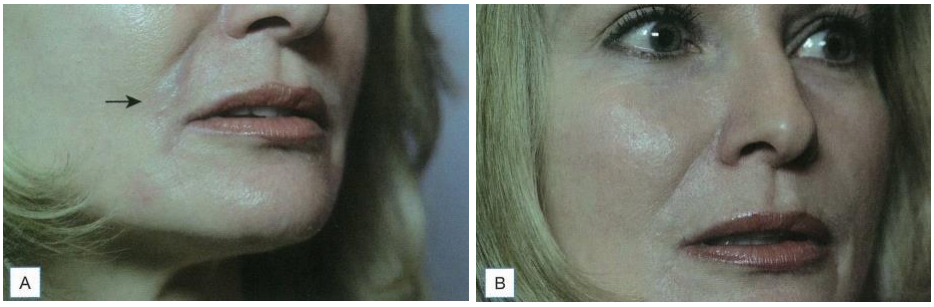
(Brody, 2005)

HA SUPERFICIAL PLACEMENT: TYNDALL EFFECT



(Cox, S.E., & Lawrence, N., 2007)

TYNDALL EFFECT AND TREATMENT



NODULE VERSUS GRANULOMA

Lumps/Nodules:

Non Inflammatory

- Visible within a few weeks
- Typically due to technical errors or placement of specific fillers into dynamic areas

Granulomas:

Aggressive Inflammatory Response

- Present several months to years following injection at ALL implantation sites at the SAME time
- Excision rarely indicated as borders are seldom defined
- Without intervention, may increase in size, persist and then spontaneously resolve

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GRANULOMA MANAGEMENT

- Oral and intralesional steroid
  - Used in association with antibiotics such as minocycline, which target granulomas
  - Reports state that non-inflammatory fibrotic nodules have responded to treatment with intralesional triamcinilone
  - Alone or in combination with 5-FU
- May require excision

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GRANULOMA IN NASOLABIAL FOLD AND ORAL COMMISSURE



(Carruthers, A., & JDA, 2005)

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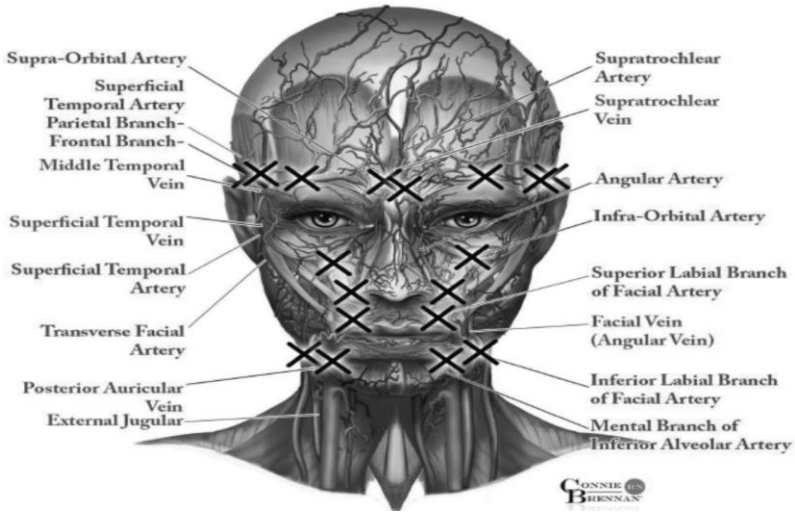
GENERAL DERMAL FILLER POSTTREATMENT INSTRUCTIONS

Provide Guidance Regarding:

- Avoiding Manipulation of treatment sites
- Makeup application
- Activity restrictions/limitations
- Skin care use
- Laser and IPL treatments

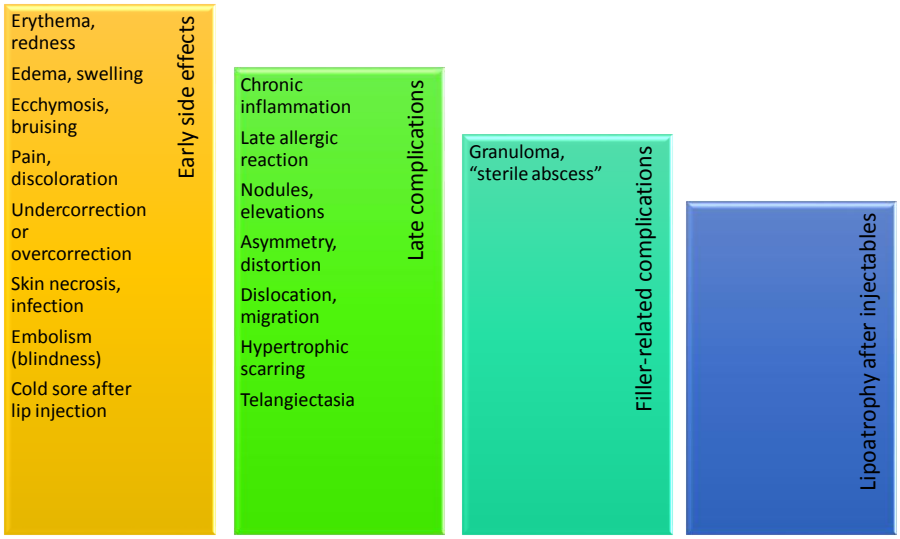
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THE FACIAL ARTERIAL/VENOUS SYSTEM AND "DANGER ZONES"



www.psnjournalonline.com Volume 34 Number 3 July–September 2014

CLASSIFICATION OF DERMAL FILLER COMPLICATIONS*



*Data from Hexsel, D. M., Hexsel, C. L., and Iyengar, V. Liquid injectable silicone: History, mechanism of action, indications, technique, and complications. Semin. Cutan. Med. Surg. 22: 107, 2003

SIGNS AND SYMPTOMS OF ACCIDENTAL INTRA-ARTERIAL INJECTION OF HYALURONIC ACID (HA) FILLER

Signs and Symptoms	Description and Onset	Clinical Considerations
Pain	Pain may be absent initially if anesthetics are given. Escalating pain is felt in areas affected by ischemia and may not respond to treatment with analgesics.	Not pathognomonic. May be absent in the presence of anesthetic agents. Absence of pain is therefore unreliable in the early phases of injury, if local anesthetics are given either for local or regional anesthesia or are contained within the filler formulation.
Pallor or blanching phase	Blanching of skin may occur immediately after intra-arterial injection as a temporary phase.	Not pathognomonic. May also be seen if epinephrine is included in the filler formulation or in the local anesthetic. Pallor from epinephrine (in the anesthetic formulation) is due to arterial contraction and generally lasts 5 to 10 minutes, but this is highly variable.
Livedo phase	Blotchy reddish- or blue-mottled discoloration typically follows blanching phase but progresses to bluish discoloration, as oxygen is depleted in cases of complete occlusion.	Not pathognomonic. Partial occlusion, or the presence of collateral circulation, can modify the clinical appearance. Also, skin color may be altered by ambient temperature and modulated by patient sensitivity to cold. Livedo may be due to capillary dilatation after arteriolar contraction or after arterial occlusion.
Slow capillary refill	Digital compression of affected area shows slow blood return.	Return of normal pink color after 1 or 2 seconds is considered normal. Slow capillary refill may be a sign of arterial insufficiency.
Blue or gray-blue phase	With local tissue oxygen depletion, the deep blue of deoxygenated blood predominates.	Metabolic activity in the affected tissues consumes all available oxygen in the local blood, causing a deep blue-black discoloration. Over time, this may take on a grayish hue. A deep bruise may have a similar appearance, confounding the sign.
Demarcation phase	In the advanced state of ischemia that has progressed to necrosis, a distinct margin of hyperemia surrounds a zone of frank necrosis. Epithelial integrity is lost, and skin slough begins.	Localized tissue necrosis is a late sign, followed by tissue slough, often involving several layers of tissues (not just dermis). The ulceration that results then heals slowly by secondary intention.
Repair and remodeling phase	Final stages after slough of necrotic tissue; inflammation subsides, and tissue repair and remodeling occurs.	Healing occurs by secondary intent, as epithelial cells migrate and mature to heal the wound.

aNote that the adverse events severity depends highly on the site of injury, the health of the circulatory system prior to injection, the volume of product injected, and the formulation of the material. Some products are more likely to promote immediate blood clotting within blood vessels (such as collagen); others may cause simple mechanical obstruction of vessels without excitation of the complement cascade and without inciting an acute inflammatory reaction (eg, pure fillers).

09/04/2016

Aesthetic Surgery Journal 2014, Vol. 34(4) 584–600

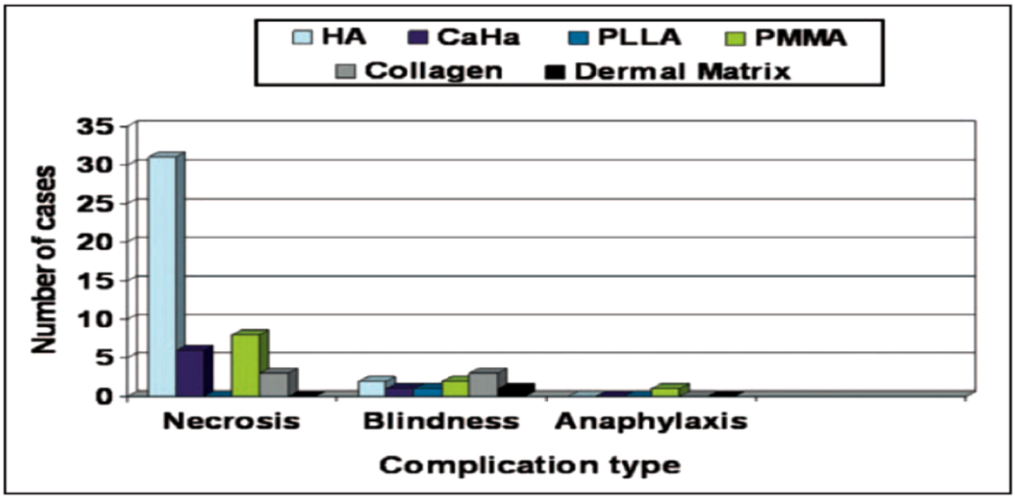
PROVEN TREATMENTS FOR GRANULOMAS

Triamcinolone (Kenalog, Volon-A), 20–40 mg/ml intralesionally
Betamethasone (Diprosone), 5–7 mg intralesionally
Methyl-prednisolone (Depo-Medrol), 20–40 mg undiluted
1/3 Diprosone (1 ml = 3.5 mg) + 1/3 5-fluorouracil (1.6 ml) + 1/3 (1 ml) lidocaine intralesionally
Kenalog (10 mg/ml) + 5-fluorouracil (50 mg/ml) intralesionally

09/04/2016

www.psnjournalonline.com Volume 34 Number 3 July–September 2014

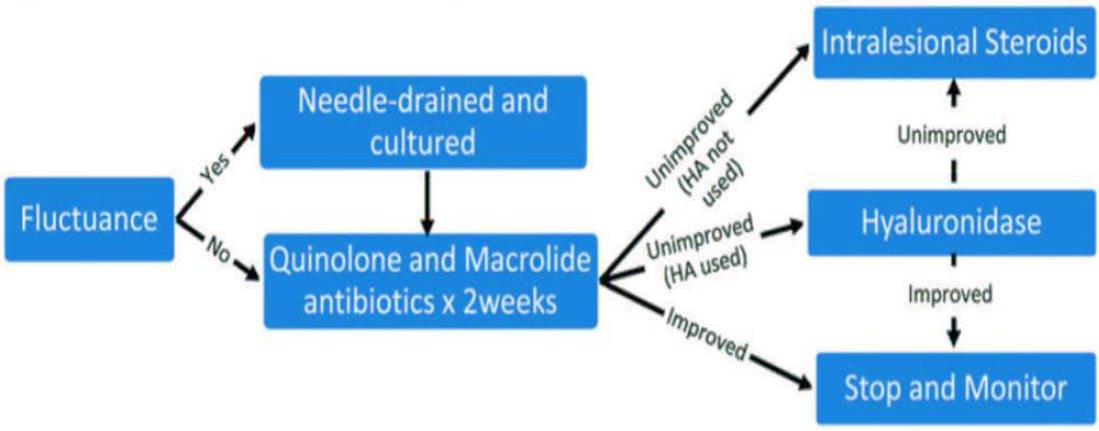
DISTRIBUTION OF SEVERE COMPLICATIONS ACCORDING TO TYPE OF FILLER



09/04/2016

Aesthetic Surgery Journal 33(6) 862– 877 © 2013

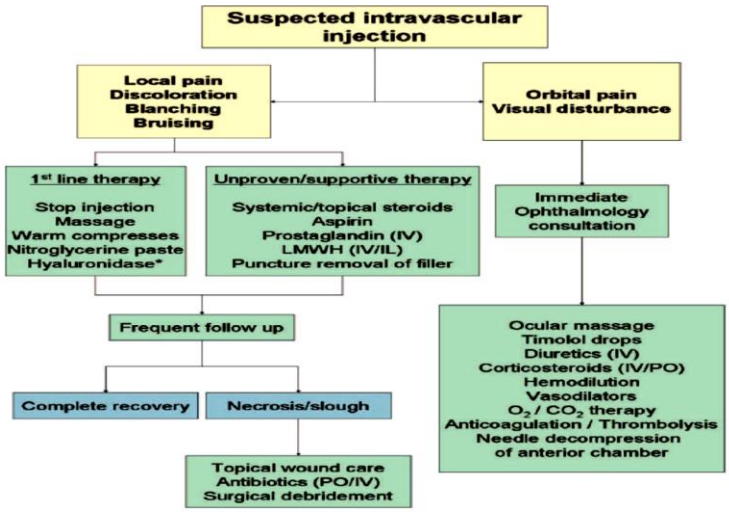
MANAGEMENT ALGORITHM OF LATE AND DELAYED COMPLICATIONS OF SOFT-TISSUE INJECTABLES



09/04/2016

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ALGORITHM FOR TREATMENT OF SEVERE COMPLICATIONS FOLLOWING FILLER INJECTIONS



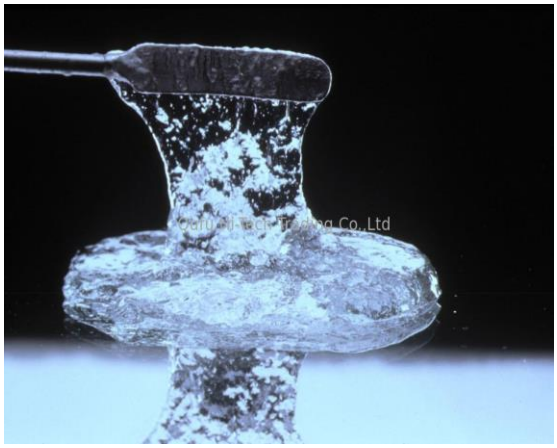
09/04/2016 *Hyaluronidase is recommended independent of filler type. IL, intralesional; IV, intravenous; LMWH, low-molecular-weight heparin; PO, per oral

Aesthetic Surgery Journal 33(6) 862– 877 © 2013

DOSAGE OF HYALURONIDASES BY REGION OF APPLICATION

Region	Hyaluronidase (Units)
Nasal and perioral skin	15-30[20,21]
Periorbital area	30[21]
Infraorbital area	10-15[18]
Lower lid	1.5[22]

09/04/2016



HOW TO DIFFERENTIATION HA DERMAL FILLER

09/04/2016

ALL HA FILLERS ARE NOT THE SAME

Lengt of the polymer chain, degree of water solubility, type of cross-linker used, degree and efficiency of cross-linking, gel hardness, gel viscosity, extrusion force, gel consistency, and total HA concentration

→

A product's efficacy, longevity, ease of injection, and safety profile

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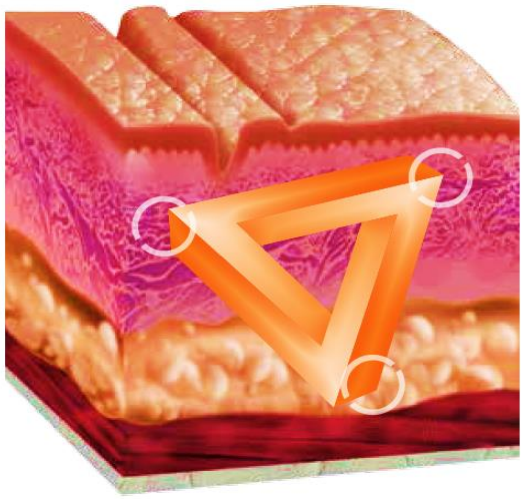
HOW TO DIFFERENTIATE HA FILLERS

- Raw HA typically is sourced from the one manufacturer
- Specific characteristics and variables make each HA filler unique
  - Total HA concentration
  - Soluble HA added or not (lubricant)
  - Average molecular weight (MW) of HA (length of strands)
  - Degree of cross-linking or cross-linker used
  - Varying particle size
  - Gel / Fluid HA ratio
  - Gel hardness (G')
  - Extrusion force and viscosity
  - Degree of gel swelling post injection

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WHAT DOES THE SKIN NEED?

ELASTICITY –
for optimal tissue support



COHESIVITY –
for excellent tissue integration

PLASTICITY –
for excellent malleability to model and shape

09/04/2016

WHAT DOES THE SKIN NEED?



ELASTICITY – the ability of a gel to return to its initial shape after being subjected to strain



COHESIVITY – the ability of a gel to stick together and thereby maintaining gel integrity



PLASTICITY – the ability of a gel to be shaped and modelled

09/04/2016

RHEOLOGICAL TERMS USED TO DESCRIBE PHYSICAL PROPERTIES OF MATERIALS

Rheological terms used to describe physical properties of materials	
Elasticity:	The ability of a material to return to its original shape after being deformed.
Elastic modulus G':	The G' value indicates the deformation energy contained in the matter during deformation. When the stress or pressure is removed, this energy is available to restore the matter to its original shape, fully or partly reversing the deformation.
Viscosity:	Viscosity is a measure of the resistance of a fluid which is being deformed by either shear or tensile stress.
Viscous modulus G'':	The G" value indicates the energy used during deformation of a material, and is thus the share of the deformation energy lost during deformation.

09/04/2016

Magazin für ästhetische Chirurgie 2|12 6. Jahrgang 2012

COHESIVE GEL HA

- Defined:
  - Non-sieved HA gels – Belotero Balance & Juvederm
  - No particle sizing occurs during manufacturing
- Process:
  - HA is cross linked and made into a cohesive, homogeneous mass
  - Different particle sizes
  - Creates a more cohesive gel

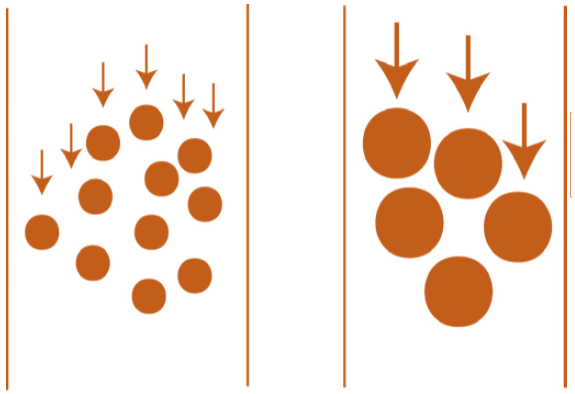
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DISTINCTIONS OF COHESIVE GEL VERSUS SIEVED HA

- Behavior of each type once injected
  - Smooth
    - Remains in the shape it was injected in
    - Lift
    - Softness on palpation
  - Sieved
    - Spreads from point of injection
    - Slight firmness on palpation
  - Practitioner must decide which type provides ideal correction for particular sites of injection

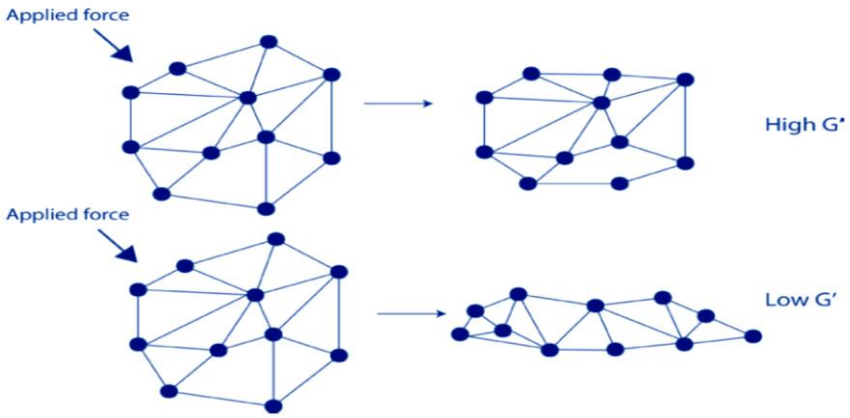
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THE VISCOSITY AND ELASTIC MODULUS (G`)



Viscosity is dictated by the ability of the molecules within the gel to move past one another, which relates to the size and molecular weight of the particles

THE VISCOSITY AND ELASTIC MODULUS (G`)



G` is a function of bond strength, which determines the degree to which the bonds can stretch when stresses. G` therefore reflects the ability of the bonds to resist expansion and contraction

Flow Characteristics of Fillers:
Relationship to Lift and Spread

Product	Elasticity*	Viscosity*
Radiesse	1,407	349,830
Radiesse + 0.3% lidocaine	554	143,100
Restylane-L	565	131,310
Perlane-L (Restylane Lyft)	549	127,090
Restylane	514	119,180
Juvéderm Voluma	274	92,902
Juvéderm Ultra Plus XC	136	32,152
Juvéderm Ultra XC	111	27,034
Juvéderm Ultra Plus	75	17,699
Belotero Balance	30	9,217
Juvéderm Ultra	28	7,307



*All measured at 0.7 Hz (physiologically relevant for stresses common to skin).

Sundaram H et al. *Dermatol Surg*. 2010;36:1859-1865. Sundaram H et *al. J Drugs Dermatol.* 2012;11(8 Suppl):S12-S24. Data on file, Merz.

09/04/2016

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Table 2 The Global Aesthetic Improvement Scale

DEGREE	DESCRIPTION
1 Exceptional improvement	Excellent corrective result after a session
2 Very improved patient	Marked improvement of the appearance, but not completely optimal
3 Improved patient	Improvement of the appearance, better compared with the initial condition, but a touch-up is advised
4 Unaltered patient	The appearance substantially remains the same compared with the original condition
5 Worsened patient	The appearance has worsened compared with the original condition

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JUVÉDERM®
FAMILY OF HYALURONIC ACID FILLERS





JUVÉDERM® XC SETS THE STANDARD

Smooth FLOW

The first and only smooth-consistency gel formulated with lidocaine

Smooth COMFORT

Provides a more comfortable patient experience[1-3,]*

Smooth OUTCOMES

The only HA filler FDA approved[†] to last up to 1 year with initial treatment[1,2,‡]

FDA = US Food and Drug Administration; HA = hyaluronic acid.
*When compared to the nonlidocaine JUVÉDERM® formulations.
[†]In the United States, JUVÉDERM® injectable gel is indicated for injection into the mid-to-deep dermis for correction of moderate to severe facial wrinkles and folds (such as nasolabial folds).
[‡]This includes all JUVÉDERM® injectable gel formulations.
1. JUVÉDERM® Ultra XC Directions for Use; 2. JUVÉDERM® Ultra Plus Directions for Use; 3. Weinkle et al. *J Cosmet Dermatol.* 2009.

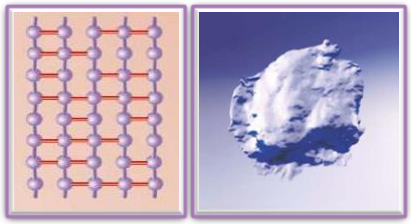
109

JUVÉDERM® XC POSSESSES UNIQUE PHYSICAL AND CHEMICAL PROPERTIES[1]

Smooth FLOW

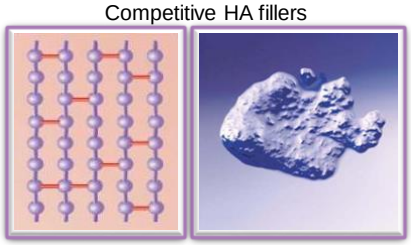
- HYLACROSS™ technology: robust and smooth consistency[1]
  - Proprietary cross-linking and homogenization
  - Uniform extrusion force and smooth flow
  - Random sizes and shapes that result in a smooth-consistency gel
  - Results in a unique 3D matrix that is strong and robust, yet still soft and smooth

JUVÉDERM®



More cross-linked | Smooth consistency

Competitive HA fillers

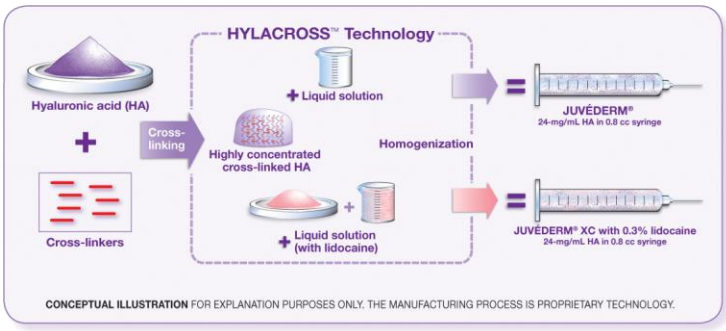


Less cross-linked | Granular consistency

The significance of the difference has not been established in controlled clinical studies.
1. Data on file, Allergan, Inc.; JUVÉDERM® Technical File.

110

ADDING LIDOCAINE AS A DRY SUBSTANCE ENSURES THE SAME CHEMICAL AND PHYSICAL CHARACTERISTICS AS JUVÉDERM® INJECTABLE GEL WITHOUT LIDOCAINE



- Addition of lidocaine has no effect on[1,2]:
  - HA concentration or volume
  - HA degradation
  - Product viscosity or extrusion force
  - pH level

111

1. Weinkle et al. *J Cosmet Dermatol.* 2009; 2. Data on file, Allergan, Inc.

JUVEDERM ULTRA AND ULTRA PLUS

- Non-animal derived Hyaluronic Acid (HA) gel
- FDA approval for mid-deep dermal injection for treatment of moderate to severe facial wrinkles/folds such as n/l folds
- 2 syringes per box (.4cc or 1cc)
- Chemical makeup:
  - Ultra :24mg/ml HA less viscous
  - Ultra Plus :24mg/ml HA 20% more viscous than Ultra due to higher degree of cross-linking
- Injection Plane:
  - Ultra : mid to deep reticular dermis
  - Ultra Plus : deep reticular dermis
- Longevity of correction: up to 12 months with initial treatment
- Identical to original formulations in packaging, chemical composition, injection technique and longevity
- Lidocaine .3% in a powder form added by manufacturer
  - Powder form ensures that the physical characteristics and longevity of the product are unchanged
- Patients report 90% reduction in pain

Note: longevity estimations based on anecdotal reports and FDA approved statement

09/04/2016

JUVEDERM VOLUMA XC

- Non-animal derived Hyaluronic Acid (HA) gel
  - First HA filler FDA approved for Mid Face Volumization
- FDA approval for deep supraperiosteal and/or subcutaneous injection for treatment of age-related volume deficit in the mid face (cheeks) on adults over 21
- 2 syringes per box (1cc)
- Chemical Make up:
  - 20 mg/ml of tightly cross linked HA (short chain) HA using Vycross Technology (high G')
- Injection Plane: Sub Cutaneous Plane/ Supra Periostial Depot
- Longevity of correction: up to 2 years with maximum fill
- NOT to be placed in mobile areas (ie: lips, hands) or for nasal sculpting or glabella

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VYCROSS™ Collection

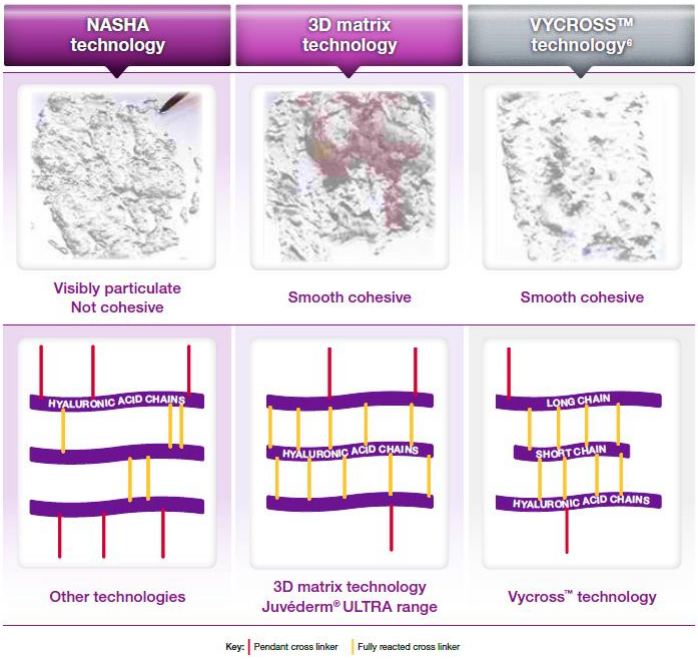
	Volbella	Volift	Voluma
Primary usage	Fine lines Medium-sized skin depressions Enhancement of the lip area	Deep skin depressions Face contouring	Restore volume of the face
Implantation depth	Superficial to Mid-dermis Lip mucosa	Deep dermis Lip mucosa	Subcutaneous Upper-periosteal Deep dermis
HA concentration	15 mg/mL	17.5 mg/mL	20 mg/mL
Gel Hardness [1](G' @ 5Hz)	~ 200Pa	~ 250Pa	~ 320 Pa
Compression[1]	17 gmf	23 gmf	39 gmf
Duration	Up to 12 months[2]	Up to 12 months[4]	Up to 18 months[3]
Needle size	30 G ½"	30 G ½"	23 G 1" (2mL syringe) 27G ½" (1mL syringe)

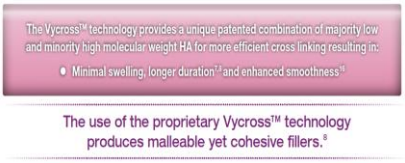


[1] TR896 and TR897 reports, Internal data.
[2] Eccleston D, Murphy DK, *Clinical, Cosmetic & Investig*
[3] Raspaldo H, *J Cosmet Laser Therapy 2008*, 10(3), 134-142.
[4] Technical Report RE1210037, Internal data.

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THE JUVÉDERM® RANGE OF FILLERS USES PROPRIETARY TECHNOLOGY





09/04/2016

THE VERSATILITY OF THE VYCROSSTM COLLECTION

	Juvéderm® VOLBELLA® with Lidocaine	Juvéderm® VOLIFT® with Lidocaine	Juvéderm® VOLUMA® with Lidocaine
Recommended indications	Enhancement of lip and perioral areas and reduction of fine lines	Indicated for filling medium-deep depressions	Restores facial volume including cheeks, cheekbone, and chin
Product code	94200JR	94201JR	94504JR 94506JR
Packaging	1 x 1 mL	2 x 1 mL	1 x 2 mL 2 x 1 mL
HA Concentration	15 mg/mL	17.5 mg/mL	20 mg/mL
Lidocaine	Yes 0.3% w/w Lidocaine (HCl)	Yes 0.3% w/w Lidocaine (HCl)	Yes 0.3% w/w Lidocaine (HCl)
Easyflow System	2 x 30G 1/2"	4 x 30G 1/2"	4 x 27G 1/2"



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RESTYLANE & PERLANE

- **Non-animal derived Hyaluronic Acid (HA) with molecules suspended in a gel carrier**
- FDA approval for mid-deep dermal injection for treatment of moderate to severe facial wrinkles/folds such as n/l folds
- Restylane 1 syringe per box (.5cc, 1cc or 2cc)
- Perlane 1 syringe per box (1cc, 2cc)
- **Chemical makeup: equal percentages of HA/ml**
  - Restylane particle size smaller
  - Perlane particle size larger
- **Injection Plane:**
  - Restylane: mid-deep reticular dermis
  - Perlane: deep reticular dermis
- **Longevity of correction:**
  - Restylane:4-6 mos; up to 18 months/1 touch up at 4.5-9 mos
  - Perlane: at least 6 months

09/04/2016

Note: longevity estimations based on anecdotal reports and FDA approved statement

RESTYLANE-L PERLANE-L

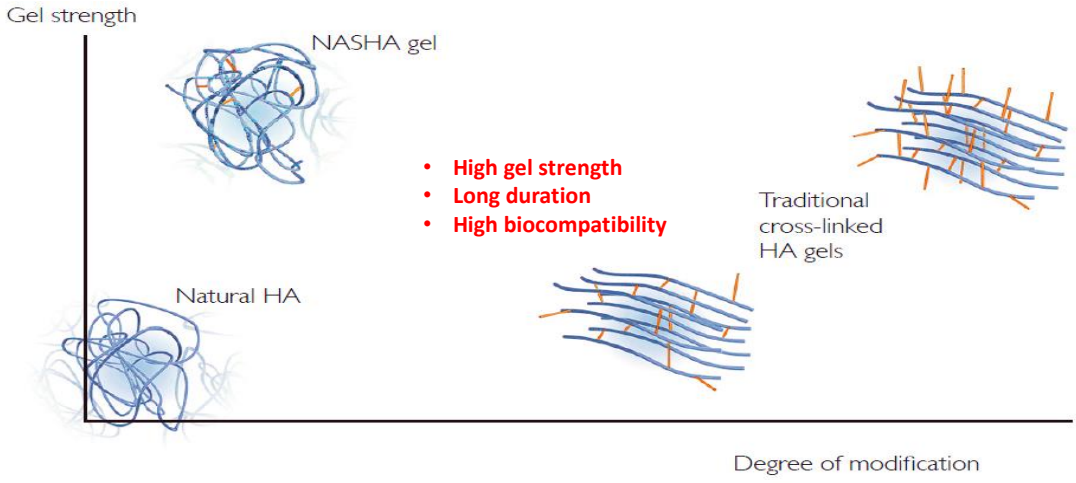
Restylane®

- Identical to original formulations in packaging, chemical composition, injection technique and longevity
- Lidocaine .3% added by manufacturer
- Patients report 90% reduction in pain



09/04/2016

NASHA TECHNOLOGY - OPTIMAL GEL PROPERTIES



- **High gel strength**
- **Long duration**
- **High biocompatibility**

Reference: 1.NASHA - the monograph; Ågerup B, Wik O.

Restylane®

Restylane Touch™
- Very fine facial lines
- Lipstick bleed lines
- Niggling creases

Restylane® Lidocaine
- Moderate lines and wrinkles
- Nose to mouth lines
- Marionette lines
- Tear trough hollows under the eyes

Restylane Perlane™ Lidocaine
- Sharp, deep lines
- Frown lines
- Nose to mouth lines
- Brow lift
- Firms the jawline
- Smoothes out uneven shaped noses

Restylane Sub-Q™
- Restores lost volume in the mid and lower face
- Boosts hollow cheeks
- Corrects receding chins
- Creates a non surgical mid face lift

Restylane Lipp™
- Provides natural fullness leaving lips soft to touch
- Cupid's bow enhancment
- Lip shaping

Restylane Vital™
- Treats the fine crêpey lines caused by over exposure to the sun.
- Boosts the skin's hydration system to leave the skin looking plump and hydrated.
- Perfect for treating sun damaged skin on the face, back of the hands and décolletage.

Restylane Vital™ Light
- Ideal for thin and delicate skin and where there is a loss in skin firmness and tone
- Perfect for upper face décolletage and neck
- Lip hydration

BELOTERO BALANCE

- **Non-animal derived Hyaluronic Acid (HA) gel double cross-linked with BDDE**
  - FDA approval for mid-deep dermal injection for treatment of moderate to severe facial wrinkles/folds such as n/l folds
  - 1 syringe per box (1cc)
- **Chemical makeup:**
  - 22.5mg HA
- **Injection Plane:**
  - Mid to deep dermis but may be injected more superficially
- **Longevity of correction:** typically 4.5 - 6 month/*Labeling extended 12-18 months when a repeat treatment used*

Note: longevity estimations based on anecdotal reports and FDA approved statement

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BELOTERO®



Belotero® Balance



Belotero® Intense



Belotero® Volume

09/04/2016

SCIENTIFIC STUDIES

A recent scientific study, **not sponsorized by Teoxane Laboratories**, reports
Teosyal® UltraDeep to be the longer-lasting volumizing filler among 24 dermal fillers

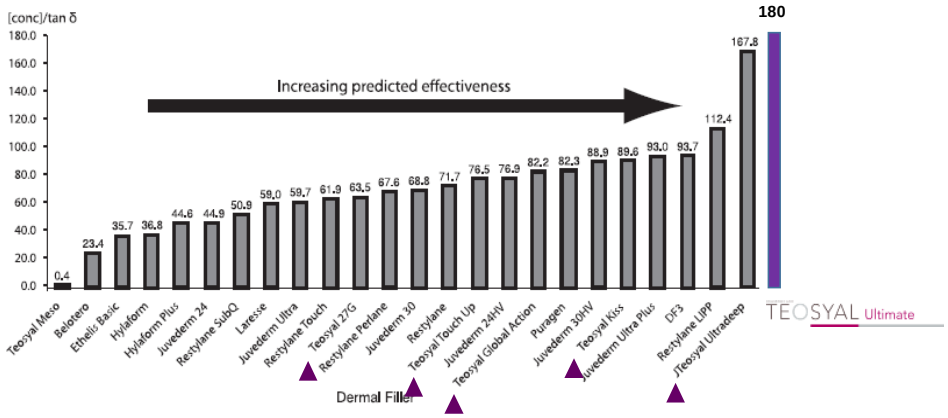


Figure 2. The prediction of persistence for several polysaccharide dermal fillers based on the filler formulation concentration and elasticity as measured according to the tan δ. Fillers with higher concentration and higher elasticity (lower tan δ) are predicted to be more persistent.

S. J. Falcone *et al.*, *Dermatologic Surgery* **2009**, *8*, 1238-43.

RADIESSE

- **Chemical makeup**
  - CaHa active ingredient (70%) + glycerin and water gel carrier (30%)
  - FDA approval for mid dermal injection for treatment of moderate to severe facial wrinkles/folds such as n/l folds & for lipoatrophy due to HIV
- **Vacuumed packed in foil pack; 1 syringe per box**
  - (.3cc, .8cc, or 1.5cc)
  - 1 kit per syringe for adding Lidocaine to product
- **Injection Plane:**
  - Deep reticular dermis or dermal/subcutaneous junction
- **Longevity of correction:**
  - 12 months or longer
- **Limitations**
  - Not recommended for use in superficial rhytids, lips or tear trough

Radiesse™ just beautiful

09/04/2016

Note: longevity estimations based on anecdotal reports and FDA approved statement

SCULPTRA

- **Poly-L Lactic Acid:**
  - NOT considered a filler, but a bioactivator
  - Large volume indications; requires 2-8 treatments @ 4-6 week intervals
  - FDA approval for up to 4 injection sessions that are scheduled about 3 weeks apart for correction of shallow to deep nasolabial fold contour deficiencies and other facial wrinkles
- 2 vials per kit; powder that must be reconstituted prior to injection with 6-8cc sterile water
  - **1-2cc Lidocaine, plain or with epinephrine**
- **Injection Plane:**
  - Subcutaneous tissue
- **Longevity of correction:**
  - Up to 2 years (maximum results seen at 6 mos post final treatment)
- **Limitations:**
  - Not recommended for use in superficial rhytids, lips or tear trough

09/04/2016