Synthetic Fillers
(HA fillers, Non-HA fillers including Collagen)

Autologous Fat

Facial Implantables (AlloDerm & Gore-Tex)
Facial Implants
Synthetic Fillers

• Collagen
• Hyaluronic Acid

• No C/HA with non-absorbable microspheres (Sculptura & Radiesse)
  • No C/HA without non-absorbable microspheres (Laresse)
• Collagen with non-absorbable microspheres (Artefill)
Collagen Fillers

From 1981 to 2003, was the only available facial filler.

**Advantages:** Very Easy Injection

**Limitations:**
- Very short-lived duration usually lasting around 6 weeks or so
- Because collagen was bovine-derived (from cows), a small percent of patients had allergic reactions
Collagen Fillers

Cross-Linking Collagen

Zyderm, Zyplast & Evolence
last longer than 6 months but still need pretreatment hypersensitivity testing, in 2009 Evolence was withdrawn from US market

Adding non-absorbable Component

ArteFill
Microsphere-enhanced collagen filler for the correction of nasolabial folds with unique composition of polymethylmethacrylate (PMMA) microspheres (20% of implant volume) and purified bovine collagen (80% of implant volume, containing 0.3% lidocaine)
Hyaluronic Acid

• Naturally occurring Polysaccharide (Sugar) present in skin more in dermis than epidermis

• It has the ability to bind to large quantities of water (1 gm can bind up to 3 litres of water)

• Excellent lubricant which aids Cell mobility

It is prepared either bacterial based (Restylane & Juviderm 4000-6000 monomers) or Animal based (Hyalform 10000-15000 monomers) *No Significant Difference*
Hyaluronic Acid

- Formed of polymers each resembling a chain composed of repeating units of smaller molecule called monomers

- When these chains are bound together by glycosaminoglycan crosslinkers it is called Cross-linked HA
Hyaluronic Acid

WHY does it contain both cross-linked and Non cross-linked HA

--Non cross-linked component aids extrusion and flow but is rapidly degraded

--Cross-linked component provides persistency on the expence of gel softness and ease of injection
Hyaluronic Acid

**Important Parameters affecting performance of HA fillers**

- *Total HA Concentration per ml* (range: 8-27 mg/ml)
- *Percentage of crossed linked HA of the Total HA concentration* (range: 0-90%)
- *Degree of cross-linkage* (number of cross-linkers between HA chains)
- *Gel consistency: Smooth* (eg. Juvederm) or *Granular* (eg. Restylane)
- *Gel hardness*
- *Degree of hydration of HA chains*
Hyaluronic Acid

Gel hardness or G-prime value: measures gel hardness

More particle size = More gel hardness
More conc. of HA = More gel hardness
More conc. of cross-linked HA = More gel hardness
More degree of cross linkage of HA = More gel hardness
Hyaluronic Acid

Degree of Hydration of HA Chains

When HA chains are near Equilibrium Hydration their ability to bind water is minimal (What you inject is what you get) e.g Hyalform

When HA chains are far below Equilibrium Hydration they are more hungry for water e.g restylane & Juviderm
Hyaluronic Acid

Why is it so popular?

No allergic reactions
Reasonable duration
Lower possibility of Granuloma formation

THE ERASER "Hyalase"
Non-HA Non Collagen Fillers

**Famous examples:** Radiesse, Sculptra, Aquamid & Laresse

A portion of non-resorbable beads or particles mixed in a carrier solution. e.g Radiesse uses ceramic beads and ArteFill uses plastic beads

The non absorbable component stimulates collagen synthesis

As a result, they last longer than the HA fillers even if 80 - 90% of the particulated filler does go away

**Adverse effects and Limitations**

--Lump formation due to scarring around beads

--Chronic inflammation in and around the injection site

--**No eraser !!**

*So their use in the lips is not recommended but they can be used deep at the bone level for temporary cheek, chin and jaw enhancement*
Sculptra, or poly-L-lactic acid (PLLA) microspheres, was approved by the FDA on August 3, 2004, for the treatment of facial fat loss.

It causes the skin to thicken via collagen neo-synthesis, improves appearance of folds and sunken areas, and hides the fat loss.

For most PLLA clinical studies, the effects lasted for 2 years.
Aquamid

Comprised of 97.5% apyrogenic water bound to 2.5% cross-linked acrylamide polymer.

The effects of Aquamid are currently known to last at least 11 years, as the product has not been field-tried longer than this period yet.

It is currently not approved by the FDA for use in the United States
Calcium-based microspheres (Ca Hydroxylapatite) suspended in a water-based gel

Upon injection, it immediately adds volume to safely contour, correct, and beautify facial feature

With its patented microsphere technology, it starts **collagenesis**, encouraging collagen to grow around the injection area

Approved by the FDA for use in the United States
**No** non-absorbable component

Composed of two absorbable medical polymers called carboxymethylcellulose (CMC) and polyethylene oxide (PEO)

Approved by the FDA for use in the United States
Validated 5-Point Photographic Wrinkle Assessment Scale

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
<td>Extreme</td>
</tr>
<tr>
<td>No wrinkle</td>
<td>Shallow, just perceptible wrinkle</td>
<td>Moderately deep wrinkle</td>
<td>Deep wrinkle, well-defined edges (but not overlapping)</td>
<td>Very deep wrinkle, redundant fold (overlapping skin)</td>
</tr>
</tbody>
</table>
The Modified Fitzpatrick Wrinkle Scale

0
No Wrinkle
No visible wrinkle continuous skin line

1
Fine Wrinkle
Visible wrinkle and slight indentation

2
Moderate Wrinkle
Clearly visible wrinkle; 1-2 mm wrinkle depth

3
Deep Wrinkle
Deep and furrow visible wrinkle; more than 3 mm wrinkle depth

0.5
Very shallow yet visible wrinkle

1.5
Visible wrinkle and clear indentation; less than 1 mm wrinkle depth

2.5
Prominent and visible wrinkle; more than 2 and up to 3 mm wrinkle depth
The 8 Point Approach
Injection Techniques

Linear Threading
Serial Puncture
Fanning
Ferning
Sandwich
Cross-Hatching
Injection Techniques *Linear Threading*

**Nasolabial Folds**

- Needle inserted at 20-40 Degrees
- Material Injected as needle is advanced or withdrawn

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*Linear Threading technique (Nasolabial Folds)*

- Needle inserted with an angle 20-40
- Material is injected as needle is advanced or withdrawn and in very close parallel lines
Injection Techniques *Serial Puncture*

To fill lines and create definitions

Needle inserted at 45 Degrees Medial to fold

Small Material Deposits Injected at Close Intervals

Serial Puncture technique
(To fill lines and Create definition)

--Needle inserted with an angle 45 medial to fold
--small deposits injected in close intervals
Injection Techniques *Fanning Technique*

For upper ½ of Nasolabial folds and oral commisures

Needle inserted at 20-40 Degrees

Material Injected in retrograde fashion in fanning directions as clock numbers without withdrawing needle

Fanning technique

(Upper 1/2 of Nasolabial Fold, Oral Commisure)

--Needle inserted with an angle 20-40

--Material injected in retrograde fashion in fanning direction as clock numbers changing directions without withdrawing needle
Injection Techniques **Ferning Technique**

For Dynamic Folds as lower ½ of Nasolabial folds, Mouth Corners & Smile Lines in Lower Cheeck
Needle inserted at 20-40 Degrees perpendicular to fold then advanced a few mms away from it
Material Injected in retrograde fashion alternating between both sides of fold
Injection Techniques *Sandwich Technique*
Injection Techniques **Cross-hatching Technique**

For Modifying Facial Contours and enhancing volumes

Needle inserted at 20-40 Degrees

Material Injected in retrograde fashion
Complications

EARLY
- Over & Under Correction
- Filler Visibility
- Skin Necrosis
- Infection

LATE
- Nodule Formation
- Granuloma Formation
Anaesthesia
Injecting Nasolabial Folds
Injecting Marionette Lines
Injecting The Lip
Restoring Facial Volumes and Facial Sculpturing
Instructions After Injection

Activities to Avoid

Exercise  Sun  Heat  Alcohol for 24 hours
<table>
<thead>
<tr>
<th></th>
<th>TEOSYAL® Meso</th>
<th>TEOSYAL® First Lines</th>
<th>TEOSYAL® Global Action</th>
<th>TEOSYAL® Touch Up</th>
<th>TEOSYAL® Deep Lines</th>
<th>TEOSYAL® Kiss</th>
<th>TEOSYAL® Ultra Deep</th>
<th>TEOSYAL® Ultimate</th>
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<tbody>
<tr>
<td>Concentration</td>
<td>15 mg/g</td>
<td>20 mg/g</td>
<td>25 mg/g</td>
<td>25 mg/g</td>
<td>25 mg/g</td>
<td>25 mg/g</td>
<td>25 mg/g</td>
<td>22 mg/g</td>
</tr>
<tr>
<td>Volume-creating capability</td>
<td>○ ○ ○ ○ ○</td>
<td>● ○ ○ ○ ○ ○</td>
<td>● ● ● ○ ○ ○ ○</td>
<td>● ● ● ○ ○ ○ ○</td>
<td>● ● ● ○ ○ ○ ○</td>
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<td>● ● ● ○ ○ ○ ○</td>
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<tr>
<td>Needle</td>
<td>30G 1/2</td>
<td>30G 1/2</td>
<td>30G 1/2</td>
<td>27G 1/2</td>
<td>27G 1/2</td>
<td>26G 5/8</td>
<td>21G 1 1/2</td>
<td></td>
</tr>
<tr>
<td>Skin lesions</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
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<td><img src="image7.png" alt="Image" /></td>
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<tr>
<td>Blister pack</td>
<td>2 x 1ml</td>
<td>2 x 0.7ml</td>
<td>2 x 1ml</td>
<td>2 x 0.5ml</td>
<td>2 x 1ml</td>
<td>2 x 1ml</td>
<td>2 x 1ml</td>
<td>1 x 3ml</td>
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<tr>
<td>Estimated duration before top-up*</td>
<td>2 - 3 months</td>
<td>6 months on average</td>
<td>6 - 9 months on average</td>
<td>6 - 9 months on average</td>
<td>6 - 9 months on average</td>
<td>6 - 9 months on average</td>
<td>9 - 12 months on average</td>
<td>12 - 18 months on average</td>
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*This average lifespan depends on several factors: patient's skin type; severity of the wrinkle to be corrected; type of injection (superficial, medium or deep dermis) and the volume injected.
<table>
<thead>
<tr>
<th></th>
<th>STYLAGE&lt;sup&gt;®&lt;/sup&gt; HYDRO</th>
<th>STYLAGE&lt;sup&gt;®&lt;/sup&gt; S</th>
<th>STYLAGE&lt;sup&gt;®&lt;/sup&gt; M</th>
<th>STYLAGE&lt;sup&gt;®&lt;/sup&gt; L</th>
<th>STYLAGE&lt;sup&gt;®&lt;/sup&gt; XL</th>
<th>STYLAGE&lt;sup&gt;®&lt;/sup&gt; LIPS</th>
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<tbody>
<tr>
<td>COMPOSITION</td>
<td>Non cross-linked antioxidant Hyaluronic Acid</td>
<td>Cross-linked antioxidant Hyaluronic Acid</td>
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<tr>
<td>CONCENTRATION</td>
<td>14 mg/g</td>
<td>16 mg/g</td>
<td>20 mg/g</td>
<td>24 mg/g</td>
<td>26 mg/g</td>
<td>18.5 mg/g</td>
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<tr>
<td>VOLUME</td>
<td>1 x 1 ml</td>
<td>2x0.8 ml</td>
<td>2 x 1 ml</td>
<td>2 x 1 ml</td>
<td>2 x 1 ml</td>
<td>0.8 ml</td>
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<td>NEEDLES</td>
<td>30G 1/8</td>
<td>30G 1/2</td>
<td>30G 1/2</td>
<td>27G 1/2</td>
<td>26G 1/2</td>
<td>30G 1/2</td>
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<tr>
<td>INDICATIONS</td>
<td>MESO</td>
<td>Fine to medium wrinkles</td>
<td>Medium to deep wrinkles</td>
<td>Deep to very deep wrinkles</td>
<td>ENHANCEMENT</td>
<td>LIPS</td>
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<tr>
<td>STORAGE</td>
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<td></td>
<td></td>
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<td>Between 2°C and 25°C</td>
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<td>REMANENCE</td>
<td>9 MONTHS</td>
<td>12 MONTHS</td>
<td>12 MONTHS</td>
<td>12 MONTHS</td>
<td>12 MONTHS +</td>
<td>6 - 9 MONTHS</td>
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<td>PACKAGING</td>
<td><img src="image" alt="STYLAGE HYDRO" /></td>
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<td><img src="image" alt="STYLAGE M" /></td>
<td><img src="image" alt="STYLAGE L" /></td>
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<td><img src="image" alt="STYLAGE LIPS" /></td>
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<tr>
<td></td>
<td>VARIODERM FINE LINE</td>
<td>VARIODERM</td>
<td>VARIODERM PLUS</td>
<td>VARIODERM SUBDERMAL</td>
<td></td>
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<tr>
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<td></td>
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<tr>
<td>Concentration</td>
<td>6 mg/ml</td>
<td>12 mg/ml</td>
<td>18 mg/ml</td>
<td>27 mg/ml</td>
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<tr>
<td>Cross linking grade</td>
<td>70-90%</td>
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<td>70-90%</td>
<td>70-90%</td>
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<tr>
<td>Needle size</td>
<td>Varioderm contains 2 x 1 ml syringes and 4 sterile needles</td>
<td></td>
<td>Varioderm contains 2 x 1 ml syringes and 4 sterile needles</td>
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<tr>
<td>Packaging</td>
<td>2 x 1,0 ml</td>
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<tr>
<td>Indications</td>
<td>Superficial Wrinkles Crow’s feet Red part of the lips Perioral lines</td>
<td>Medium and Deep Wrinkles in all areas Lip contours</td>
<td>Deep Wrinkles Contour of the face Volume creation</td>
<td>Facial Contour and Augmentation, Very Deep Wrinkles, Volume Creation, Nasal Augmentation, Scar and Acne Scar Correction and Breast Augmentation</td>
<td></td>
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<tr>
<td>Skin level</td>
<td>Superficial Dermis</td>
<td>Middle and Deep Dermis</td>
<td>Deep Dermis or Subcutis</td>
<td>Subcutis and Epidermal</td>
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<tr>
<td>Injection technique</td>
<td>based on the indications: retrotracing, criss cross, multiple point and fan technique</td>
<td></td>
<td>based on the indications: retrotracing, criss cross, multiple point and fan technique</td>
<td></td>
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</tr>
</tbody>
</table>
**Restylane and Restylane Lidocaine**

Restylane® was the first hyaluronic acid product to be approved by the FDA for aesthetic use.

Restylane® is specifically designed to reduce moderate facial wrinkles and folds, such as for example glabellar frown lines.

It can also be used to treat smile lines and marionette lines at the corners of the mouth. Restylane Lidocaine can be used as an alternative to increase patient comfort.

**Indications:**
- Moderate facial wrinkles.

**Where to inject:**
- Mid-dermis.

**Available syringe size:**
- 1 ml
- 0.5 ml

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**Restylane Touch**

Restylane Touch™ is designed to reduce the appearance of fine, superficial lines such as the periorbital and perioral lines.

**Indications:**
- Fine superficial facial lines.

**Where to inject:**
- Upper dermis.

**Available syringe size:**
- 0.5 ml

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**Restylane Lipp**

Restylane Lipp™ is designed for the highly dynamic anatomy of the lips.

Restylane Lipp is structured to withstand the strains associated with the full range of oral movements. It provides lip enhancement for an extended period of time.

**Indications:**
- Lip enhancement.

**Where to inject:**
- Deep dermis/upper subcutaneous layer.

**Available syringe size:**
- 1 ml
- 0.5 ml

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**Restylane Perlance and Restylane Perlance Lidocaine**

Restylane Perlance™ is used for the correction of deeper wrinkles and folds such as nasolabial folds.

Restylane Perlance is a powerful tool for shaping facial contours such as minor to moderate contouring of the cheek or eyebrow area, and accentuating the facial features.

Restylane Perlance Lidocaine can be used to increase patient comfort.

**Indications:**
- Deep wrinkles and folds, minor to moderate facial contouring.

**Where to inject:**
- Deep dermis/upper subcutaneous layer.

**Available syringe size:**
- 1 ml
- 0.5 ml

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**Restylane SubQ**

Restylane SubQ™ is designed for volumetric contouring of facial features.

Restylane SubQ is injected deeper to add volume and support the overlying tissue, providing facial fullness and restoring symmetry. This treatment is ideal for patients with flattened facial features, or those with an unbalanced or asymmetrical face. It is also suitable for patients reluctant to undergo facelift surgery or the insertion of permanent implants.

Meeting the increasing demands from patients requesting less invasive and non-permanent alternatives to plastic surgery, Restylane SubQ also fulfills many requirements of an ideal soft tissue filler.

**Indications:**
- Facial contouring/chin and cheek augmentation.

**Where to inject:**
- Deep subcutaneous layer or superficially.

**Available syringe size:**
- 2 ml
Macrolane™ is the first hyaluronic acid–based product for breast enhancement, volume restoration and contouring of body surfaces. Macrolane provides instant and long-lasting results without the need for general anaesthesia. It is injected into the breast in the sub-glandular level and subcutaneously for body contouring. The Macrolane gel is based on Q-Med's unique and patented NASHA™ technology. NASHA gels have been used in over 10 million treatments in over 70 countries worldwide for facial aesthetic treatments. The safety and effectiveness of NASHA gels have been clinically proven and are well documented.

Macrolane is available in two different formulations, or volume restoration factors, Macrolane VRF20 and Macrolane VRF30. Macrolane VRF20 is suitable for areas with less tissue support and cover, while Macrolane VRF30 is a thicker gel suitable for areas with substantial tissue support and cover.

A single treatment with Macrolane can last up to 12 months. The body slowly metabolizes the biocompatible Macrolane gel. If longer lasting results are desired, re-treatments can be made to maintain the aesthetic results.
Juvéderm® ULTRA 2 gently treats moderate lines, especially those around the lips and corners of the eyes and those very close to the surface of the skin.

Juvéderm® ULTRA 3 gently smooths wrinkles between the nose and corner of the mouth in order to maintain a youthful smile.

Juvéderm® ULTRA 4 works on the most noticeable folds and lines, and improves the contour of the face.

Juvéderm® ULTRA SMILE is specifically for your lips for natural, smooth, long-lasting results; and it’s formulated with a local anaesthetic for added comfort.

Juvéderm™ VOLUMA™ restores facial volume loss due to age or weight loss, for a fuller, smoother, more youthful appearance.