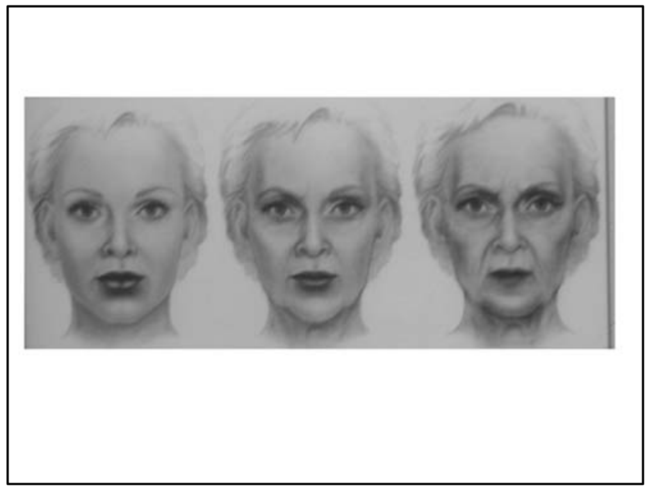
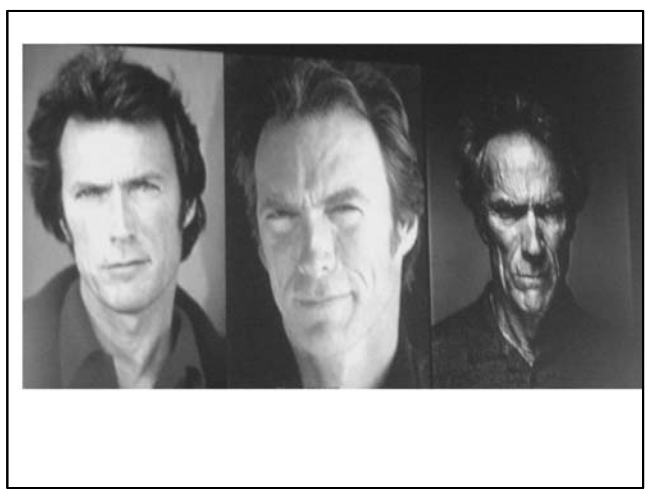
[연수강좌]

Transdermal augmentation

안 지 현

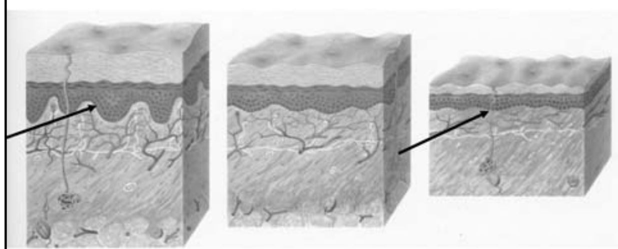
AnG클리닉



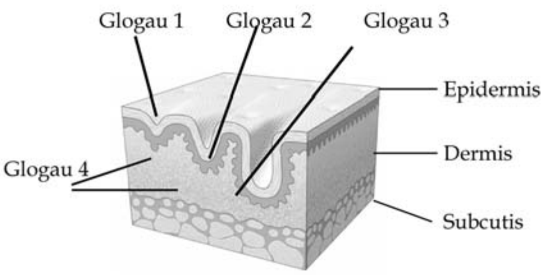


Ageing of skin texture

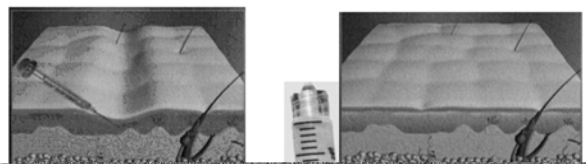
Symptoms
Flattening of the epidermis
reduction of collagen and Glucosaminoglycanes and (!) ....



Depth of wrinkles according to Glogau skin ageing



2.Various Filler

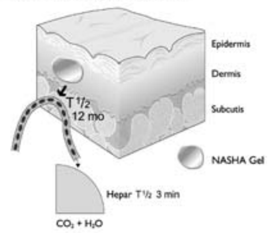


Character of HA

- High biocompatibility
- Hydrophilic – 1000 Times
- Non-selective species
- Linear polysaccarides
- D-glucuronic acid와 N-acetyl glucosamine의 반복되는 dimer(이중체)

Degradation

- Degradation – through the action of hyaluronidase & free radical
- Lymphatic drainage → blood circulation → Catabolism in sinusoidal liver
- Receptor mediated uptake & lysosomal hyaluronidase
- In blood, Half-life of HA is only a few min



In skin

- In skin half-life is < 24 hours
- In a normal human body about 3g of H·A is catabolized each day.

The stabilization is essential in order to improve the shelf life and the residence time.

Stabilization of HA

- Conversion of the viscous sol form to cross-linked hydrogel
- Resistance to degradation
- Retaining the biocompatibility & Pharmacological properties of native HA

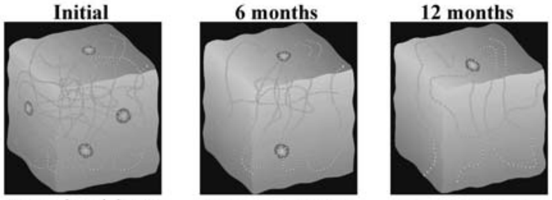
Water binding of Hyaluronic Acid

Dependence on molecular weight

Isovolemically degraded

– because they can hold more water the less concentrated they are –

Initial | **6 months** | **12 months**



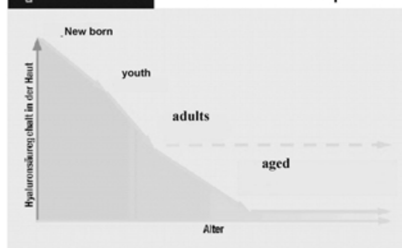
20 mg polymer/ml water can hold 50 ml water/g polymer

10 mg polymer/ml water can hold 100 ml water/g polymer

5 mg polymer/ml water can hold 200 ml water/g polymer

Decrease of hyaluronic acid

needs to be replaced



content of hyaluronic acid in the skin by age

age	
19–47	0,0330%
60	0,015%
70	0,007%

Longas M; Evidence for structural changes in dermatan sulfate and hyaluronic acid with aging, Carbohydrate Research (1987) 159: 127-136

Klaus Fritz – Hautärzte und Laserzentrum Landau

Protein load & E.U level

Main factor			Clinical symptom
Protein Load	➡	Foreign body 형성 Ag-Ab Complex ⬇ hypersensitivity	➡ Allergic reaction
Endotoxin	➡	Macrophage에 의한 phagocytosis	➡ Oedema, fever, erythema

What is a Good Filler? Safety

- **Endotoxin Unit level : 0,2 EU/g (cf: EP 12.5EU/25mg)**
  - **60 times**
  - 열균공정에서 생성된 균체내독소
  - bacterial fermentation
  - 균주 : Stretococcus zooepidermicus

- **Endotoxins이란?**
  - pyrogen
  - fever
  - oedema
  - erythema,redness
  - ⇒ free radicals 생성

EXP)	ENDOTOXIN UNIT LEVEL
RESTYLANE	0.5 Eu/g
TEOSYAL	0.2 Eu/g

		RESTYLANE	JUVEDERM	TEOSYAL
HA	MANUFACTURER	Q-MED	LEADERM	TEOXANE
	NATION	SWEDEN	FRANCE	SWISS
	DISTRIBUTOR	CONTACT KOREA	WOORI TRADING	ORIENT MESO
	PROTEIN LOAD	107ppm/mg 155ppm/mg 13~17ppm/mg	39ppm/mg	5ppm/mg (27G,30G)
	ENDOTOXIN UNIT LEVEL	0.5 EU/G		0.2 EU/G
	CONCENTRATION	20 mg	18 ~ 24mg	25mg(27G,30G) 15mg/(MESO)
	DURATION	0.6 M ~ 1 YEAR	0.6 M ~ 1 YEAR	1 YEAR ~ 1.5 YEAR
	GEL STRUCTURE	BIPHASIC ASPECT	MONOPHASIC ASPECT	MONOPHASIC ASPECT
	DOSAGE	1 Ml	1.2Ml (0.6 x 2 Syr.)	2 Ml (1 x 2 Syr.)
	SPEC	RESTYLANE TOUCH	No.18	MESO
		RESTYLANE	No.24	30G
		PERLANE	No.30	27G

Matridex

- The hyaluronic acid derivative
- Partially cross-linked hyaluronic acid created via bacterial fermentation
- dextranomer
- It is biocompatible and biodegradable
- It is indicated for rhytides, depressions, and lip augmentation

Matridex의 Components

◆ Active components

Hyaluronic acid	25 mg
Cross-linked hyaluronic acid	25 mg
Hypromellose	15 mg
Dextranomere DEAE	25 mg

◆ Excipients

L(+)-lactic acid	3.3 mg
Sodium chloride	6.9 mg
Phosphate buffer	
Water for injection	1 ml

What are HA & CL-HA?

◆ Hyaluronic acid
- 체내 구성물질로서 조직의 수분유지기능에 중요한 요소
- Hydration으로 인한 Augmentation 효과

◆ Cross-linked Hyaluronic acid
- HA가 쉽게 흡수되는 것을 보완 cross-link시킴.
- Insolubility in water, high hydration, viscoelasticity의 특징으로 지속력 증가

Ref) Journal of Biomedical Materials Research 1993:27:1129-34

Advantages of Hyaluronic Acid

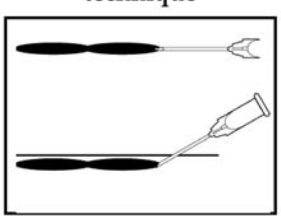
- Non-animal
- No skin test needed
- Biodegradable
- Instant result
- Long-lasting
- Hyaluronidase(Hylase)

Injection of Hyaluronic Acid

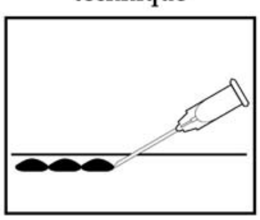
- Inject through 27 or 30 gauge needles
- Requires a full correction for the defect; but, not overcorrected
- After the injection, the material should be lightly massaged to conform to the contour of the surrounding tissue
- Additional implantation may be necessary to achieve the desired level of correction

Injection technique

Linear threading technique

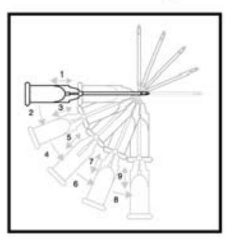


Serial puncture technique

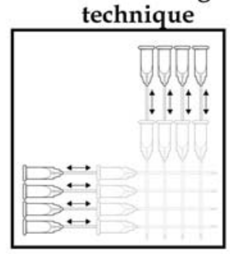


Injection technique

Fan technique



Cross-hatching technique

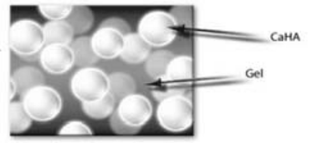


Calcium Hydroxylapatite for Soft-Tissue Augmentation

FDA-approved for vocal cords, as a tissue marker, and for periodontal use as a bony onlay
Approved for other usages in soft tissue, so found safe for soft-tissue use
Nasolabial fold and HIV Facial Lipoatrophy studies are finishing 12-month follow-up after patient injections completed.

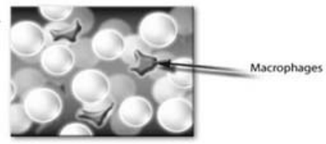
Mechanism of Action

- *Radiesse (CaHA+Gel) initially performs as a filler*



- *Macrophages*

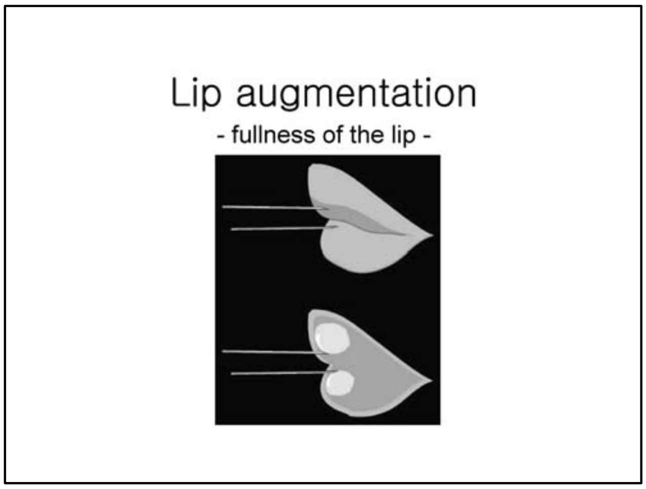
Start to degrade gel carrier (2-3 Months)

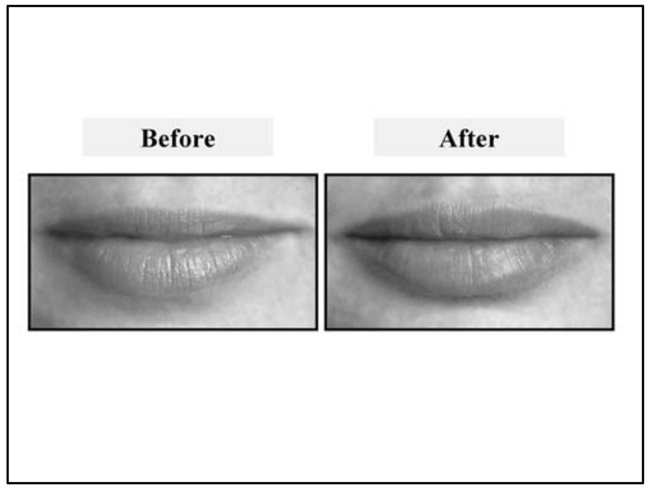


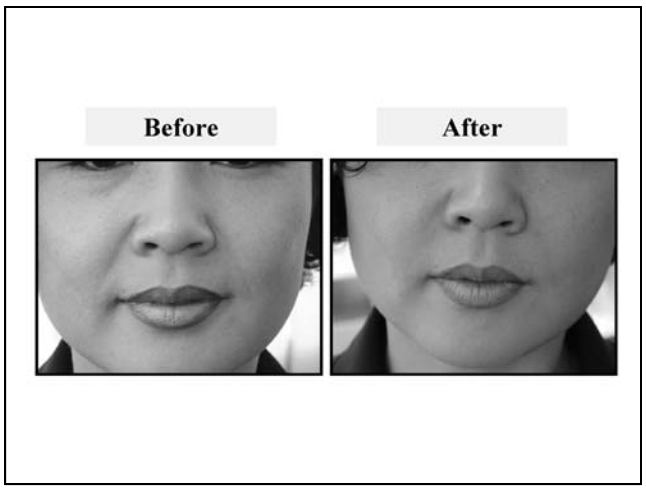
Mechanism of Action

Macrophages dissolve gel carrier as new collagen forms "scaffold" around particles. Collagen surrounds microspheres of CaHA and provides for a long term augmentation (1-2 year augmentation)

CaHA particles start to degrade and are metabolized by

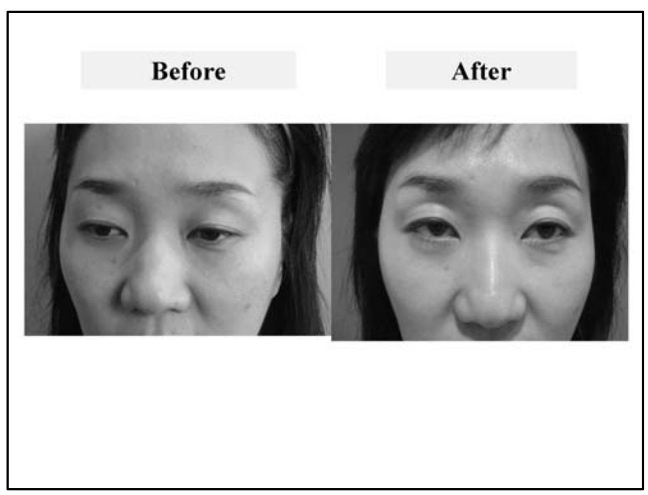

Lip augmentation
- fullness of the lip -


Before
After


Before
After


Before
After


Before
After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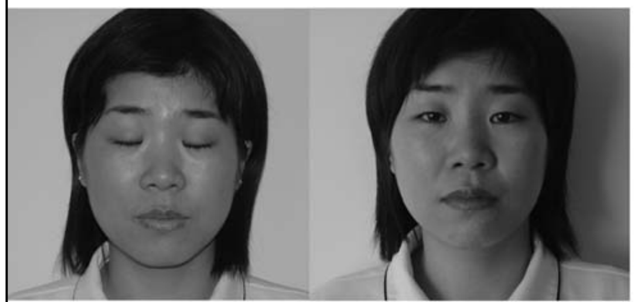
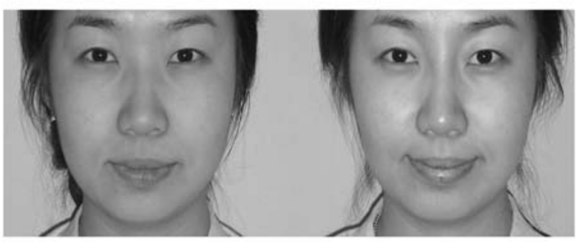
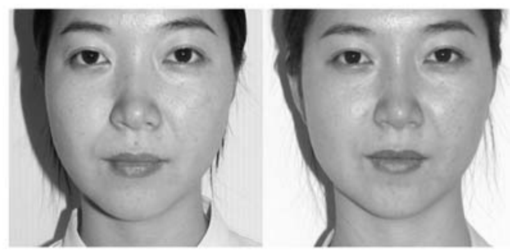
After





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