Skin rejuvenation with laser and other techniques

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Changes in Aging Skin

- skin thinner, more dry
- wrinkles in areas that are involved in mimic action
- loss of elasticity and sacking
- loss of subcutaneous fat tissue
- reduction in production of sebum
- pigmentation disorders, teleangiectasias, actinic keratosis
Methods in Skin Rejuvenation

- chemical peels
- microdermabrasion
- dermabrasion
- ablative lasers as CO2-laser and Er:YAG
- IPL – Photo rejuvenation
- non ablative lasers - sub surfacing
- fractional resurfacing (Fraxel®)
- radiofrequency (Thermage®)
Chemical peels

- superficial peels (exfoliation of epidermis)
- medium deep peels (papillary dermis)
- deep peels (reticular dermis)
Chemical peels - agents

• glycolic acid
• lactic acid
• salicylic acid
• TCA Peel
• Retinoid (only in ointments)
• additionally:
  bleaching agents as hydroquinone and Koji acid
Chemical peels - indications

• actinic elastosis and superficial wrinkles
• hyper pigmentations
• acne, acne scars
Microdermabrasion

- mechanical peeling with small crystals (salt/aluminium crystals)
- vacuum extraction after application
- treatment up to papillary dermis
- several treatments necessary
- light erythema after treatment
- indications: superficial wrinkles, tired skin
- treatment possible in skin type V and VI
Microdermabrasion - devices
Dermabrasio

- removal of upper layer of skin up to papillary dermis
- remodelling of collagen
- indication: deeper elastotic wrinkles, perioral wrinkles
- long “down time” (minimum 1 week)
- contraindications: keloid, acne, inflammatory skin diseases, periocular wrinkles
- complications: hyper-/hypo pigmentation, hypertrichosis, scars, milia, erythema, HSV-infection, bacterial infection
Dermabrasion – theoretic background

From: Kaufmann, et. al.: Dermatologische Operationen, Seite 54-55
Ablative Lasers: CO2 and Er:YAG

- removal of pigmentations and superficial wrinkles
- ablation of thin layers of epidermis
- absorption by water (selective photothermolysis)
  - vaporisation of cells and ablation of thin and exact layers of tissue
Ablative Lasers: CO2

- emission in 16,600 nm
- effect in sub cutis by heating of collagenous tissue
- collagen shrinking up to a third of original length
- increasing number of collagen fibres
- activity of fibroblasts increases
- styptic effect
Ablative Lasers: Erbium:YAG

- emission in 2,940 nm
- “cold” ablation mean no effect in sub cutis
- better and quicker healing of treated area
- advantage against peeling:
  - better control in depths of ablation
- no styptic effect
Ablative Lasers: Indications

• best results for superficial actinic perioral and periorbital wrinkles
• actinic elastosis
• dyschromia in actinic aged skin
• contraindication for mimic wrinkles as nasolabial or glabellar wrinkles
Ablative Lasers: Contraindications

- mimic wrinkles as nasolabial (filler) or glabellar (BTX) wrinkles
- neck
- skin type III and darker pigmented patients
- sun tanned persons
- anamnesis of keloids and hypertrophic scars
- intake of retinoid
Ablative Lasers: Side effects

• immediately after: crusts, erosions, bleeding
• change in pigmentation (hypo- or hyper pigmentation)
• keloids and hypertrophic scars
• erythema
• bacterial or virus infection
• increased sebum production with exacerbation of acne
Ablative Lasers - technique

From: Kaufmann, et. al.: Dermatologische Operationen, Thieme Verlag, Seite 74
Ablative Lasers – treatment with CO2
Ablative Lasers - after CO2

From: Worret et.al.: Kosmetische Dermatologie, Springer Verlag, Seite 219-220
Ablative Lasers - immediately after CO2

From: Worret, et. Al.: Kosmetische Dermatologie, Springer Verlag, Seite 220
Ablative Lasers – before and after CO2

From: Worret et. al.: Kosmetische Dermatologie, Springer Verlag, Seite 218
Ablative Lasers – before and after CO2 ablation
Ablative Lasers – before and after CO2
Ablative Lasers - immediately after Er:YAG

From: Worret et.al.: Kosmetische Dermatologie, Springer Verlag, Seite 221-222
Ablative Lasers - immediately after Er:YAG

From: Worret et. al.: Kosmetische Dermatologie, Springer Verlag, Seite 221
Ablative Lasers – Er:YAG

Before

Immediately after
Ablative Lasers – Er:YAG

Several weeks after
Ablative Lasers – Er:YAG
Ablative Lasers – Side effects

Persisting erythema
Ablative Lasers – Side effects

Two years after CO2 ablation
IPL - Photorejuvenation

- no need for down time → “lunch time procedure”
- no epidermal ablation
- dermal collagen remodelling more important to improve wrinkles than ablation
IPL - Photorejuvenation

• emission of a large range of wave lengths
• Photorejuvenation with removal of:
  • teleangiectasias and spider
  • treatment of diffuse erythema (rosacea, flushing)
  • removal of red and brown pigmentations
IPL - Photorejuvenation

- treatment of neck and hands also possible
- improvement of skin texture and tone by collagen remodelling
- indications: minimal wrinkles, actinic ageing of skin, younger persons (from mid 30s)
- repeated treatments (3 – 5) necessary
- side effects: blisters, scars, hyper-/hypo pigmentation, haematoma
Non ablative Lasers - subsurfacing

- emission in infrared wavelengths
- heating of papillary and reticular dermis with peak of energy → collagen remodelling
- cooling of epidermis
- devices: CoolTouch™ (1320 nm, Nd:YAG), Smoothbeam™ (1450 nm)
Fractional photothermolysis - Fraxel™

- Erbium:Glass Laser with emission in 1550 nm
- Heating in micro thermal zones with a diameter of 100 µm and a depth up to 300 µm

From: Fractional Resurfacing in Plastic Surgery, Reliant Inc.
Fractional photothermolysis - Fraxel™

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Fractional photothermolysis - Fraxel™

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Fractional photothermolysis - Fraxel™

From: Fractional Resurfacing in Plastic Surgery, Reliant Inc.
Radiofrequency - Thermage™

- heating in dermis and subcutaneous fat with radiofrequency
- results after one treatment in most cases
- effects focussed more in tightening, less in wrinkles
- anaesthesia necessary
- side effects: erythema, blisters, oedema
Radiofrequency - Thermage™

From: Homepage Thermage™
Radiofrequency - Thermage™

From: Homepage Thermage™
Wishes of aging men

- men are more interested in blepharoplasty operations
- less interest in improvement of skin texture and tone
- in contrast to women men “are allowed” to have wrinkles
  - powerful appearance
  - “interesting face”
- only few men in cosmetic consultation in Germany
Reality

Full face transplantation
Dangers in Laser treatment of human skin
Recommendations of
Strahlenschutzkommission
Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

www.ssk.de
DDL 2006

• Annual meeting of DDL 2006 and Orientierungsmodul of master studies „Diploma in Aesthetic Laser Medicine“ of Ernst Moritz Arndt university Greifswald, Germany

• 05./06.05.2006 : Knappschaftskrankenhaus Recklinghausen: Prof. Zabel
Diploma in Aesthetic Laser Medicine D.A.L.M.
Weiterbildungsstudiengang der Ernst Moritz Arndt Universität Greifswald
www.laserstudium.de
Which method would you choose?
Thank you for your attention!

www.ddl.de
www.dr-kimmig.de