Avoiding & Managing Complications

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Complications from lasers & IPL
- Crusting / Blisters
- Hyperpigmentation
- Hypopigmentation
- Scarring
- Infection
- Dissatisfaction with outcome
- Can happen with any laser, IPLS, light source & RF device.
- Complications will occur

Crusting, blisters...
- Sometimes can be suspected by very intense erythema
- Benign if handled properly
  - Know it
  - Recognise it before
  - Treat it immediately (class 3 or 4 topical steroid)

Pigmentary Changes: Hyperpigmentation
- Common
- Not a complication but rather a natural occurrence
- Less common after fractional ablative but does occur
- Resolves with time; sunblock a must after resurfacing
- Bleaching agents (e.g. hydroquinone, peels occasionally needed) Role of pretreatment
Hypopigmentation

- Also skin type related
- Transitory
- Permanent
- Can lead to scarring

Unusual Rxn due to Supplement

- **John Cotterill**
  - Severe phototoxic reaction to laser treatment in a patient taking St John’s Wort.
  - *J Cosmetic & Laser Ther 2001;3:159-160*

- Drug induced reaction (phototoxicity) from *Hypericum Perforatum* (milpertuis) contained in St John’s Wort (UK) / Jarsin (Germany).

- **Ask all patients before using a laser 532-800 nm.**

Scarring

How Do Complications Occur?

- **Wrong**
  - Information / Expectation
  - Diagnosis / Indication
  - Choice of system
  - Parameters
  - Treated site
  - Technique / Timing
  - Patient

**Combination of one or more elements**

Laser hair removal is ever increasing in popularity. Technology is fast advancing, and there are increasingly excessive commercial claims that laser hair removal in all skin types is free of side effects. The aim of this study is to review the evidence from published literature regarding the incidence of adverse effects after laser and light systems for hair removal. A review of the current published literature on the ill effects reported after laser/light-assisted depilation was conducted. Overall incidence of adverse effects after laser/light hair removal appears to be low, with very uncommon permanent sequelae. The two largest studies to date have shown that acute and transient side effects do occur. Higher incidence of pigmentary alterations is associated with the shorter wavelength lasers (up to 19%), particularly with darker skin types, compared with lower incidence using the neodymium-yttrium-aluminium-garnet laser (2-3%). Both studies did not show any long-term side effects or scarring. Laser/light hair removal, carried out by trained professionals, is a safe procedure with a very low incidence of permanent sequelae. The majority of adverse effects are transient and minor. They are more common in darker skin. Longer wavelength devices reduce the risk in darker skin.


- 2541 female hirsute patients. 1000 patients were treated by the Lumina IPL system. 1541 patients were treated by Vasculight-SR, a multifunctional laser and IPL system.
- 75 burns – 10 PIH - 64 PIHPO – 1 scar.
- 28 PIH, 28 PIHPO – 28 Erosions.
- 79 paradoxical hair growth, 27 leukotrichia and 1 folliculitis,

As study comes from Iran, I suppose that skin types were mainly IV & V, that could explain the high incidence of complications as they treated mainly with IPL.

Laser Eye Injuries

- Melanin absorption
- Iris
- Ciliary body
- Retina

- Direct heating of eye via transmission of energy through eyelid
Devices Posing a Threat to Melanin

- 532 nm KTP
- 755 nm Alexandrite
- 800-810 nm diode
- IPL
- Nd:YAG 1064 nm
  - Q switched

Ocular Complications


Ocular Injuries Resulting from Unwanted Melanin Absorption

- Iris
  - Iritis (usually transient)
  - Iris transillumination defects (may result in permanent light sensitivity)
  - Injury to iris sphincter muscle with resulting “keyhole” or otherwise misshapen pupil
- Ciliary body: Decrease in aqueous production

Medicolegal Case Reports

- Long-pulsed 1064 nm Nd:YAG laser used to treat “unibrow”. Corneoscleral shields reportedly in place. Patient developed a keyhole pupil

- Do not use lasers to perform hair removal on the eyelids or eyebrows.
Medicolegal Case Reports

- IPL. Many patients undergoing photorejuvenation treatments have now been reported to develop iritis/iris transillumination defects, permanent photophobia.
- Myth: As IPLs produce broadband light and not a collimated laser beam, they do not pose a threat to the eye.

Ocular Safety

- Eye protection specific to the wavelength in use for operator
- Eye protection specific to wavelength in question for patient
- Occlusive corneoscleral lenses when indicated
- Avoidance of high risk activities

Corneoscleral Lenses

- Metallic for use with CO₂, Er:YAG, fractional resurfacing, plasma
- Plastic for use with RF
Novel adverse effects of laser-assisted axillary hair removal

Hélou J, Soutou B, Jamous R, Tomb R.

BACKGROUND: Several adverse effects of depilatory laser may now be commonly expected in relation to skin type and anatomic location. We report and analyse unusual events in patients undergoing laser-assisted axillary hair removal, including hyperhidrosis, bromhidrosis and leukotrichia. OBJECTIVE: The aim of this study was to examine a large patient population, assess the frequency of these adverse effects, and establish a correlation with different hair-removal laser protocols. PATIENTS AND METHODS: A retrospective case-control study of patients undergoing laser-assisted axillary hair removal was conducted to determine the incidence of these adverse effects in relation to skin type and types of laser used. RESULTS: Hyperhidrosis, bromhidrosis and leukotrichia were seen in 11, 4, and 2% of patients respectively. Hyperhidrosis was significantly less frequent in patients with skin types III and IV than in those with skin type II or V. Combined diode and alexandrite laser sessions were associated with a significantly higher incidence of hyperhidrosis compared to diode or alexandrite sessions alone. Regarding bromhidrosis and leukotrichia, no significant correlation with age, skin type or laser settings was revealed by the statistical analysis. CONCLUSION: Hyperhidrosis, bromhidrosis and leukotrichia are likely new adverse effects of laser-assisted axillary hair removal.

Unusual side effect for hair removal

- Found in 10 patients in two centers (Israel & London)
- 9/10 were female. Is it livedo reticularis or erythema ab igne (EAI)?

Do not use a hair removal laser near a tattoo!!!

- Hair removal lasers are millisecond lasers.
- Their wavelength is strongly absorbed by melanin but also by tattoo pigment.

Wolf R et al. « More is missed by not looking than by not knowing » (Thomas McCrae 1870-1935).

Photos courtesy M. Lapidoth, M.D.

Scar is guaranteed...

Photos courtesy M. Lapidoth, M.D.

Scars in tattoos after laser treatment for hair removal

Keloid occurring in a tattoo after laser hair removal.
Pigmentary Changes: Erythema

- Persistent erythema is uncommon
- Think of causes e.g. allergy, infection, delayed wound healing, application of topical agents

Infection: Bacterial

- Bacterial: usually Gram (+)
- Gram (-): can occur as well
- Some prefer Cipro for prophylaxis

Infection: Atypical

- Infection: Viral

- H. simplex 1 can flare after resurfacing
- With prompt tx, resolution without complications is the norm
- Acyclovir 400mg 5x/day, Famciclovir 500mg q 8h, Valacyclovir 500mg q 8h
- Prophylaxis strongly suggested in tx of perioral region, especially if pts have a hx of HSV1
Infection: Viral

Scarring s/p CO$_2$ Laser Skin Resurfacing

Scarring s/p Er:YAG Ablative Laser Skin Resurfacing

1 year s/p Ablative Fx Resurfacing

Preop  Scarring of Upper Lip
Hypertrophic and Atrophic Scarring s/p CO₂ LSR

Prevention of Scarring
- Do not overtreat
- Avoid tx of pts who have used isotretinoin within 6-12 months
- Extreme caution when tx the lower neck with Pearl Fractional

Management of Scarring
- Topical steroids
- Intralesional steroids +/- 5 fU
- Vascular laser
- Occlusion (silicone)
- Resurfacing of atrophic scarring

LSR Complications: Hypopigmentation
- Pseudo-hypopigmentation
- Late hypopigmentation
- Excimer laser (308 nm)
- LP 1064