

Microneedle Radiofrequency for Hyperhidrosis treatment

Dr Michael Naouri

General Secretary of the French Society of Laser Dermatology

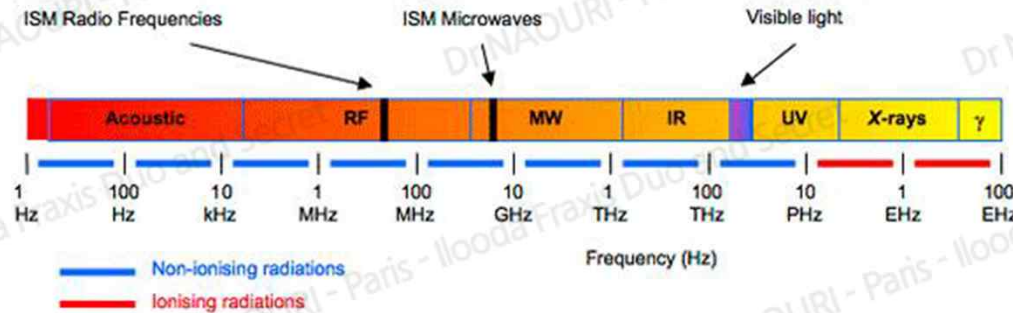
PARIS, FRANCE

Conflict of interest

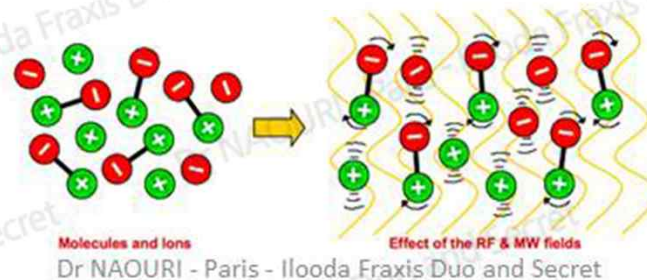
- Ilooda (Secret™, Fraxis Duo™) : financement of studies, travel for IMCAS Bali 2017
- ZHENGAN INDONESIA (distributor of Ilooda™ in Indonesia) : accomodation for IMCAS Bali 2017

What is radiofrequency ?

- Electromagnetic waves closed to microwaves in the electromagnetic spectrum



- Almost same properties than microwave : can generate intratissular heat by moving (water) molecule

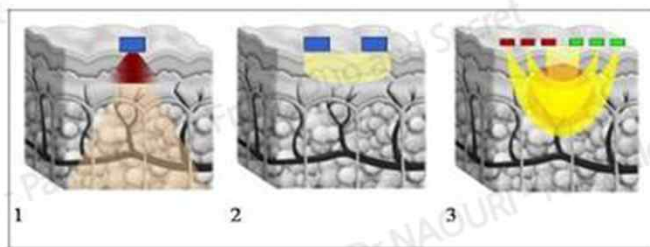


Different radiofrequencies used in dermatology

- 1 External (mono, bi, multipolar)

Aims to heat to a significant depth without tissue damage

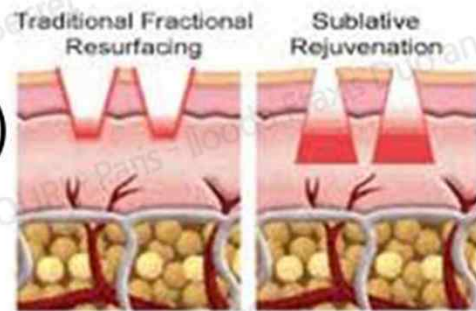
-> skin tightening, bodyshaping



- 2 (Sub)Ablatives

Aims to burn skin surface

-> resurfacing (like « superficial » fractional CO2)



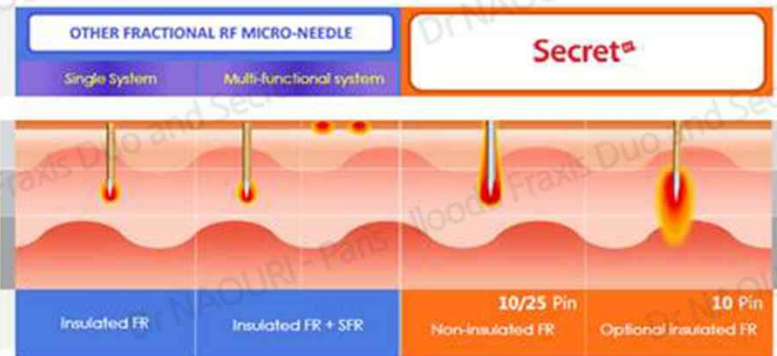
Different radiofrequencies used in dermatology

- Microneedle radiofrequency

Fractional selective thermal damage at defined depth

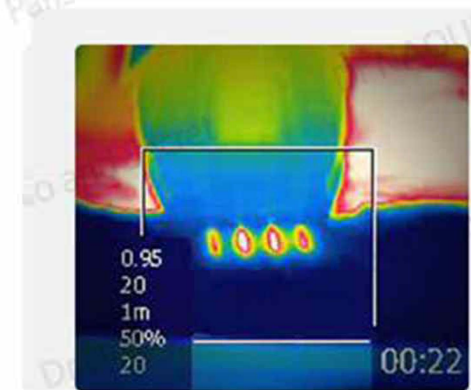
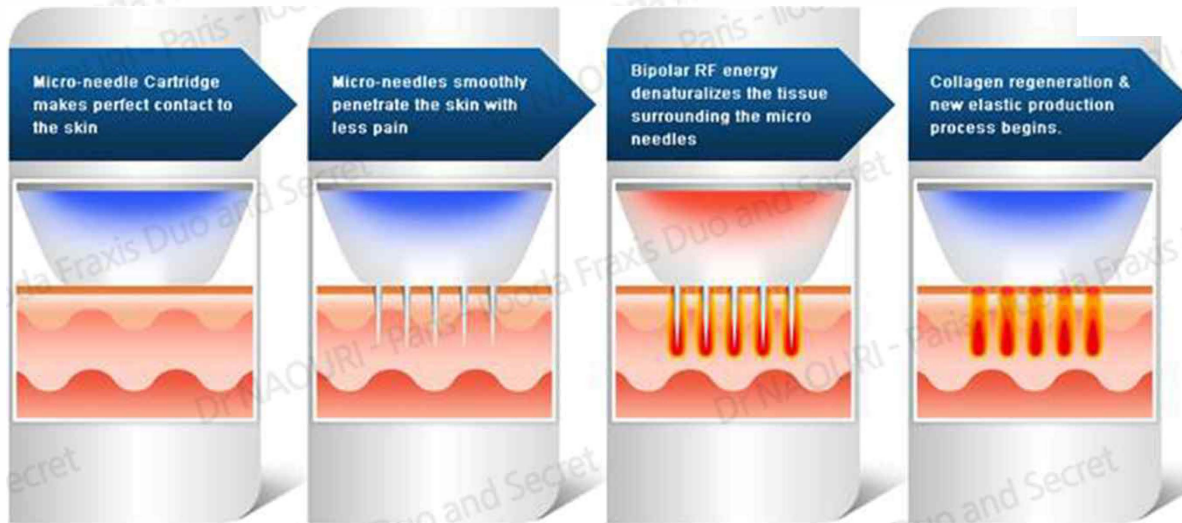
-> deep dermal and subdermal remodeling

-> versatility : ageing, scars, striae, acne... and hyperhidrosis



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How does it work?



- Insertion – energy delivery - retraction

Main indications : ageing and scars

**Non-insulated microneedle
fractional radiofrequency for the
treatment of scars and
photoaging** *JEADV* 2014

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Figure 1 Improvement of acne scars. Surgical scar and Periorbital/nasolabial rhytids after NIMRF Secret™.

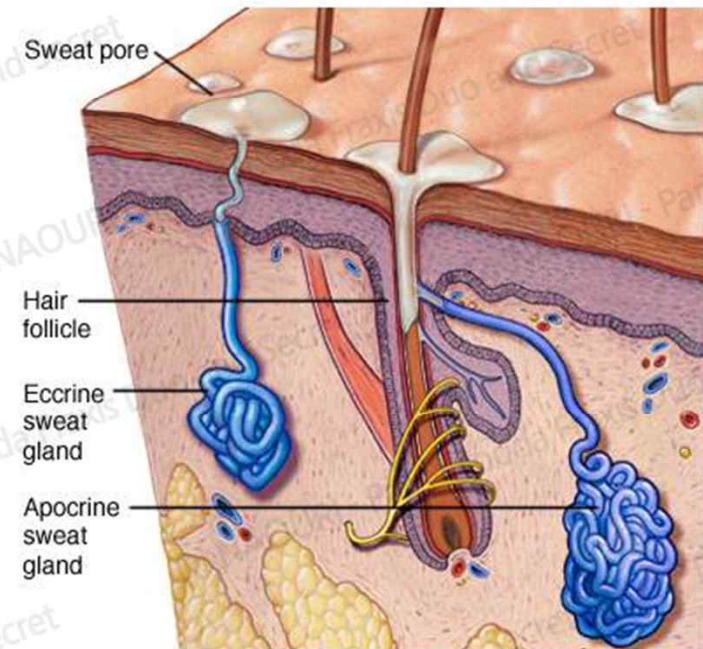
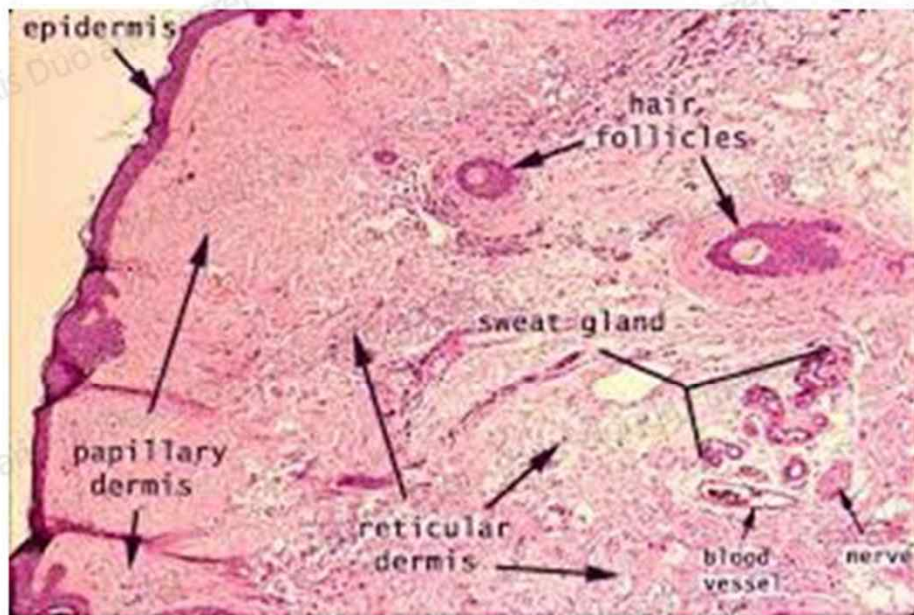
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Why use microneedle radiofrequency to treat hyperhidrosis ?

- Some publication with other thermal destruction of sweat glands
 - High intensity focused ultrasound (Ulthera™, Ultraskin™)
 - Microwave (Miradry™)
 - Endolaser /RF
- Problem :
 - Very expensive
 - Time consuming
 - Lack of versatility (only hyperhidrosis for Miradry™)
 - Invasive and operator dependant (endolaser/RF)

Why use microneedle radiofrequency to treat hyperhidrosis ?

- Depth of sweat gland : 3mm
-> accessible for the microneedle until 3.5mm length



Microneedle radiofrequency to treat hyperhidrosis : an old new idea...

- Electrosurgery using insulated needles: treatment of axillary bromhidrosis and hyperhidrosis. Kobayashi T. J Dermatol Surg Oncol. 1988 Jul;14(7):749-52.

Abstract : This paper deals with operative techniques and clinical aspects of electrically treating axillary bromhidrosis and hyperhidrosis using insulated needles. Most patients were treated 5 or 6 times using 2 types of needles, one for electroelimination of sweat glands and the other mainly for epilation. The results for most patients were satisfactory, with scarring occurring only in the early developmental stages of the technique.

- But with only 1 microneedle... : operator dependant and time consuming
->30 years after, generalization of this kind of treatment thanks to new energy based devices with multiple microneedles, initially developed for dermal remodeling



Scientific background

- 8 studies referenced on Pubmed (3 « high impact factor »)
« microneedle radiofrequency + hyperhidrosis »
- 45 patients in total
- Many criterias studied :
 - Subjective : HDSS score, dlqi
 - Objective : sweat weight, histology
- 2 devices
 - Ilooda (non insulated)
 - Lutronic (insulated)

DLQI (quality of life)

- From « very large effect » to « small effect » on life
- >50% decrease

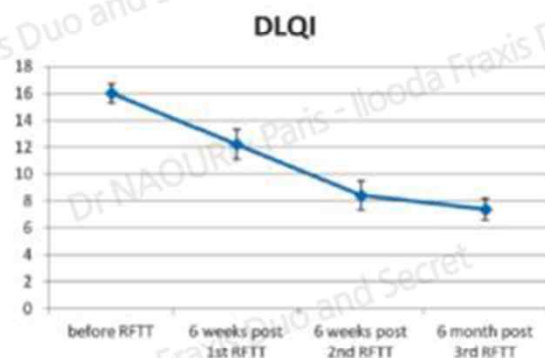


Figure 4. The DLQI during the course of treatment and after 6 months with 9 points improvement ($p < .05$).

Radiofrequency Thermotherapy for Treating Axillary Hyperhidrosis

CHRISTOPH H. SCHICK, MD,^{1*} TANJA GRALLATH,² KERSTIN S. SCHICK, MD,^{1*} AND MOSHE HASHIMONAI, MD³

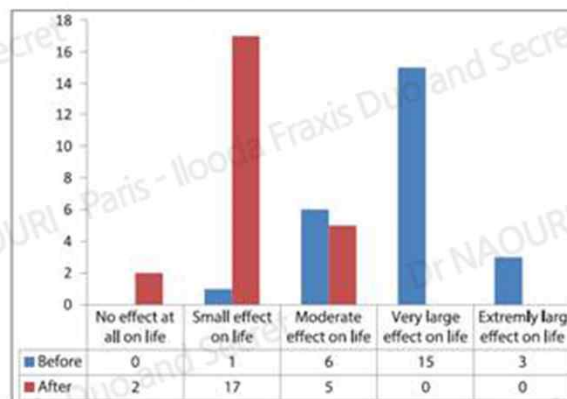


Figure 1: Dermatology Life Quality Index scores translation before and after intervention

Dermatology ORIGINAL RESEARCH
 Fractionated microneedle radiofrequency for treatment of primary axillary hyperhidrosis: A sham control study
 Farhad Farah Naeini,¹ Rezaei Akhlagi Naeini,¹ Mehrooz Pourabbasi,¹ Mohammad Ali Nafarostanlou,¹ and Majid Mirzabakhshian²

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DERMATOLOGY LIFE QUALITY INDEX

Hospital No: _____ Date: _____
 Name: _____ Address: _____ Diagnosis: _____
 Score: DLQI

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please tick @ one box for each question.

- Over the last week, how **itchy, sore, painful or stinging** has your skin been?
 - Very much
 - A lot
 - A little
 - Not at all
- Over the last week, how **embarrassed or self conscious** have you been because of your skin?
 - Very much
 - A lot
 - A little
 - Not at all
- Over the last week, how much has your skin interfered with you going **shopping or looking after your home or garden**?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant
- Over the last week, how much has your skin influenced the **clothes** you wear?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant
- Over the last week, how much has your skin affected any **social or leisure** activities?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant
- Over the last week, how much has your skin made it difficult for you to do any **sport**?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant
- Over the last week, has your skin prevented you from **working or studying**?
 - Yes
 - No
 - Not relevant

If "No", over the last week how much has your skin been a problem at **work or studying**?

 - A lot
 - A little
 - Not at all
- Over the last week, how much has your skin created problems with your **partner or any of your close friends or relatives**?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant
- Over the last week, how much has your skin caused any **sexual difficulties**?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant
- Over the last week, how much of a problem has the **treatment** for your skin been, for example by making your home messy, or by taking up time?
 - Very much
 - A lot
 - A little
 - Not at all
 - Not relevant

Please check you have answered EVERY question. Thank you.
 *AY Finley, GK Khan, April 1992 www.dermatology.sage.uk; this must not be copied without the permission of the authors.

Patient satisfaction

TABLE 4. Results of Patient Survey (n = 30)

Very satisfied with the result, n (%)	11 (37)
Satisfied with the result, n (%)	16 (53)
Less satisfied with the result, n (%)	2 (7)
Not satisfied with the result, n (%)	1 (3)
Subjectively perceived reduction of sweating (%)	72

Radiofrequency Thermotherapy for Treating Axillary Hyperhidrosis

CHRISTOPH H. SCHICK, MD,^{1*} TANJA GRALLATH,^{2*} KERSTIN S. SCHICK, MD,^{1*}
AND MOSHE HAMMONAI, MD³

Gravimetry : objective measurement of sweat production

- 1 study : From $>200\text{mg}/\text{min}$ to $<50\text{mg}/\text{min}$ \rightarrow sweat production divided by 4 (divide by 2 after only one session at 6 weeks)
- More objective and quantifiable than minor test

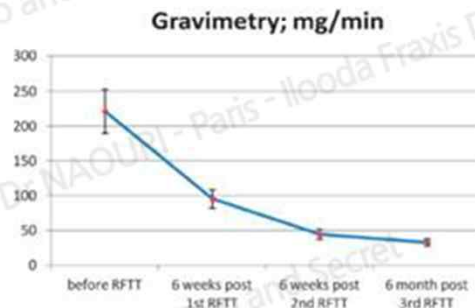


Figure 5. The gravimetric measurement of the sweat quantity during the course of treatment and after 6 months with improvement approaching nearly normal levels ($p < .05$).

Radiofrequency Thermotherapy for Treating Axillary Hyperhidrosis

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Pathology

- Decrease in number and size of sweat glands
- Thermolysis of the glands

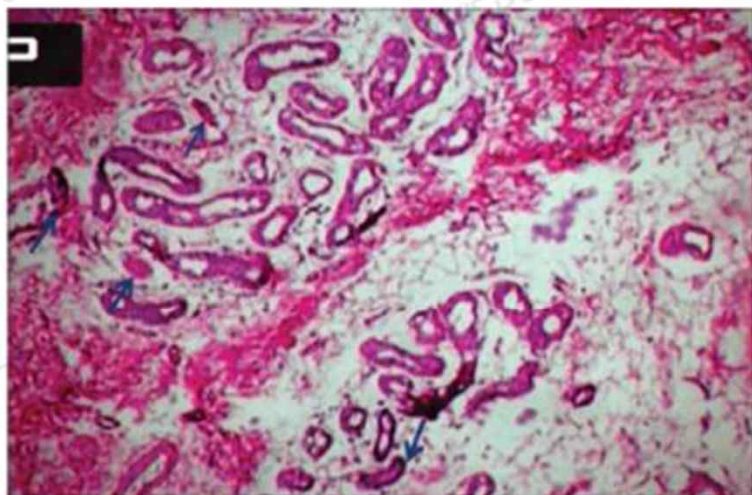


Figure 3: Coagulation changes of the glands due to thermolysis (arrow) (Hematoxylin and eosin, $\times 100$)

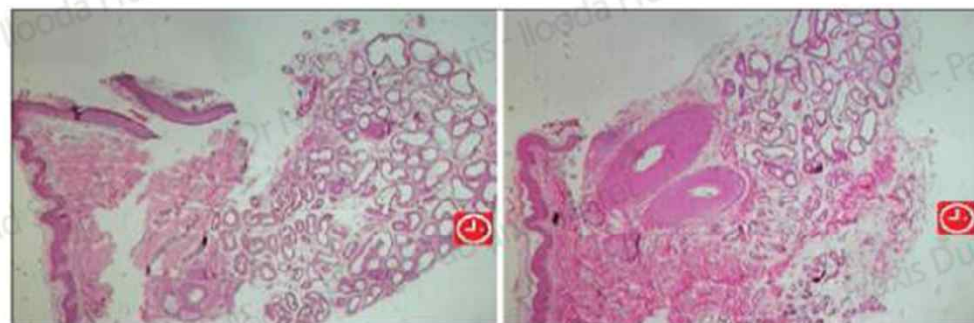


Figure 2: Baseline biopsy of sweat glands (Right) and the posttreatment appearance of sweat glands (left) which show decrease in the number and size of both apocrine and eccrine glands after treatment. (Hematoxylin and eosin, $\times 40$)

Histopathological evidence of efficacy of microneedle radiofrequency for treatment of axillary hyperhidrosis

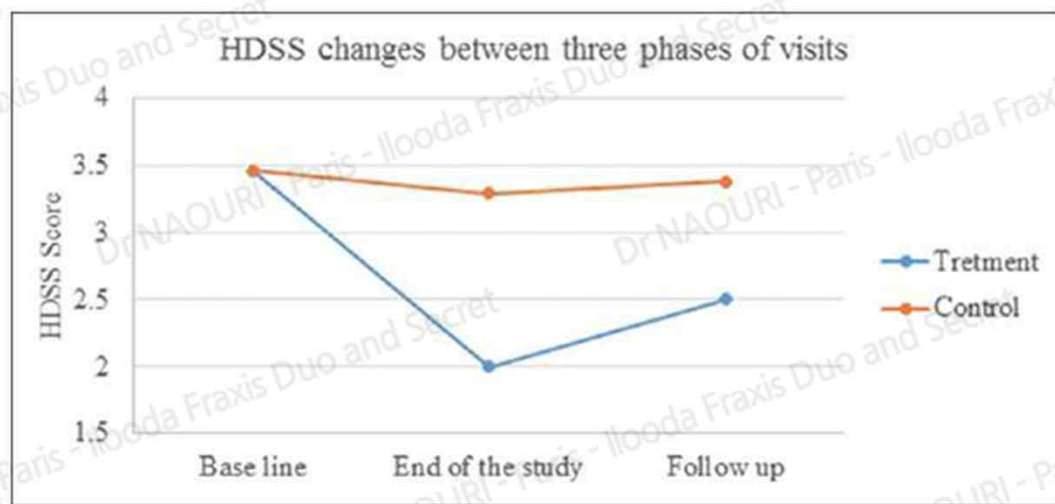
Farahnaz Fatemi Naeini, Ali Saffaei, Mohsen PourazizF, Bahareh Abtahi-Naeini

Skin Diseases and Leishmaniasis Research Center, Department of Dermatology, ¹Department of Clinical and Pharmacy Practice Pharmacy Students' Research Committee, Department of Clinical Pharmacy and Pharmacy Practice, School of Pharmacy, Isfahan University of Medical Sciences, Isfahan, ²Students' Research Committee, Department of Dermatology, Semnan University of Medical Sciences, Semnan, Iran

Indian Journal of Dermatology, Venereology and Leprology | May-June 2015 | Vol 61 | Issue 3

Long term effect

- 1 year follow up : significant persistence of the effect despite a little increase of HDSS score



	Treatment	Control	P value
Base line	3.46±0.50	3.46±0.50	1
End of the study	2.00±0.51	3.29±0.46	<0.001
Follow up	2.50±0.88	3.38±0.49	<0.001

SD: Standard deviation

Long term effect (more closely)

- But variable, depending of patients
 - 41,6% : no relapse at 1 year
 - 45,9% : relapse (not specified if initial level) at 1 year
 - 12,5% : no effect
- Correlation with BMI : obese patient are less responders : higher deepness (fat) before destroying sweat glands ?
- No correlation with sex, age, age onset and duration of the disease



Publication of IADVL, WB
Official organ of AADV

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Treatment of primary axillary hyperhidrosis by fractional microneedle radiofrequency: Is it still effective after long-term follow-up?

[Bilalash Alshabi-Nazmi¹](#), [Farooq Farooq Nazmi¹](#), [Ali Saifan²](#), [Shadi Bekfar¹](#), [Makram Peniston³](#), [Maail Muneemamun⁴](#), [Nasir-Sadat Bolandrasat⁵](#)

Safety

- Main side effects
 - Petechial bleeding : 50-56%
 - Exsudation or scab : 0-87%
 - Erythema : 30-68%
 - Twitching of the arm during procedure : 0-27%
 - Postanalgesia pain : ?-70% – mean : 2/10 -> bearable...
 - PIH or needle puncture visible : 20-44%
- Complications
 - Ulceration : 2 cases
 - Transient tingling (nervous impairment ?) completely resolved at 2 months : 1 case

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Dermatology
International Journal of Dermatology (2013) 52, 279-284

ORIGINAL RESEARCH

Fractionated microneedle radiofrequency for treatment of primary axillary hyperhidrosis: A sham control study

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¹Department of Dermatology, Skin Disease and Leprosy Research Center, Students' Research Committee, Ilam University of Medical Sciences, Ilam, ²Student Research Committee, Research Centre for Social Determinants of Health, Department of Community Medicine, Semnan University of Medical Sciences, Semnan, and ³Skin and Nerve Cell Research Center, Dibrin University of Medical Sciences, Tehran, Iran

My experience with Secret™ device from Ilooda

- I was one of the first users of microneedle radiofrequency in hyperhidrosis
- Award of the french laser society for this new indication



Treatment with Ilooda Secret™ (non insulated) radiofrequency device

- Local anesthesia : subcutaneous injection of 50mL of 0.2% lidocaine solution in each axilla (lidocaine 1% 20mg/20mL + 80mL physiological serum for the 2 armpits)
- Ilooda Secret(non insulated)
 - 3mm 2 pass then 2mm 1 pass
 - 50% overlapping
 - 250ms pulse duration / 500ms skin penetration
 - Intensity 70%
- 3 sessions
- !!! All devices are different



Conclusion : advantages of microneedle radiofrequency

- Versatility
- Safe and effective
- Fast and simple
- Low Cost (> other EBD)
- Definitive in more than 40% of patients (> Botulinic toxin)

Thank you for your attention



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