WEBINAR

Ultrasound-Guided Techniques to Rapidly Dissolve Fillers, Part 1: Misplaced Facial Fillers

January 2023

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Your Host

Shelley Guenther, CRGS, CRCS

Clinical Marketing Manager

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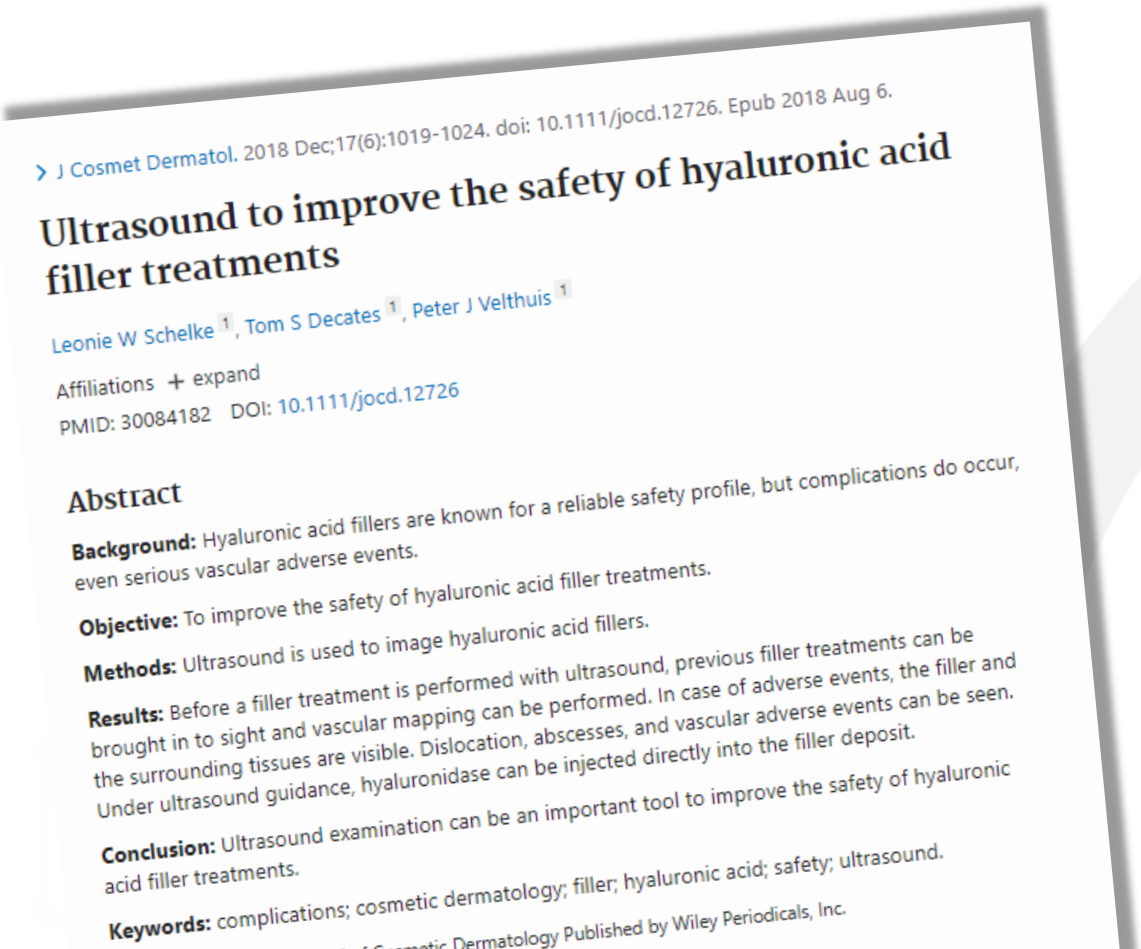
Ultrasound to Improve the Safety of Hyaluronic Acid Filler Treatments



J Cosmet Dermatol. 2018 Dec;17(6):1019-1024. doi: 10.1111/jocd.12726. Epub 2018 Aug 6.

Ultrasound to improve the safety of hyaluronic acid filler treatments

Leonie W Schelke [1], Tom S Decates [1], Peter J Velthuis [1]

Affiliations + expand

PMID: 30084182 DOI: 10.1111/jocd.12726

Abstract

Background: Hyaluronic acid fillers are known for a reliable safety profile, but complications do occur, even serious vascular adverse events.

Objective: To improve the safety of hyaluronic acid filler treatments.

Methods: Ultrasound is used to image hyaluronic acid fillers.

Results: Before a filler treatment is performed with ultrasound, previous filler treatments can be brought in to sight and vascular mapping can be performed. In case of adverse events, the filler and the surrounding tissues are visible. Dislocation, abscesses, and vascular adverse events can be seen. Under ultrasound guidance, hyaluronidase can be injected directly into the filler deposit.

Conclusion: Ultrasound examination can be an important tool to improve the safety of hyaluronic acid filler treatments.

Keywords: complications; cosmetic dermatology; filler; hyaluronic acid; safety; ultrasound.

"Dislocation, abscesses, and vascular adverse events can be seen. Under ultrasound guidance, hyaluronidase can be injected directly into the filler deposit."

Schelke LW, Decates TS, Velthuis PJ. Ultrasound to improve the safety of hyaluronic acid filler treatments. J Cosmet Dermatol. 2018 Dec;17(6):1019-1024. doi: 10.1111/jocd.12726. Epub 2018 Aug 6. PMID: 30084182.. Source: https://pubmed.ncbi.nlm.nih.gov/30084182/

Ultrasound patterns of different dermal filler materials used in aesthetics

> J Cosmet Dermatol. 2021 May;20(5):1541-1548. doi: 10.1111/jocd.14032. Epub 2021 Mar 11.

Ultrasound patterns of different dermal filler materials used in aesthetics

Fernando Urdiales-Gálvez [1], Francisco M De Cabo-Francés [2], Isabel Bové [2]

Affiliations + expand

PMID: 33641224 PMCID: PMC8252486 DOI: 10.1111/jocd.14032

Free PMC article

Abstract

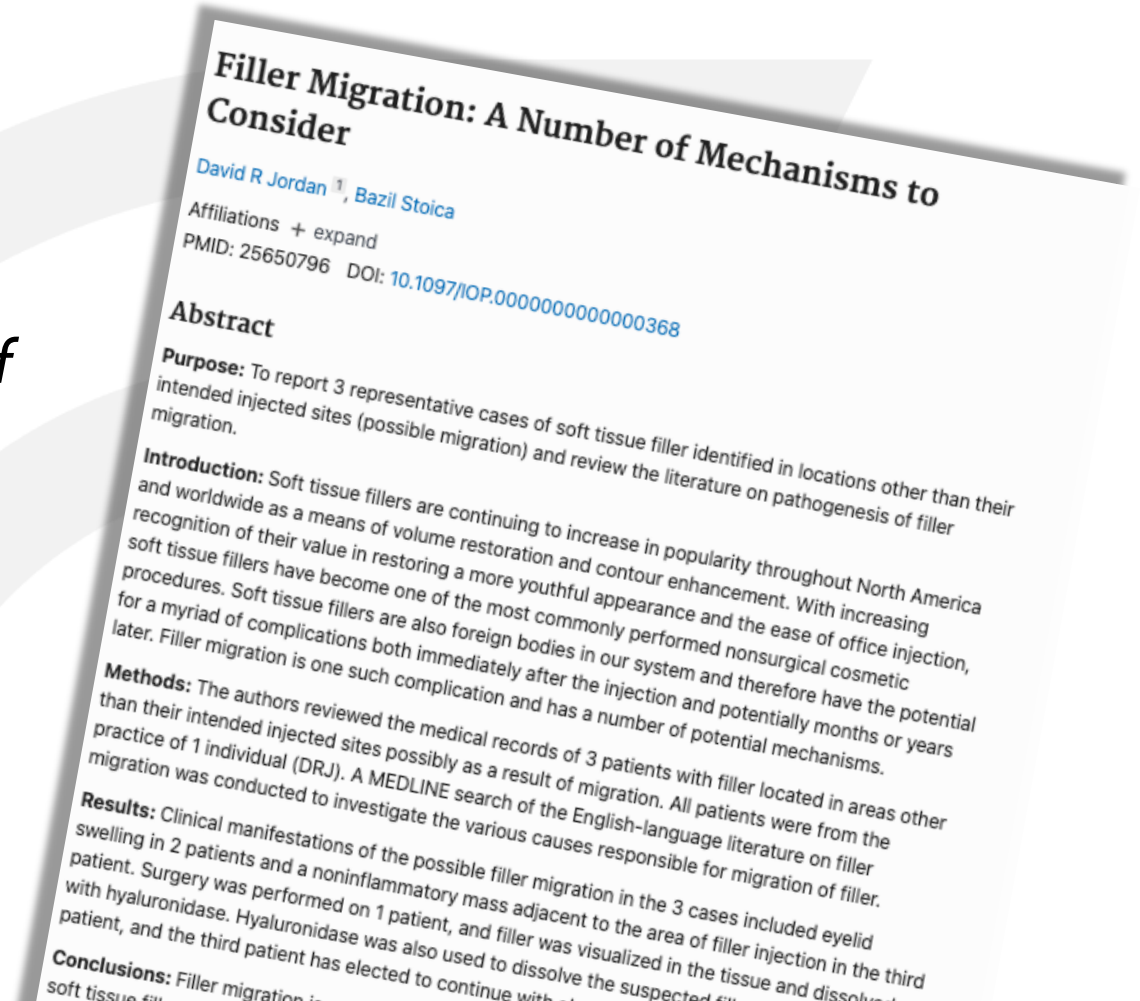
Background Hyaluronic acid (HA) injection procedures has experienced an unprecedented increase. Aims To assess and determine, by using ultrasound examinations, the patterns corresponding to different dermal fillers. Patients/Methods Observational and retrospective bicenter study conducted on patients who underwent previous aesthetic treatments with dermal fillers. Ultrasound examinations were performed, at each study center, by one experienced observer. Results Sixty patients were included in the analysis. Among them, 48 patients showed a well-defined ultrasound pattern, while 12 exhibited a mixed one. According to ultrasound images, 4 different patterns were identified: [1] Heterogeneous, characterized by alternating hyperechoic and anechoic areas, which are visualized in the tissue in a heterogeneous way. This pattern is associated with healthy skin/subcutaneous cellular tissue and with fully integrated HA fillers. [2] Fine grain snowfall, characterized by alternating hyperechoic imaging, with posterior echogenic shadows. It is typical of liquid injectable silicone. [3] Coarse grain snowfall, characterized by [illegible] all over the tissue. This is typical of calcium hydroxyapatite and [illegible] imaging, with anechoic images

"The identification of these patterns will allow specialists to choose the best therapeutic approach in patients who underwent previous aesthetic treatments"

Urdiales-Gálvez F, De Cabo-Francés FM, Bové I. Ultrasound patterns of different dermal filler materials used in aesthetics. J Cosmet Dermatol. 2021 May;20(5):1541-1548. doi: 10.1111/jocd.14032. Epub 2021 Mar 11. PMID: 33641224; PMCID: PMC8252486.

Filler Migration: A Number of Mechanisms to Consider

"It is important all physicians assessing nodules/masses/swelling in the facial area be aware that soft tissue fillers may migrate to a location away from their intended site of injection by several mechanisms and persist in the tissue even years later."



Filler Migration: A Number of Mechanisms to Consider

David R Jordan [1], Bazil Stoica

Affiliations + expand

PMID: 25650796 DOI: 10.1097/IOP.0000000000000368

Abstract

Purpose: To report 3 representative cases of soft tissue filler identified in locations other than their intended injected sites (possible migration) and review the literature on pathogenesis of filler migration.

Introduction: Soft tissue fillers are continuing to increase in popularity throughout North America and worldwide as a means of volume restoration and contour enhancement. With increasing recognition of their value in restoring a more youthful appearance and the ease of office injection, soft tissue fillers have become one of the most commonly performed nonsurgical cosmetic procedures. Soft tissue fillers are also foreign bodies in our system and therefore have the potential for a myriad of complications both immediately after the injection and potentially months or years later. Filler migration is one such complication and has a number of potential mechanisms.

Methods: The authors reviewed the medical records of 3 patients with filler located in areas other than their intended injected sites possibly as a result of migration. All patients were from the practice of 1 individual (DRJ). A MEDLINE search of the English-language literature on filler migration was conducted to investigate the various causes responsible for migration of filler.

Results: Clinical manifestations of the possible filler migration in the 3 cases included eyelid swelling in 2 patients and a noninflammatory mass adjacent to the area of filler injection in the third patient. Surgery was performed on 1 patient, and filler was visualized in the tissue and dissolved with hyaluronidase. Hyaluronidase was also used to dissolve the suspected filler in the second patient, and the third patient has elected to continue with

Conclusions: Filler migration

Jordan DR, Stoica B. Filler Migration: A Number of Mechanisms to Consider. Ophthalmic Plast Reconstr Surg. 2015 Jul-Aug;31(4):257-62. doi: 10.1097/IOP.0000000000000368. PMID: 25650796.

European Federation of Societies for Ultrasound in Medicine Position Statement on Dermatologic Ultrasound

"a position statement from a scientific society with regards to this application of US is useful for physicians involved in dermatologic US, allowing for the foundations of present clinical practice and evidence generation to be developed ."

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Guidelines & Recommendations

European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) Position Statement on Dermatologic Ultrasound

Stellungnahme der European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) zu Dermatologischem Ultraschall

Authors

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Key words

dermatologic ultrasound, guidelines and recommendations, skin ultrasound

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Bibliography

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ABSTRACT

Dermatologic ultrasound is a recent application of ultrasound for the evaluation of healthy skin and appendages and their diseases. Although the scientific literature regarding this application is still not sufficient for evidence-based guidelines, general recommendations issued by scientific societies are necessary. The EFSUMB (European Federation of Societies for Ultrasound in Medicine and Biology) steering committee for dermatologic ultrasound has developed a series of consensus position statements regarding the main fields of dermatologic ultrasound (technical requirement, normal skin and appendages, inflammatory skin diseases, tumoral skin diseases, aesthetic dermatology and practice-training requirements). This document is the foundation for future evidence-based recommendations and guidelines for dermatologic ultrasound practice.

ZUSAMMENFASSUNG

Dermatologischer Ultraschall ist eine neuere sonografische Anwendung zur Beurteilung gesunder Haut, ihrer Adnexe und deren Erkrankungen. Obwohl die wissenschaftliche Literatur zu dieser Anwendung noch nicht für evidenzbasierte Leitlinien ausreicht, sind allgemeine Empfehlungen der wissenschaftlichen Gesellschaften erforderlich. Der Lenkungsausschuss für dermatologischen Ultraschall der EFSUMB (European Federation of Societies for Ultrasound in Medicine and Biology) hat eine Reihe von Konsensus-Stellungnahmen zu den Hauptgebieten des dermatologischen Ultraschalls erarbeitet (technische Anforderungen, normale Haut und Adnexe, entzündliche Hauterkrankungen, Tumorerkrankungen der Haut, ästhetische Dermatologie und Anforderungen an die praktische Ausbildung). Dieses Dokument bildet die Grundlage für zukünftige evidenzbasierte Empfehlungen und Leitlinien für die Praxis des dermatologischen Ultraschalls.

Fernando Alfageme1, Ximena Wortsman2, Orlando Catalano3, Gaston Roustan1, Maria Crisan4, Diana Crisan5, Diana E. Gaitini6, Eugenio Cerezo7, Radu Badea8

European Federation of Societies for Ultrasound in Medicine Position Statement on Dermatologic Ultrasound

" POSITION STATEMENT 2 The minimum transducer frequency for dermatologic ultrasound should be 15 MHz. Higher transducer frequencies may provide further information that may be relevant (broad agreement 8/9, 88.9 %).."

Fernando Alfageme1, Ximena Wortsman2, Orlando Catalano3, Gaston Roustan1, Maria Crisan4, Diana Crisan5, Diana E. Gaitini6, Eugenio Cerezo7, Radu Badea8

Guidelines & Recommendations

Thieme

Introduction

Dermatologic ultrasound (DERMUS) is an application of ultrasonography (US) in the study of the normal and diseased state of the skin and appendages (nails and hair) [1].

As it is a growing, recently developed application, guidelines and recommendations based on scientific evidence are not methodologically possible. However, a position statement from a scientific society with regards to this application of US is useful for physicians involved in dermatologic US, allowing for the foundations of present clinical practice and evidence generation to be developed [2, 3].

POSITION STATEMENT 1
Operators performing a dermatology ultrasound study should be aware of patient history and clinical findings. A detailed request from the referring clinician should be available (strong agreement 9/9, 100 %).

POSITION STATEMENT 2
The minimum transducer frequency for dermatologic ultrasound should be 15 MHz. Higher transducer frequencies may provide further information that may be relevant (broad agreement 8/9, 88.9 %).

Methodological structure and classification of the consensus levels

The executive board of the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) designated a dermatologic ultrasound steering committee based on qualifications including relevant publications, clinical experience and absence of conflict of interest. The Policy Document Development Strategy for Clinical Practice Guidelines, Position Statements and Technological Reviews of the EFSUMB was adhered to throughout the process for this position statement [4].

The main topics regarding dermatologic US were selected by the steering group and a comprehensive scientific literature search was performed to identify relevant studies.

Recommendations were elaborated by steering committee members and a consensus meeting for expert evaluation of these recommendations was convened at the EUROSON 2019 Congress (Granada, Spain).

A position statement was approved if > 75 % of voting members were in agreement (broad agreement: > 75–95 % of votes, strong consensus > 95 % of the votes). For discussion a nominal group technique was applied [4]. In the case of disagreement (≤ 50 % of the votes or less in favor) or if the rephrased or alternative position statement again failed to gain > 75 % of votes, the position statement was removed. A lack of consensus on this particular issue would be recorded in the text as recommended by the EFSUMB policy document [4].

1. Technical requirements for dermatologic ultrasound

The main technological advance that has made dermatologic US possible is the introduction of high-frequency and very high-frequency transducers with enough spatial resolution to study the superficial structures of the skin and appendages [5, 6].

According to the DERMUS group (an international group of experts in dermatologic ultrasound), dermatologic US for the skin and appendages should be performed using a linear multiple frequency 15 MHz transducer as the minimum standard [2].

Newer very high-frequency (> 20 MHz) and ultra-high-frequency transducers (30–70 MHz) allow exploration of small adnexal structures, such as sebaceous glands and apocrine and eccrine glands [7].

Both gel hips and gel pads, which make it possible to separate the epidermis from the transducer, should be used for accurate epidermal evaluation and avoidance of superficial vascular plexus compression [8, 9]

Also according to the DERMUS group, all US examinations should include color, power or spectral Doppler US to ascertain the presence of a vascular anomaly, providing fundamental information regarding inflammation and neovascularization [2, 10].

In order to detect superficial dermal, subdermal, small vessels, the pulse repetition frequency (PRF) should be adjusted accordingly and the gain should be adjusted to reduce flare artifacts [11]. Proper training in color and spectral Doppler US should be included in dermatologic US training programs [3] (see training section).

Trapezoid field-of-view (FOV) and extended FOV facilities are useful in the evaluation of large or deep lesions. Three-dimensional reconstruction software and new non-Doppler facilities for microvasculature assessment are useful and should be employed, if available on the ultrasound machine [12].

Current experience regarding dermatology application of elastography is limited, and contrast-enhanced ultrasound (CEUS) has not been deployed in dermatology US practice [13, 14].

POSITION STATEMENT 3
Color Doppler/power Doppler and pulsed spectral Doppler (in the case of vascular anomalies) are recommended to establish inflammatory state of skin and appendages and the presence or neovascularization (strong agreement 9/9, 100 %).

2. Ultrasound of normal skin and appendage

Anatomical and histological structures of skin and appendages present differential echogenicity that must be known as changes may indicate pathology [11, 15].

40

European Federation of Societies for Ultrasound in Medicine Position Statement on Dermatologic Ultrasound

"US can provide relevant information that includes data on facial anatomical variants, the type, location and extent of common cosmetic fillers, the identification of implants, the complications of lipolytic procedures, and the possibility of percutaneous US guidance for the procedure ."

Fernando Alfageme1, Ximena Wortsman2, Orlando Catalano3, Gaston Roustan1, Maria Crisan4, Diana Crisan5, Diana E. Gaitini6, Eugenio Cerezo7, Radu Badea8

Guidelines & Recommendations

Thieme

POSITION STATEMENT 14
Ultrasound is recommended for supporting diagnosis, activity assessment and follow-up in scleroderma/morphea patients (broad agreement 8/9, 88.9 %).

POSITION STATEMENT 16
Ultrasound is recommended as a valuable tool for evaluating facial anatomical structures in subjects before and after aesthetic procedures (broad agreement 7/9, 77.8 %).

5. Aesthetic dermatologic ultrasound

The number of aesthetic procedures has been increasing explosively worldwide over the last decade, and most of these techniques are performed blindly, sometimes in different institutions and by operators with variable levels of training from medical and non-medical backgrounds. Moreover, patients may forget or be unaware of the type of treatment that they received [61, 62]. Thus, anatomical information can be challenging to obtain, but is critical for management and outcome in aesthetic medicine, where good results are the goal, and scars and complications are unwanted. The use of US is expanding in aesthetic medicine since US can provide relevant information that includes data on facial anatomical variants, the type, location and extent of common cosmetic fillers, the identification of implants, the complications of lipolytic procedures, and the possibility of percutaneous US guidance for the procedure [62, 63].

5.1 Main indications for ultrasound in aesthetic medicine

1– Assessment of photoaging

Ultrasound can detect and measure signs of photoaging caused by prolonged exposure to the sun through the observation of the subepidermal low echogenic band (SLEB) which is produced by the deposit of glycosaminoglycans in the papillary dermis (upper dermis) [64].

POSITION STATEMENT 15
Ultrasound is recommended as a valuable tool to detect and quantify photoaging (broad agreement 8/9, 88.9 %).

2– Recognition of relevant anatomical data

Anatomical variants in vessels, muscles or glands, measurement of the thickness of skin layers and the assessment of blood flow in complications are relevant for planning or managing cosmetic techniques and complications. Moreover, the face, the most common corporal region for cosmetic procedures, presents a complex anatomical structure where the skin layers are thinner in comparison to other body regions, and any abnormality is highly visible [65, 66].

3– Management of cosmetic fillers

Ultrasound allows for the detection and identification of common cosmetic fillers as well as the assessment of their location and extent and potential complications. These fillers include deposits such as hyaluronic acid, polymethylmethacrylate, silicone (pure or oily forms), calcium hydroxyapatite, polyacrylamide, and polycaprolactone that are approved by the Food and Drug Administration (FDA) and European Union Medical Agencies as well as those that are not approved. Percutaneous US guidance of the injection of hyaluronidase has also been reported in the management of hyaluronic acid complications [67–69].

4– Detecting implants and their complications

Ultrasound can support the detection of organic and synthetic implants and their complications. Examples of organic implants are fat, cartilage and bone grafts. Examples of synthetic implants are pure silicone, polyethylene, and polydioxanone (e. g. tensor threads). Complications of implants include an excessively superficial location, extrusion, chronic inflammatory and fibrotic reactions as well as rupture [62, 65, 69–71].

POSITION STATEMENT 17
Ultrasound is recommended as a valuable tool to detect and identify common types of cosmetic fillers and organic or synthetic implants and is recommended in the management of their complications (strong agreement 9/9, 100 %).

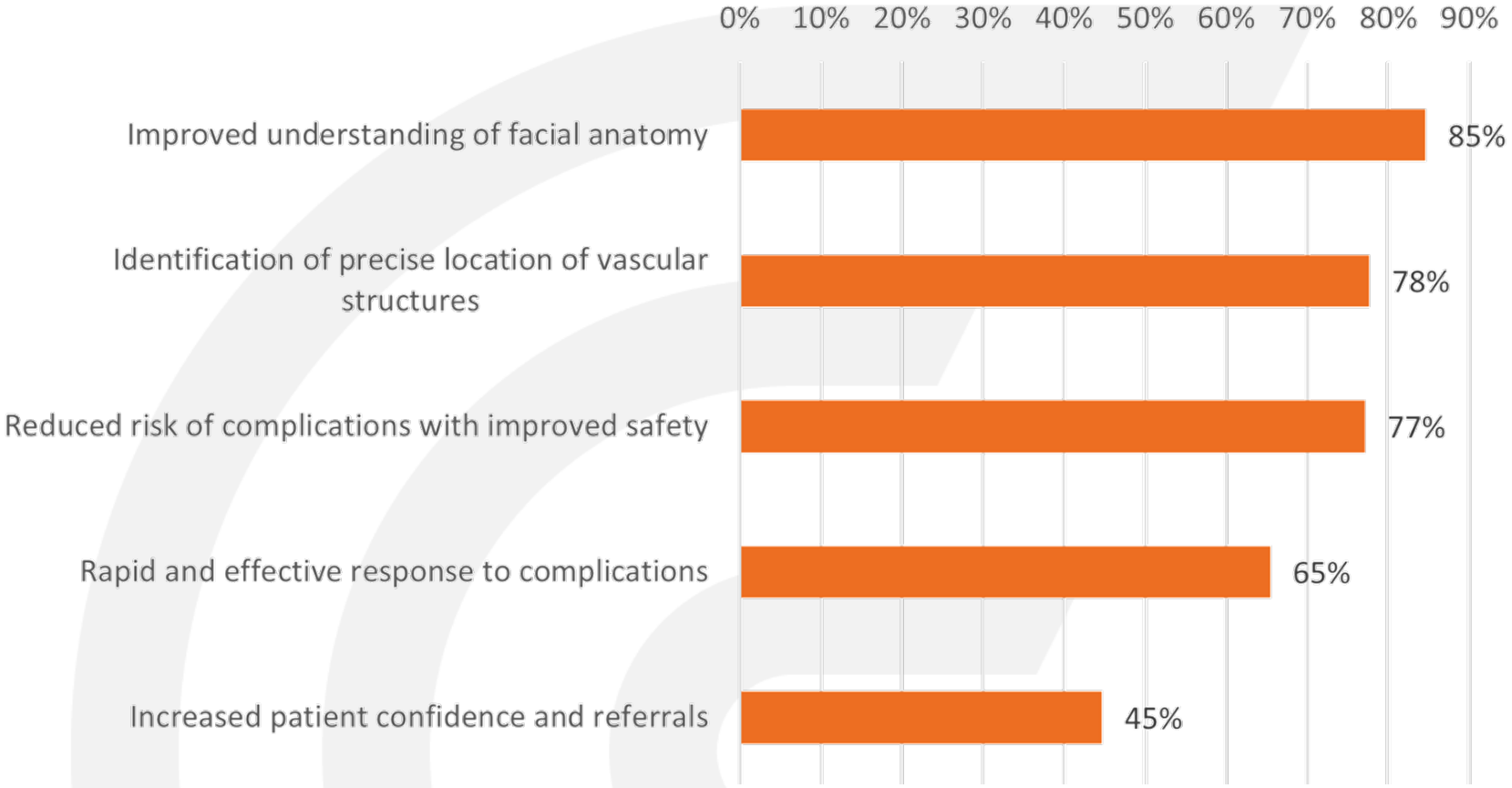
5– Detection of complications of lipolytic procedures

The goal of these procedures is to decrease the amount of hypodermal fatty tissue using techniques that generate inflammation and liquefaction of the fat. These procedures include radiofrequency, mesotherapy or cryolipolysis. Ultrasound can provide anatomical information for planning these techniques, detect the extent and location of the inflammatory changes and may serve as a monitoring technique for the assessment of the outcomes or the management of potential complications [62, 72].

POSITION STATEMENT 18
Ultrasound is a valuable tool to support planning and detection of anatomical changes, assessment of outcomes and management of complications of lipolytic procedures (strong agreement 9/9, 100 %).

Poll

What key benefits do you see ultrasound bringing to facial aesthetics?



Your Expert Guest Speaker

Dr. MJ Rowland-Warmann

BDS, BSc, MSc, Aes. Med, MClin, Dent Orthod, PGDip Endod, PGCert MedEd, Dip.MJDF

Founder Smileworks Liverpool

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Ultrasound guided techniques to dissolve fillers, Part 1: Misplaced facial fillers

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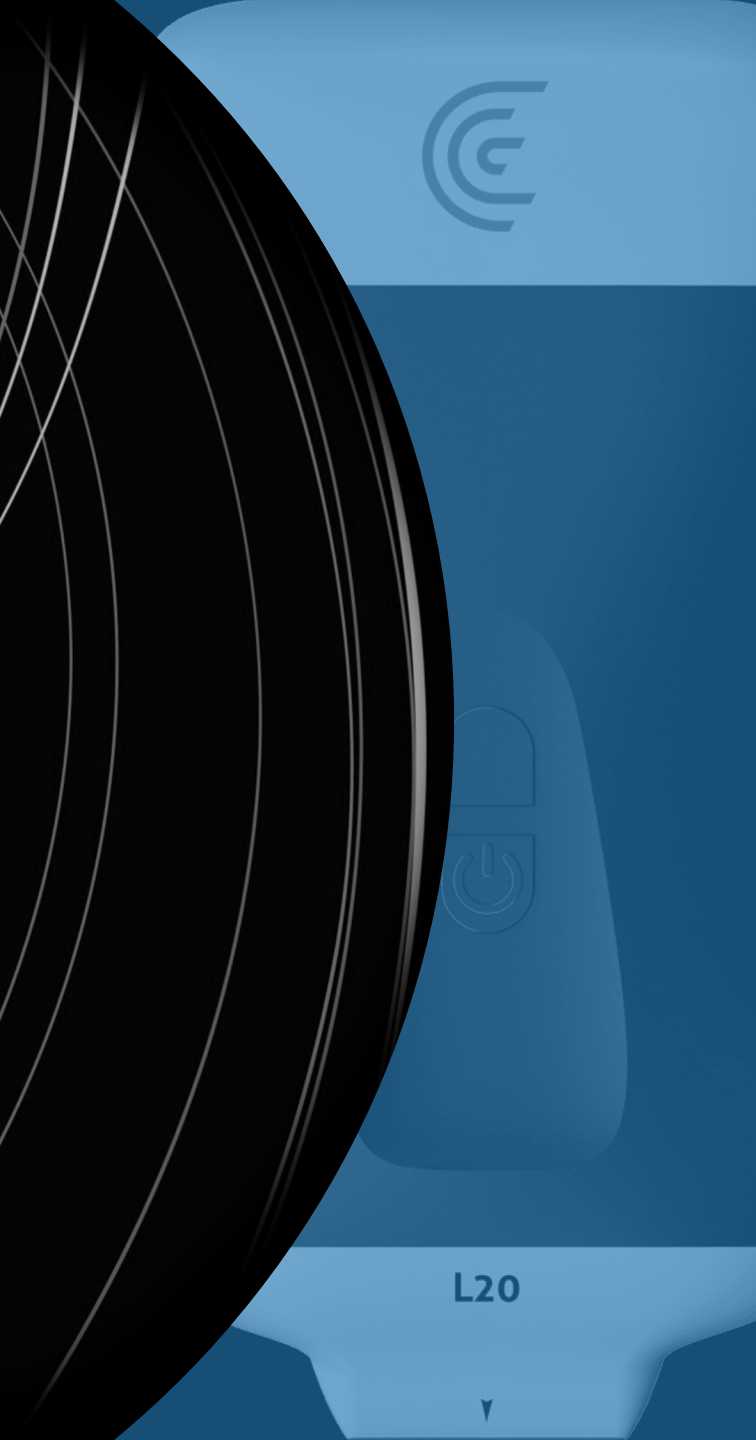
Founder & Lead Clinician Smileworks HUB

dr_mj_smileworks



How ultrasound can help us

- Filler treatment – before, during and after
- Monitoring filler over time
- Diagnosing filler types
- Learning anatomy
- Diagnosis and management of complications

How ultrasound can help us

- Filler treatment – before, during and after
- Monitoring filler over time
- Diagnosing filler types
- Learning anatomy
- **Diagnosis and management of complications**

Misplaced filler

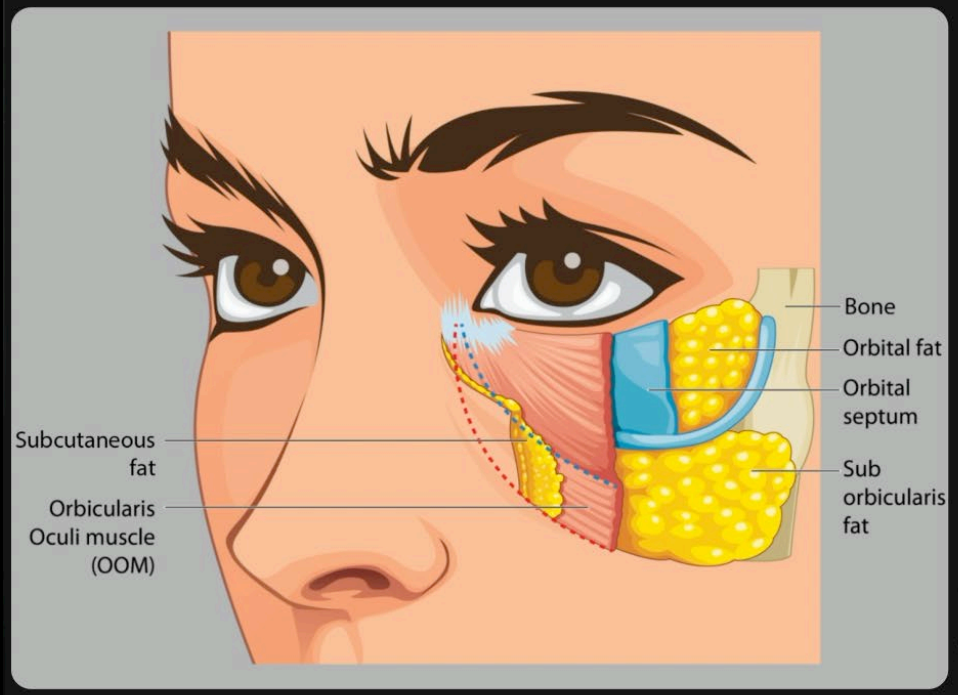
- Complications
  - Immediate
  - Delayed
- At the time of treatment & filler spread
- Common
  - patient impact
  - Industry impact

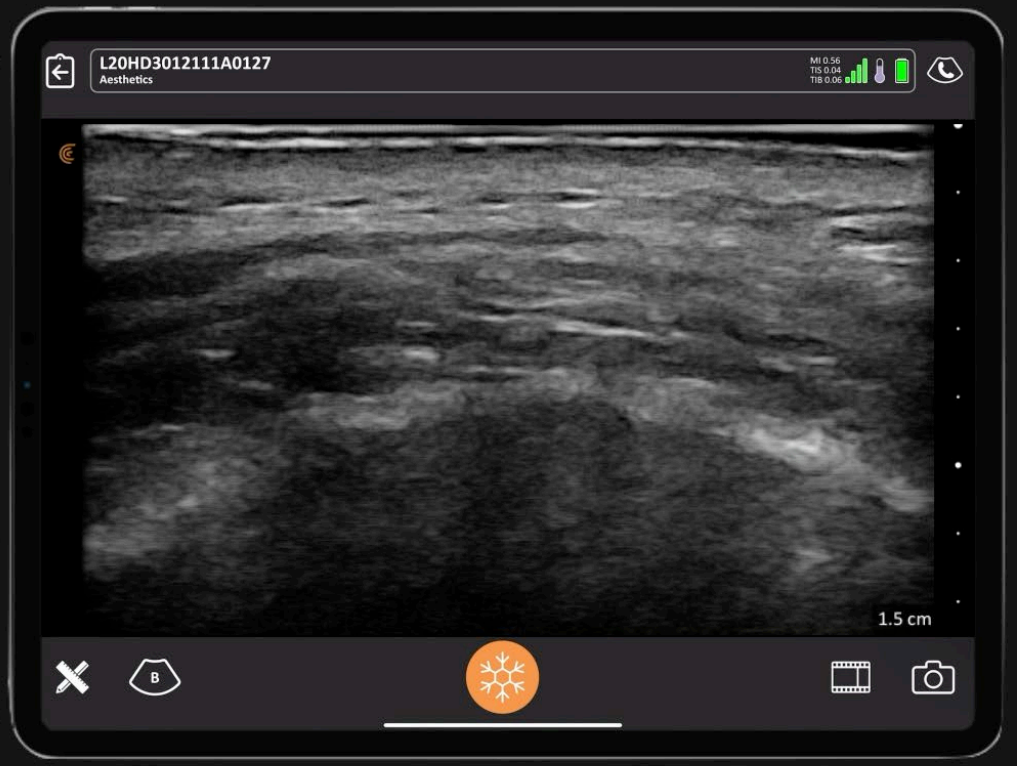
Early events (occurring up to several days post-treatment)	Delayed events (occurring from weeks to years post-treatment)
Injection site reactions	Infection (atypical; eg, mycobacterial)
Erythema	Erythema
Edema	Edema
Pain/tenderness	Pain/tenderness
Bruising	Nodule/abscess
Itching	Systemic responses to infection
	Biofilm
Infection	Foreign body granuloma
Erythema	Varying from subclinical
Edema	histologic changes to disfiguring
Pain/tenderness	nodules
Acne papule formation	
Nodule/abscess	
Hypersensitivity	Migration of implant material
Erythema	
Edema	
Pain/tenderness	
Nonfluctuant nodules	
Lumps, asymmetries, contour irregularities caused by technique and placement errors	Immune reactions
	Local and site of injection and generalized
Skin discoloration	Persistent discoloration
Redness	Persistent scarring
Whiteness	
Hyperpigmentation	
Local tissue necrosis caused by vascular occlusion	Malar edema

Funt, D. and T. Pavicic (2013). "Dermal fillers in aesthetics: an overview of adverse events and treatment approaches." Clin Cosmet Investig Dermatol ***6****: 295-316.*

Tear trough

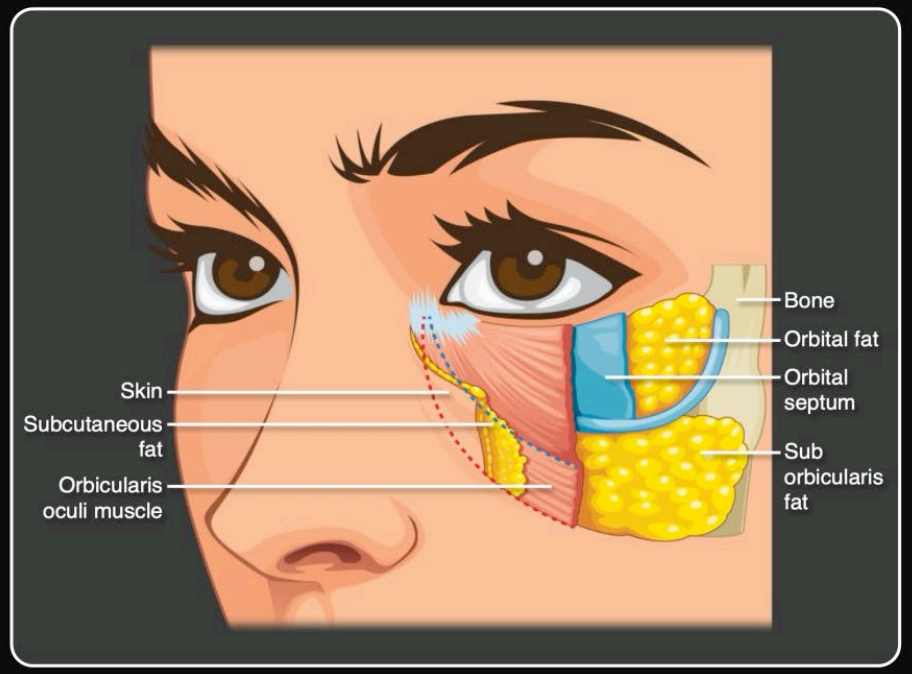
Tear trough: layered anatomy





Video

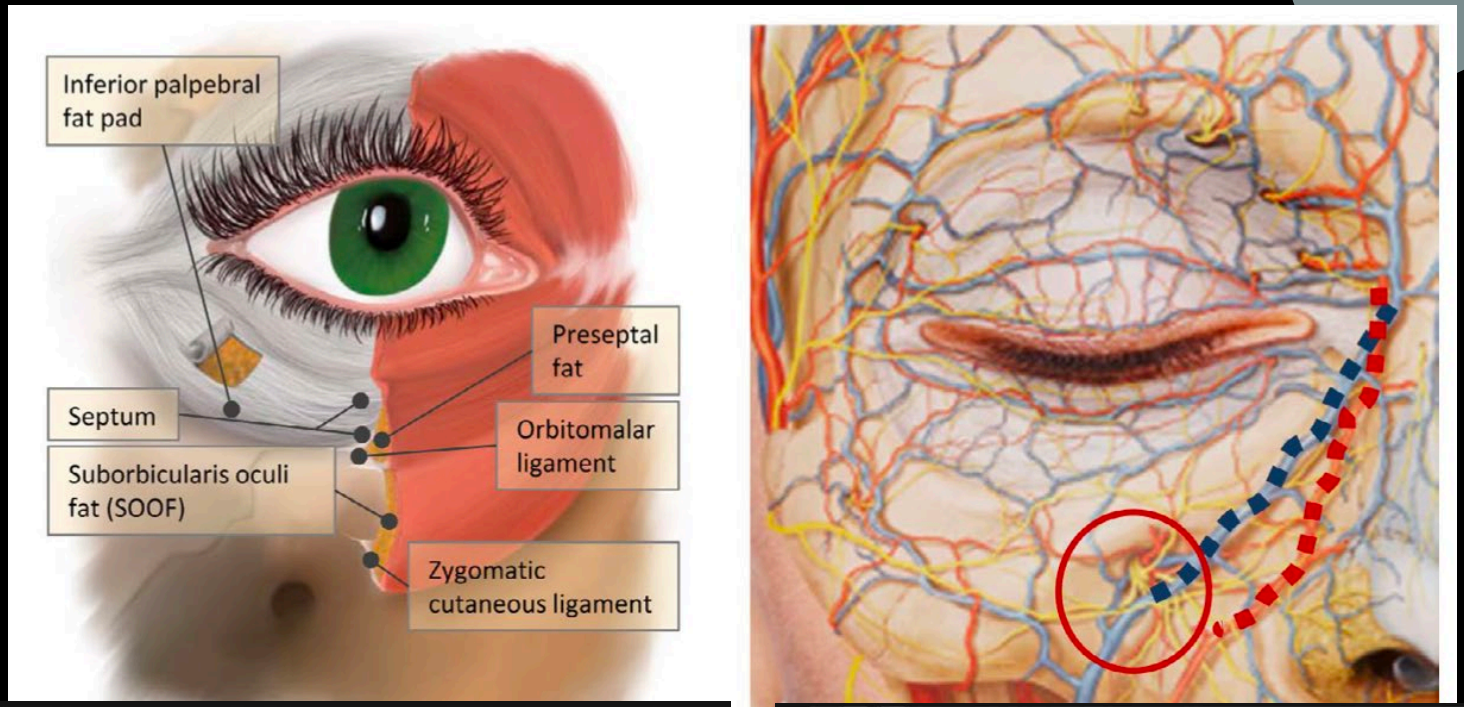
Tear trough: vascular anatomy

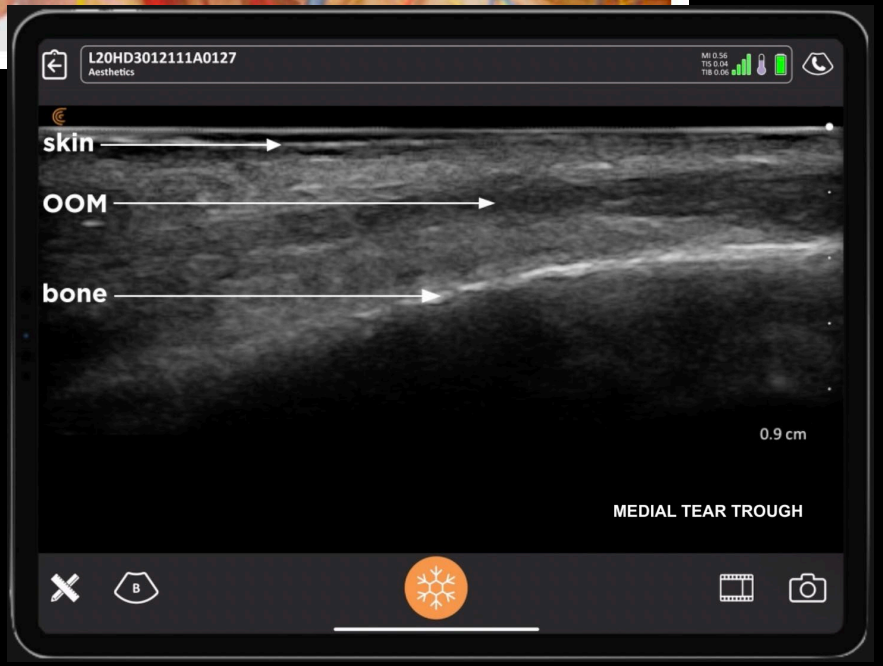


Video

*Anido, J., et al. (2021). "Recommendations for the treatment of tear trough deformity with cross-linked hyaluronic acid filler." J Cosmet Dermatol **20**(1): 6-17.*

Techniques for tear trough





Tear trough complications

- Delayed
  - Swelling (42.3%)
  - Nodules/lumps (25%)
  - Migration (7.7%)

Delayed Complications following Dermal Filler for Tear Trough Augmentation: A Systematic Review

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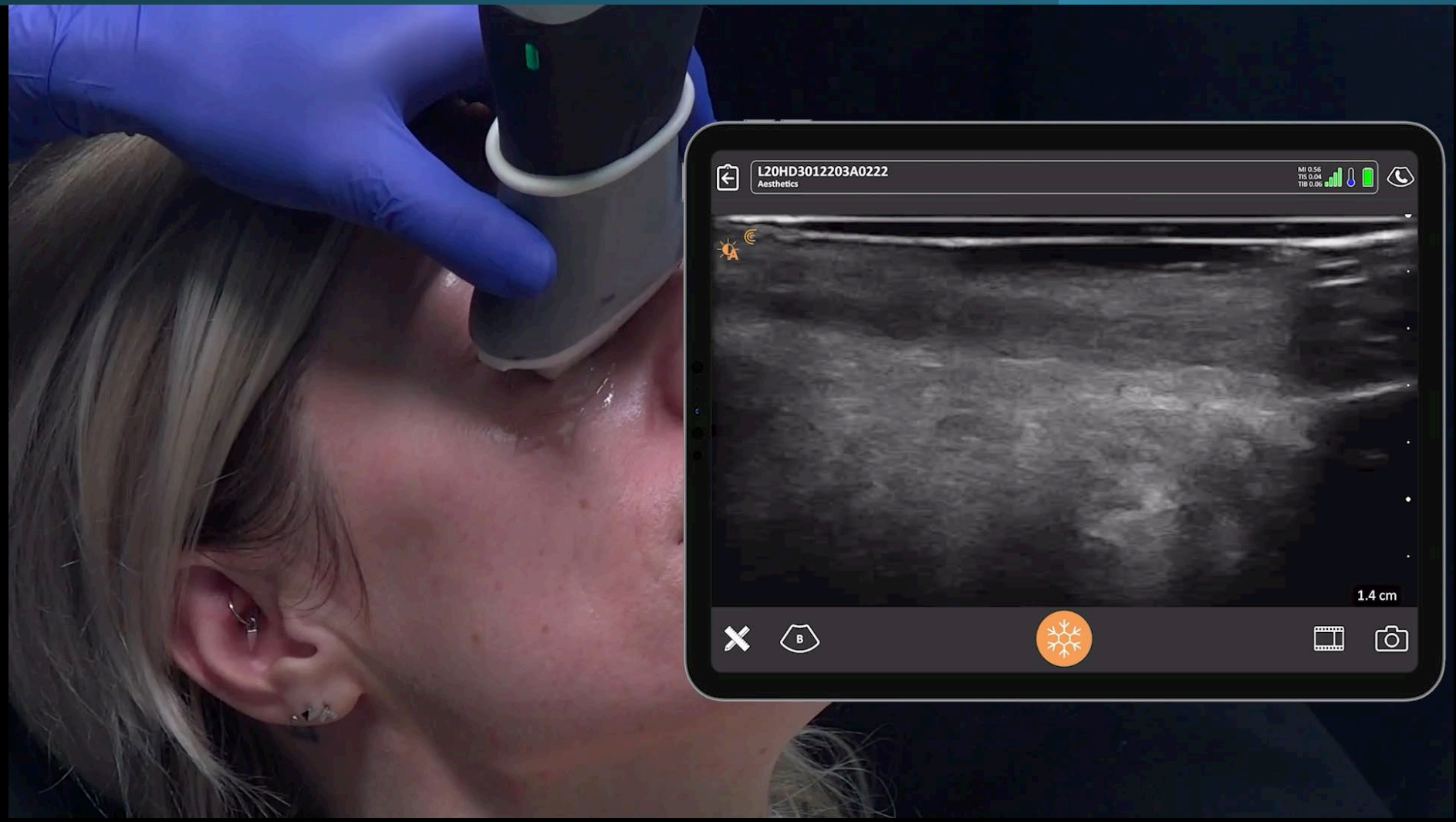
Facial Plast Surg 2022;38:250–259.

Pre-operative imaging

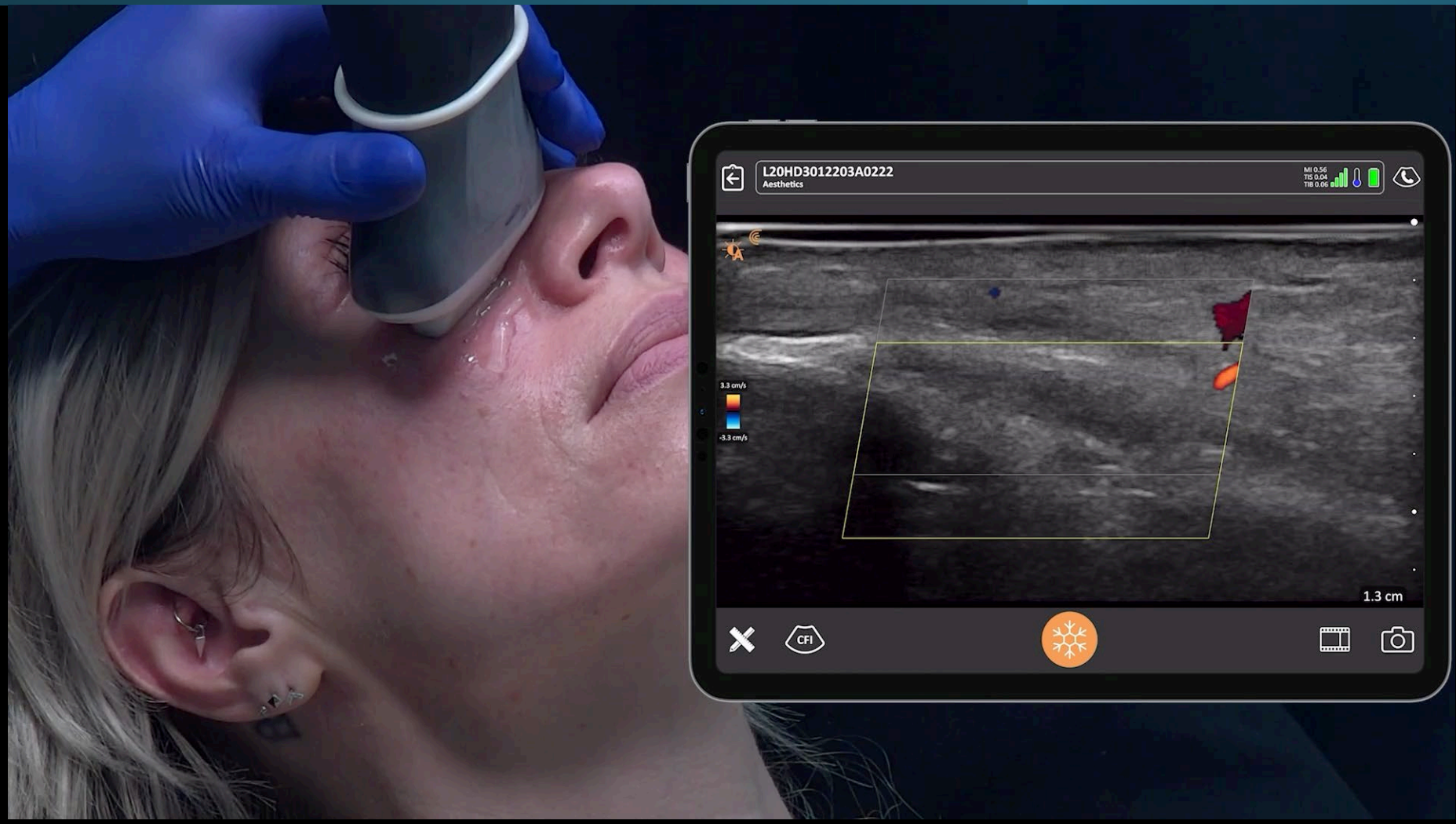


Video

Guided hyaluronidase

Video

Immediately after

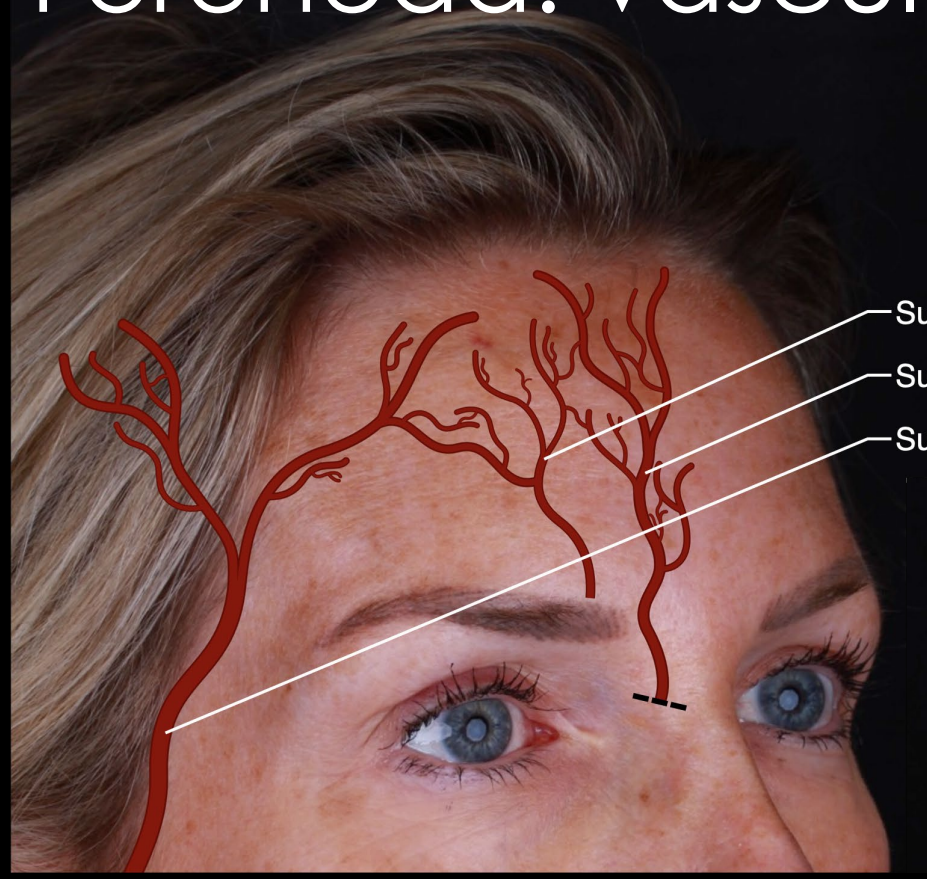


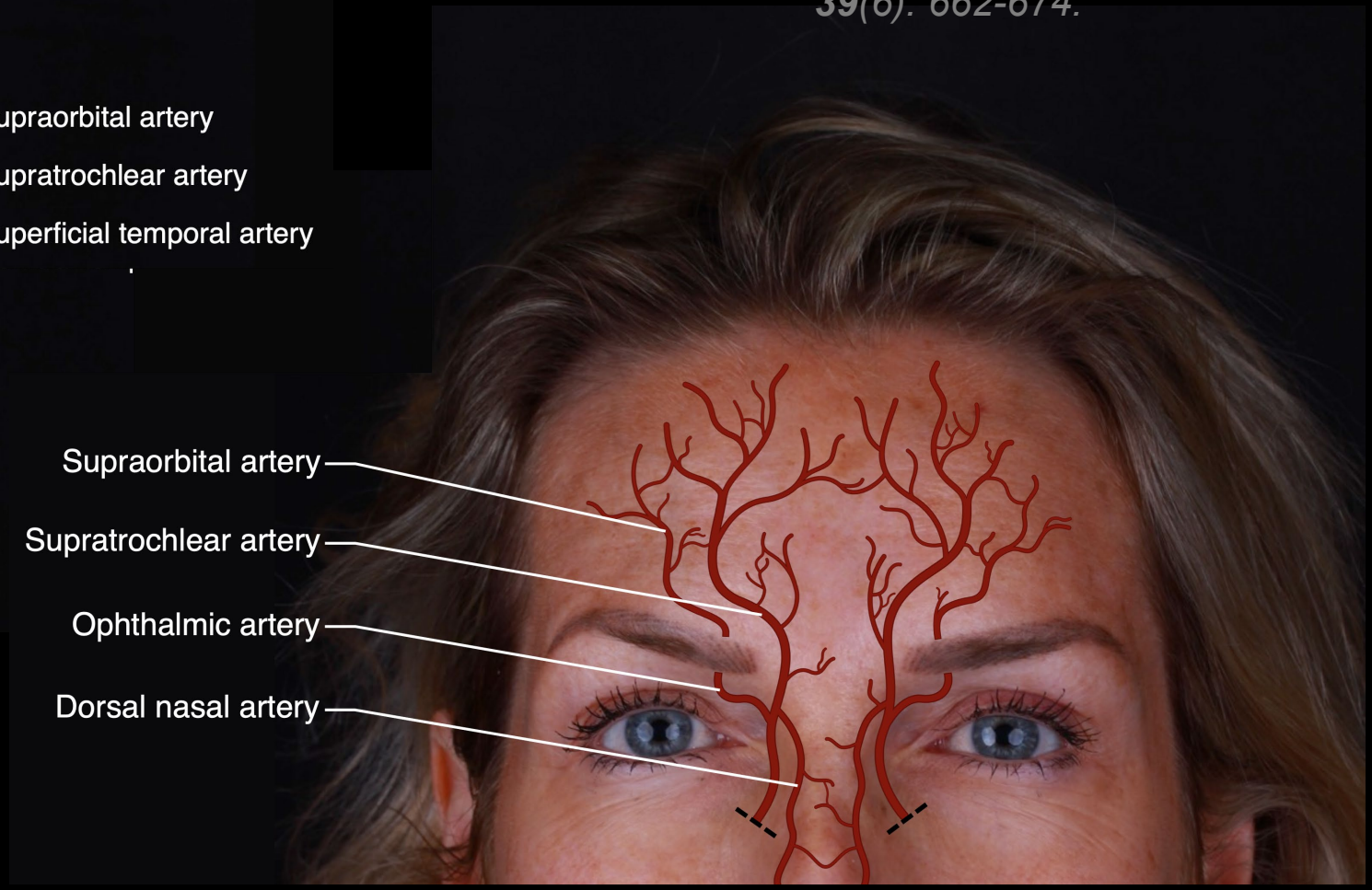
Video

Forehead

Forehead: vascular anatomy

*Beleznay, K., et al. (2019). "Update on Avoiding and Treating Blindness From Fillers: A Recent Review of the World Literature." Aesthet Surg J **39**(6): 662-674.*





Forehead: layered anatomy

Video

Pre-operative scanning

Video

Guided hyaluronidase

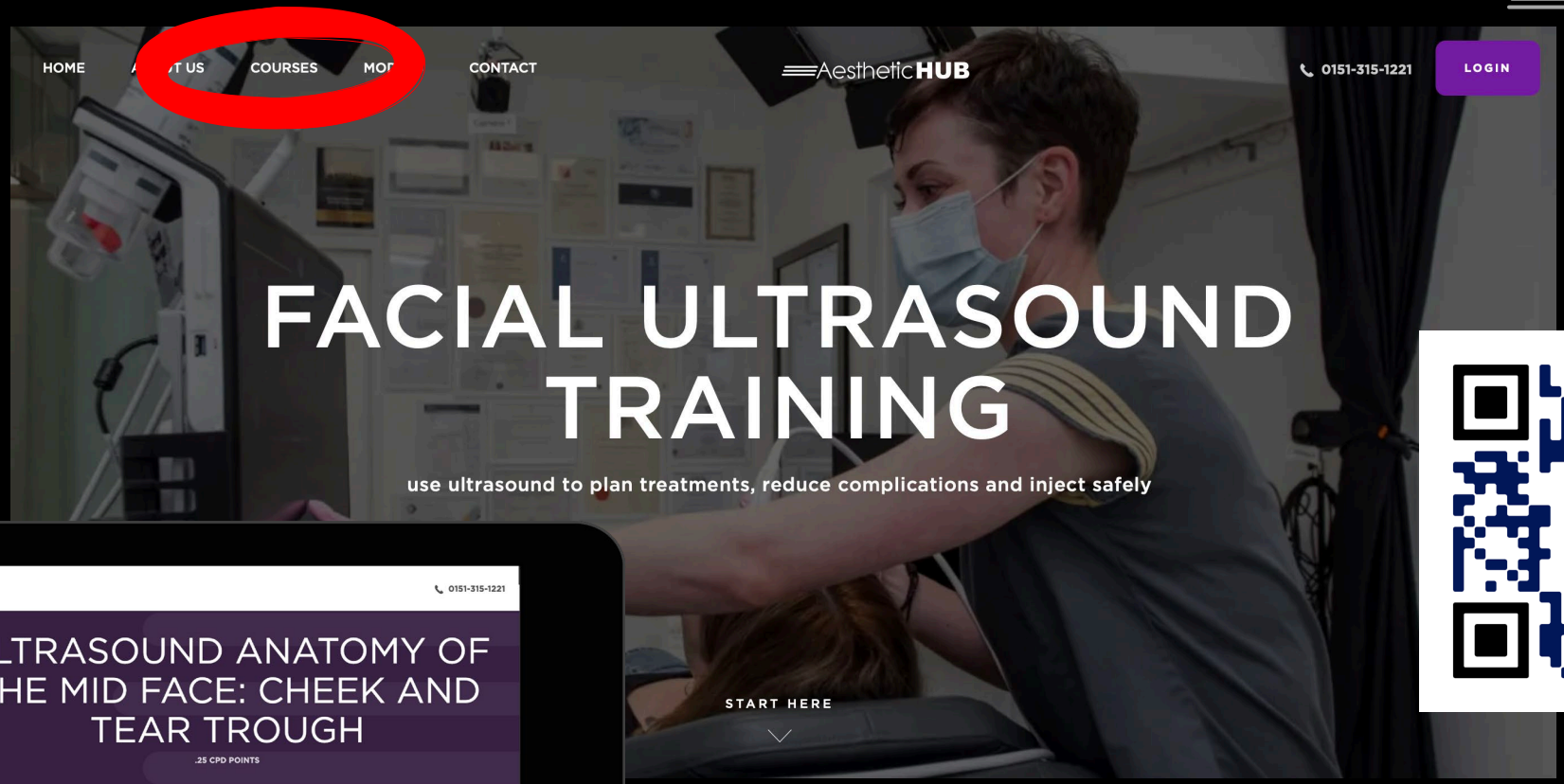
Video

1 hour after hyaluronidase

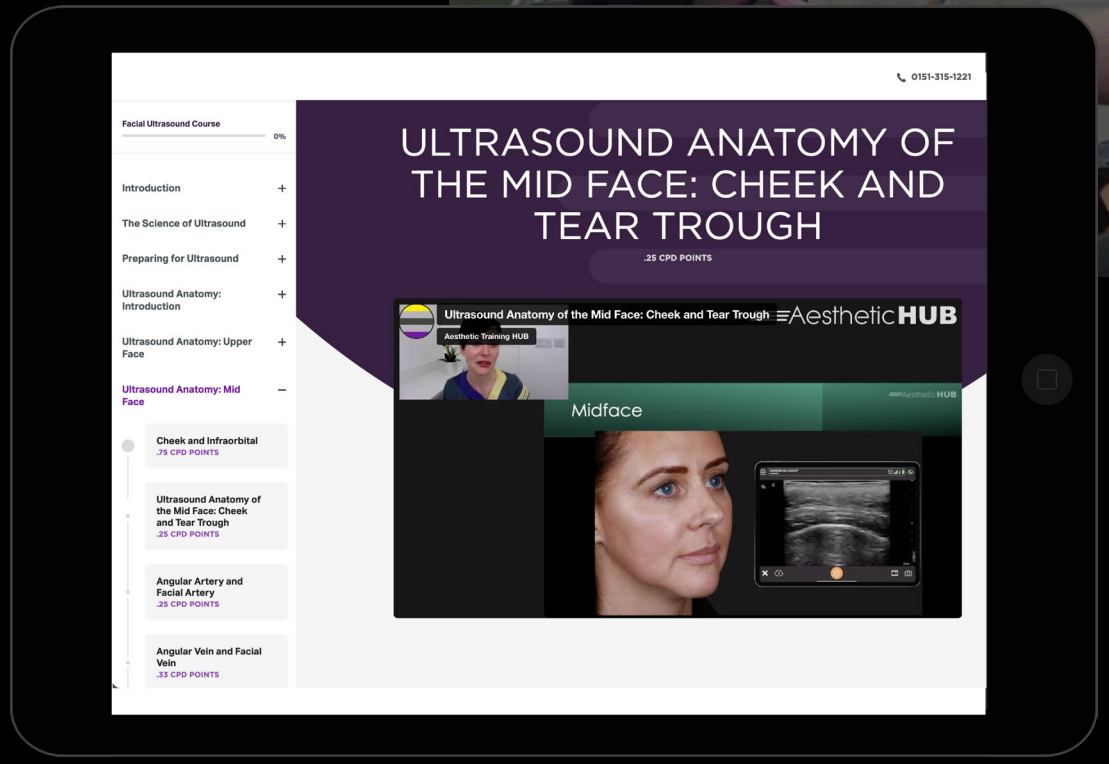
Video

Complication management

- Incorporate ultrasound into your daily routine
- Build your skills gradually
- Start with “everyday” complications
- Ask for help if you are not sure



SCAN ME



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Clinical Marketing Manager

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Wireless Freedom

High-Definition Imaging

Easy App for iOS & Android

Limitless Scanning with Power Fan HD3

Advanced Aesthetics Package

Clarius Cloud Storage

Clarius Live Telemedicine

Unlimited Users

Questions?

Dr. MJ Rowland-Warmann

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Thank you!