# L7 BULLETIN

NO.5

May 2024

No 5

## CLINICAL

Get to Know The Anatomy of your underarms

## JOURNAL CLUB

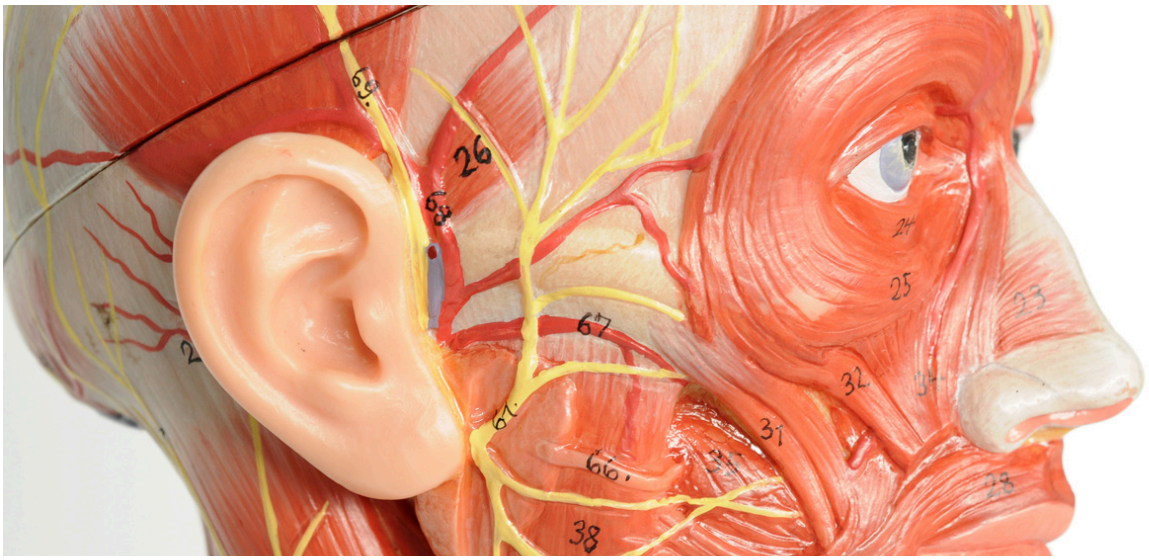
Understanding the Functional Anatomy of the Frontalis and Glabellar Complex

## EVENTS

Upcoming Events from Level 7

## YOU ASKED- WE PROVIDED

Changes to mentoring sessions!




# CONTENTS NO.5

# CLINICAL

## UNDERSTANDING THE ANATOMY OF THE AXILLA

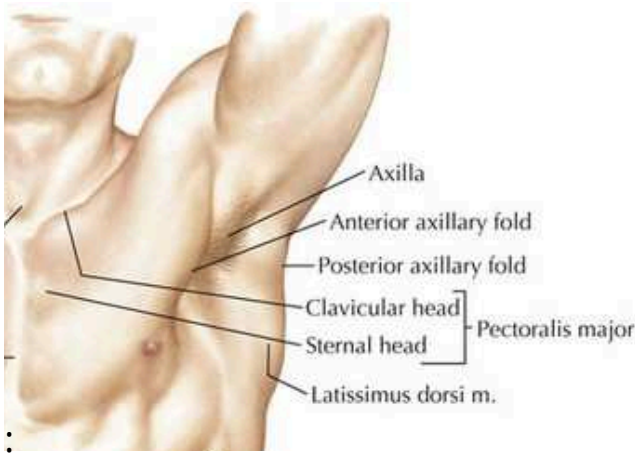
As part of your Level 7 Diploma, you are required to treat hyperhydrosis, under the umbrella of 'Non Facial Treatments'.

At Acquisiton we treat the underarms for hyperhydrosis, the production of excessive sweat from in the axilla.

The treatment for the underarm with botulinum toxin differs greatly from the treatment of muscular expression, however the action of the neurotoxin remains the same, but resulting in a different action.

**Anatomy of the axilla**

Firstly it is important to understand the surface anatomy of the axilla, the underarm.



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**Surface Anatomy**

The axilla, commonly known as the armpit, where the arm connects to the body. Understanding the surface anatomy of the axilla is important for treating patients with hyperhydrosis :

B**orders of the Axilla**

The axilla is pyramid-shaped, with clear boundaries:

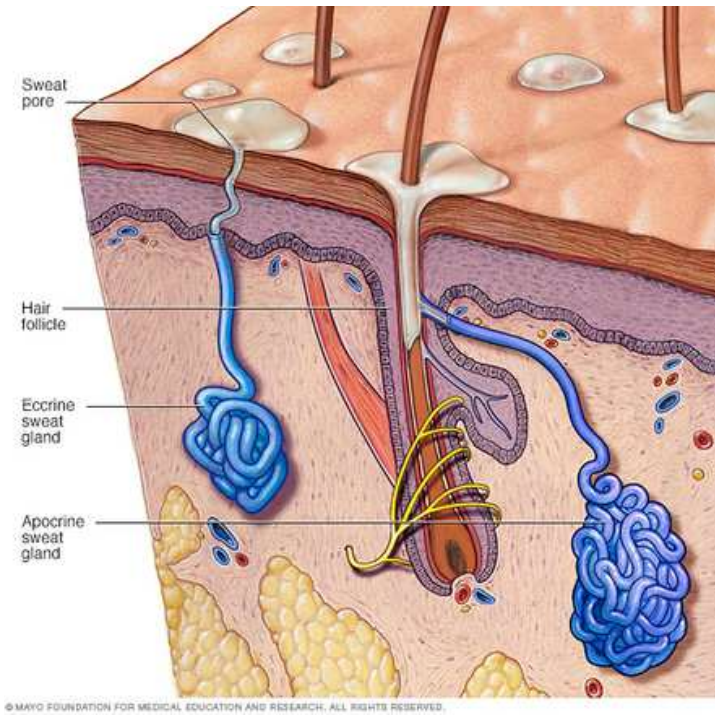
- Anteriorly: It is bordered by the pectoralis major muscle on the outside and the pectoralis minor underneath.
- Posteriorly: The subscapularis, teres major, and latissimus dorsi muscles form the border.
- Medially: This side is bordered by the thoracic wall and the serratus anterior muscle.
- Laterally: The humerus forms this border, defining the transition from the arm to the torso.

# CLINICAL

**Eccrine and Apocrine Glands: A Dual System**

The underarm hosts two distinct types of sweat glands, each with unique functions and implications for aesthetic and therapeutic treatments:

**Eccrine Glands**:
These glands, which are predominant across the body and concentrated in the underarms, are vital for temperature control. They produce a thin, watery sweat that cools the body through evaporation.





**Apocrine Glands**:
These glands become active at puberty and are located mainly in the underarm and groin areas. The sweat produced is thicker and, when broken down by bacteria on the skin, can lead to body odour. Stress hormones also influence these glands, linking them closely with emotional states.

**Botulinum Toxin: A Solution for Hyperhidrosis**

Botulinum Toxin neurotoxin is adept at addressing excessive sweating.
**Mechanism:** Botulinum toxin acts by inhibiting acetylcholine, a neurotransmitter that s**timulates sweat production.** When injected into the underarm, it temporarily deactivates the nerves that activate the eccrine glands, significantly reducing sweat output.
confidence.

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Aesth Plast Surg (2013) 37:975–983
DOI 10.1007/s00266-013-0178-1

REVIEW NON-SURGICAL AESTHETIC

# Understanding the Functional Anatomy of the Frontalis and Glabellar Complex for Optimal Aesthetic Botulinum Toxin Type A Therapy

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**Summary**

BoNTA is approved for treating glabellar lines and is also frequently used off-label for treating the frontalis muscle to reduce horizontal forehead lines. The study reviews both the anatomy and physiology of the frontalis muscle and its interactions with antagonist muscles in the upper face, aiming to guide the optimal use of BoNTA for treating forehead rhytides while minimising complications such as brow ptosis. This involved a literature search through PubMed to gather data on practitioner opinions and clinical publications concerning the efficacy and safety of BoNTA in aesthetic upper face treatments.

Dosage and injection techniques need to be customized based on individual variations in muscle anatomy and function, as well as patient goals, to achieve the best aesthetic outcomes.

## Introduction

BoNTA is traditionally used for treating glabellar lines but has been commonly applied off-label for aesthetic improvements in the frontalis muscle to diminish horizontal forehead lines. The paper aims to provide a detailed guide for using BoNTA in this area based on anatomy and function .

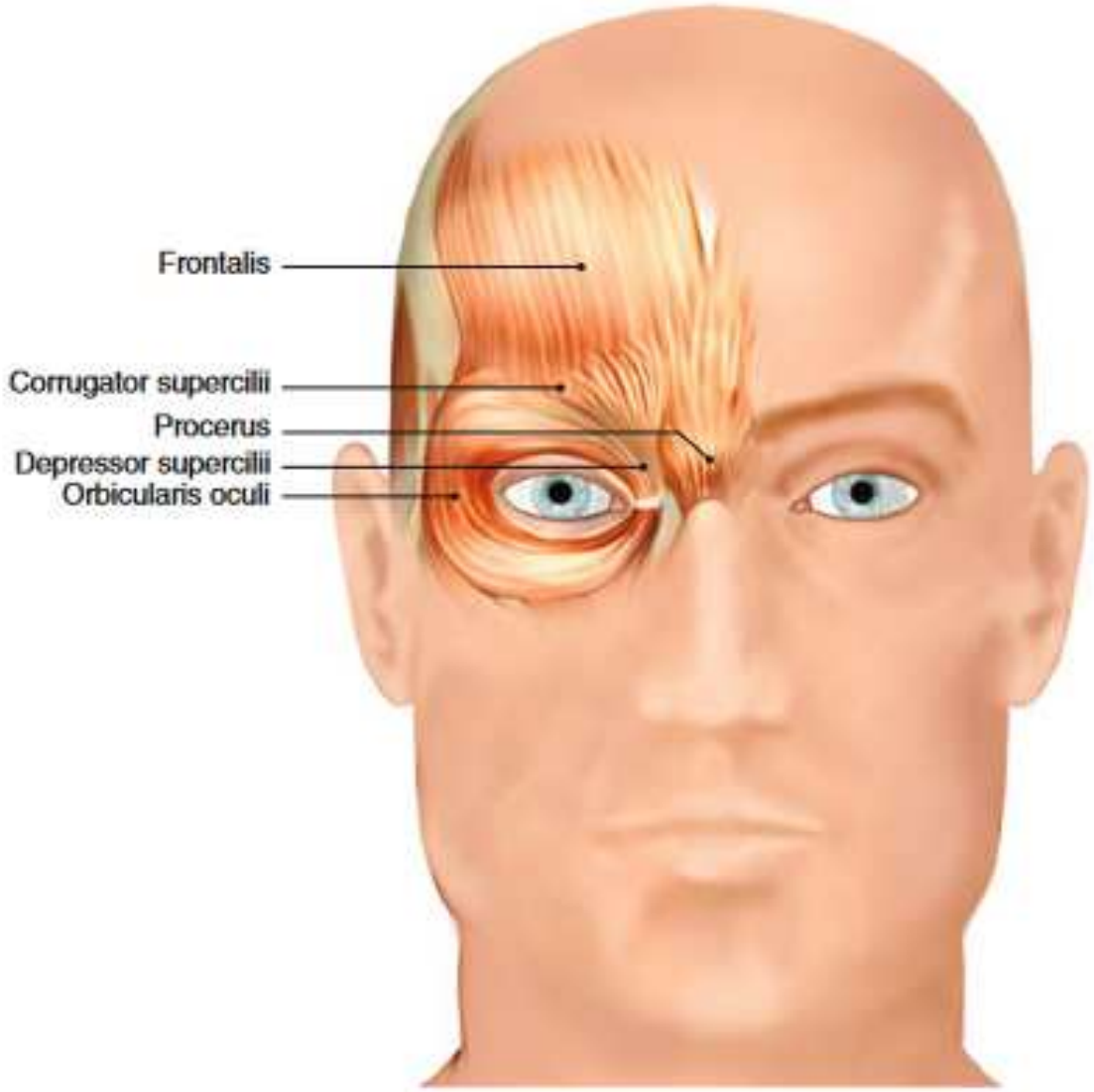


**Fig. 1** Anatomic location of the frontalis muscle in relation to the glabellar and orbicularis oculi muscles

## Materials and Methods

The authors conducted a comprehensive literature search through PubMed to gather existing data on the use of BoNTA for aesthetic treatments. The search was specifically tailored to find practitioner opinions and clinical publications related to the efficacy and safety of BoNTA for the upper face.

The search parameters were set to include clinical trials, randomised controlled trials, case reports, comparative studies, and multicentre studies. The results were limited to articles published in English, with no restriction on the publication year. This search was also supplemented with articles known to the authors or identified through citations in the retrieved articles.

The study focuses on detailing the anatomical and physiological understanding necessary for optimizing the aesthetic use of BoNTA in treating the frontalis muscle and associated areas of the upper face to minimise side effects like brow ptosis .

The frontalis muscle is a critical component of facial expression, particularly in its role in raising the eyebrows and affecting the appearance of the forehead. Here's a more detailed look at its structure, function, and interaction with surrounding muscles:

**Frontalis Muscle**

- **Structure**: The frontalis muscle is a broad, thin, bilaterally symmetrical muscle that spans the forehead. It originates from the galea aponeurotica, a tough layer of fibrous tissue that covers the upper part of the skull, and inserts into the skin above the eyebrows. The muscle fibers run vertically from the brow upward to the top of the forehead.
- **Function**: The primary function of the frontalis is to elevate the eyebrows, which creates horizontal wrinkles across the forehead when the muscle contracts. This action is associated with expressions of surprise or concern, allowing for a wider field of vision and more expressive communication.

### Interaction with Other Facial Muscles

The frontalis interacts dynamically with several other muscles that influence facial expressions:

1. **Orbicularis Oculi:** This muscle encircles the eye and acts to close the eyelids. It also helps in pulling the eyebrows downward. When the frontalis contracts to raise the eyebrows, it counteracts the downward force exerted by the orbicularis oculi, balancing the position of the eyebrows.
2. **Corrugator Supercilii:** Located medially to the frontalis, this muscle pulls the eyebrows downward and toward the center of the forehead, creating vertical frown lines between the eyebrows. The frontalis's action of lifting can moderate the intensity of these frown lines by providing an opposing upward force.
3. **Procerus**: Situated between the eyebrows, the procerus pulls the central eyebrow region downward, aiding in expressions of anger or intensity. Its action complements that of the corrugator supercilii and contrasts with the frontalis, which lifts the entire brow.
4. **Depressor Supercilii:** Often considered a part of the orbicularis oculi, this muscle helps in pulling the inner ends of the eyebrows downward, enhancing the frowning expression. Its effects are directly opposed by the frontalis.

## Influence on Facial Expression

The balance of muscle actions between the frontalis and its antagonistic muscles (orbicularis oculi, corrugator supercilii, procerus, and depressor supercilii) is essential for nuanced facial expressions. The frontalis allows for the raising of the eyebrows, which can express surprise or curiosity. In contrast, its antagonists help produce a frown or a look of concern. The interplay between these muscles must be finely tuned to avoid unwanted aesthetic results, such as asymmetry or unintended expressions, especially when using treatments like botulinum toxin type A (BoNTA).

Understanding this complex interplay is crucial for clinicians aiming to achieve natural and balanced outcomes in aesthetic procedures involving the upper face, as altering the activity of one muscle can inadvertently impact the overall facial expression due to the interconnected nature of facial musculature.

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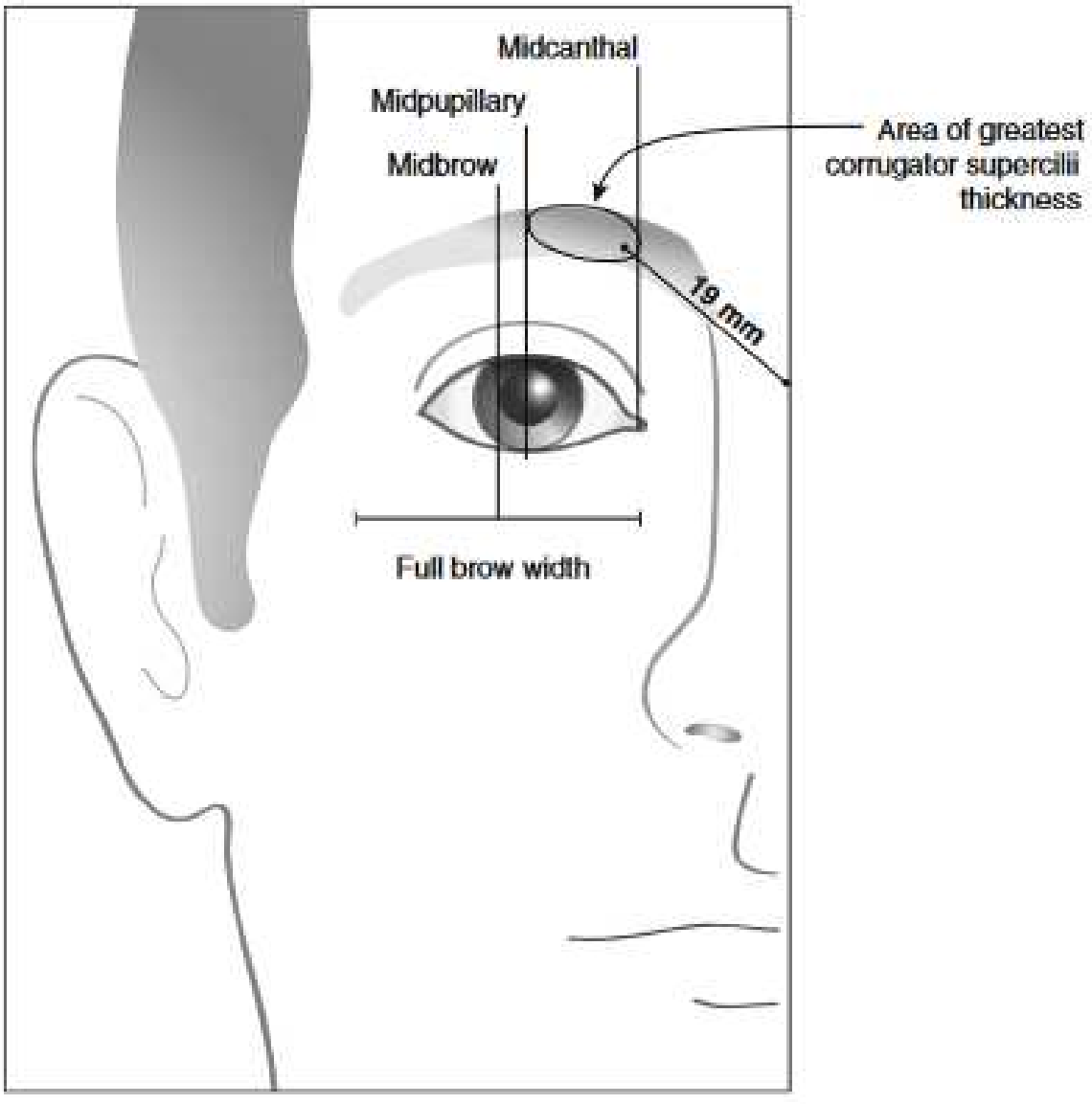
When administering botulinum toxin type A (BoNTA) in the frontalis muscle, several critical anatomical considerations ensure optimal aesthetic outcomes while minimising complications like brow ptosis or asymmetry.

1. **Injection Sites and Patterns:** Typically, a pattern of 4-10 shallow intramuscular injections across one or more horizontal lines is used. In women, a V-shaped pattern may sometimes be employed to create a slight arch in the brows .



**2. Muscle Anatomy and Function:** Due to the variable anatomy and function of the frontalis and its interaction with other facial muscles like the procerus, corrugator supercilii, and orbicularis oculi, the dosing and placement of injections must be carefully adjusted. This adjustment considers the muscle mass, the desired aesthetic effect, and individual anatomical features.

3. **Dose Adjustments:** Men typically require higher doses than women due to generally larger muscle mass. The specific dose and spacing of injections depend on the individual's muscle characteristics and the width and depth of forehead furrows.

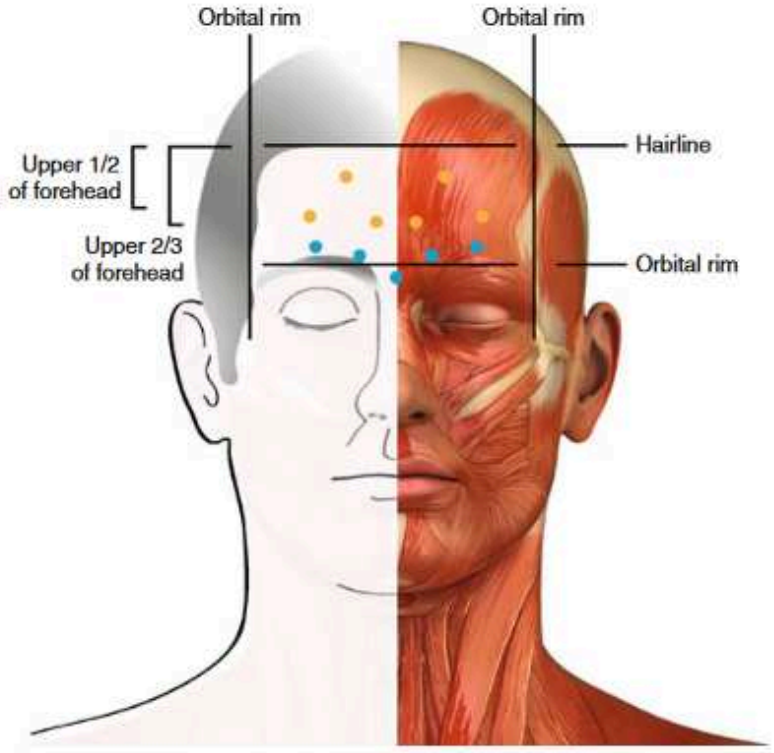



**Fig. 3** Typical sites of botulinum neurotoxin A injection for the treatment of forehead lines (*orange dots*). More sites are possible for higher or broader foreheads. The pattern may be made more V-shaped if the patient desires a slight arch for the brows. Typical sites for injection of the glabellar muscles (procerus and corrugators supercilii) are shown as *blue dots*

**4. Safety and Technique:** BoNTA injections in the frontalis should be administered at relatively superficial depths to avoid affecting deeper structures that could lead to complications like eyelid ptosis. Common errors in dosing or technique, such as overdosing, can lead to an unnatural appearance and functional issues like brow droop, which are difficult to correct because no other muscles can perform the brow-raising function of the frontalis.

5. **Avoiding Complications:** To prevent adverse effects such as brow ptosis or the 'Spock' eyebrow effect, injections should be carefully planned. This planning involves not only the dose and depth but also the specific points of injection relative to the brow and hairline, ensuring that the upper third of the forehead is primarily targeted, and avoiding the lower forehead where the risk of complications increases.

5. **Individualization of Treatment:** Each patient's treatment should be tailored based on a detailed evaluation of their facial anatomy and dynamic muscle function. This personalisation is crucial because of the significant variability in frontalis muscle size, function, and forehead shape among individuals.

## Results

BoNTA has shown durable improvements in the appearance of moderate to severe horizontal forehead lines. However, dosage and injection techniques need to be customised based on individual variations in muscle anatomy and function, as well as patient goals, to achieve the best aesthetic outcomes.

## Conclusions

The successful aesthetic application of BoNTA for horizontal forehead lines requires careful consideration of the frontalis muscle's function and anatomical variations. Clinicians need to tailor their treatment plans to each patient’s unique facial anatomy and desired outcomes to optimise results and minimise risks .

# UPCOMING EVENTS

## COURSES WITH AVAILABILITY

- Saturday 18th May 2024- Foundation - London
- Sunday 19th May 2024 - Advanced - London
- Saturday 1st June 2024- Foundation - London
- Saturday 1st June 2024- Foundation - Birmingham
- Sunday 2nd June 2024 - Advanced - London
- Sunday 2nd June 2024 - Advanced - Birmingham
- Saturday 22nd June 2024 - Tear Trough - Newcastle

## MENTORING SESSIONS WITH AVAILABILITY

- Thursday 20th June 2024 - London
- Saturday 6th July 2024 - London
- Thursday 25th July 2024 - London
- Saturday 10th August 2024 - Newcastle
- Saturday 10th August 2024 - London
- Thursday 19th September 2024 - London
- Saturday 28th September 2024 - London

*Book via your Level 7 Dashboard*
*Remember we can supply models for all sessions now.*
*Thursday sessions are capped at 4 delegates.*

WE WILL BE ANNOUNCING OUR COURSEWORK SESSIONS VERY SOON. KEEP AN EYE OUT ON YOUR EMAILS AND THE FACEBOOK GROUP.

# YOU ASKED, WE PROVIDED

## MORE MENTORING SESSIONS!!

**Changes to Weekday Mentoring Sessions**

**Effective immediately, we are making a change to the format of our sessions. In response to your valuable feedback, we have decided to remove the requirement of bringing your own model to the sessions. You are more than welcome to bring your own model if you wish to continue doing so. However, if you prefer not to bring one or simply don't have one available, we will provide a model for you during the sessions.**

**Bringing your own model can offer certain benefits, such as refining your techniques and improving your confidence in specific areas, real world application - bridges the gap between theory and practice by allowing you to work directly with real clients that you have obtained and we offer heavily discounted treatments for your model. Therefore, if you find value in bringing your own model, we encourage you to do so.**

**We will be asking you to provide your outstanding treatment numbers prior to the course, this is so we can tailor the sessions effectively to your requirements.**

**We hope this adjustment will make the mentoring sessions more accessible and enjoyable for everyone. Your input is incredibly important to us, and we appreciate your contributions towards improving our program.**

# A MESSAGE FROM THE ACADEMY DIRECTORS:

**As the founding Directors of Acquisition Aesthetics, we are delighted to extend a personal invitation to you, as one of our priority learners, for the upcoming launch of our Cadaveric Dissection Course, scheduled to take place on 25th - 26th June in Edinburgh. This course marks a significant milestone in our commitment to providing comprehensive and advanced training opportunities for aesthetic practitioners like yourself. As a Level 7 delegate, we would like to offer you first refusal on one of the limited spaces remaining.**

**Cadaveric dissection offers a unique and invaluable learning experience, allowing for an in-depth exploration of anatomy that is crucial for mastering advanced techniques in aesthetic procedures. Through this course, you will have the opportunity to enhance your understanding of facial anatomy, refine your procedural skills, and elevate the quality of care you provide to your patients.**

**The Cadaveric Dissection Course promises to be an immersive and enlightening experience, led by expert instructors who are dedicated to providing you with the highest standard of education and training. The course will be delivered by the both of us as well as renowned consultant surgeons Jeff Downie and Mark Devlin. Whether you are looking to expand your knowledge or refine your techniques, this course is designed to meet your professional development needs.**

**We invite you to visit the course page here for more details and to reserve your spot today. Spaces are limited, and we encourage you to secure your place at this exclusive event as soon as possible.**

**Date: 24th & 25th June 2024**
**Location: Royal College of Surgeons in Edinburgh**

**Join us as we embark on this exciting journey of learning and discovery. We look forward to welcoming you to the Cadaveric Dissection Course and witnessing the growth and advancement of your aesthetic practice.**

**Dr. Lara Watson & Dr. Priya Chadha**
**Directors, Acquisition Aesthetics**