

## MODULE OVERVIEW

**Module 3: Injectable Dermal Fillers** (2-day) consists of didactic & live patient hands-on training and examinations. This certification course is delivered in a small class size and high instructor-to-trainee ratio to provide comprehensive knowledge and clinical competency in the basic use of injectable fillers for aesthetic enhancement. The pre-requisite for Module 3 is Module 1: Advanced Facial & Neck Anatomy.

## HISTORY OF INJECTABLE FILLERS

### FACE & NECK ANATOMY

1. Animal derived collagen
2. Hyaluronic acid
3. Polyacrylamide
4. Polymethylmethacrylate
5. Silicone base
6. Poly-L-lactic acid
7. Calcium hydroxyapatite
8. Autologous
9. Human derived collagen, fibroblast, or fat

## RHEOLOGICAL PROPERTIES OF INJECTABLE FILLERS

### BRAND NAMES OF HEALTH CANADA APPROVED & COMMON INJECTABLE FILLERS

1. Hyaluronic acid
  - a) Restylane, Emverel collection (Galderma)
    - i. Review of subtypes
    - ii. Rheological properties, injection depth & indications
  - b) Juvederm (Allergan)
    - i. Review of subtypes
    - ii. Rheological properties, injection depth & indications
  - c) Belotero (Merz)
    - i. Review of subtypes
    - ii. Rheological properties, injection depth & indications
  - d) Teosyal, Redensity (Clarion Medical)
    - i. Review of subtypes
    - ii. Rheological properties, injection depth & indications
  - e) Revanesse (Prolenium Medical Technologies)
    - i. Review of subtypes
    - ii. Rheological properties, injection depth & indications
2. Calcium hydroxyapatite
  - a) Radiesse (Merz)
    - i. Review of subtypes
    - ii. Pre-injection mixing requirements
    - iii. Rheological properties, injection depth & indications
3. Poly-L-Lactic acid
  - a) Sculptra (Galderma)
    - i. Reconstitution techniques & storage requirements
    - ii. Rheological properties, injection depth & indications
4. Hyaluronic acid & dextra hybrid
  - a) Redexis (Prolenium Medical Technologies)
    - i. Review of subtypes
    - ii. Rheological properties, injection depth & indications

## OFF-LABEL SOTRAGE & RECAPPING ISSUES

1. Discuss storage of opened injectable filler against manufacturer's recommendations
2. Discuss legal implication of recapping and storage
3. Review of aseptic techniques in recapping

## PRE-INJECTION PREPARATION & CONSIDERATION

1. Local anesthesia
  - a) Injectable (Lidocaine & Bupivacaine)
    - i. Dosage, toxicity, epinephrine
    - ii. Complications of peripheral nerve anesthesia
    - iii. Allergic reaction
    - iv. Local toxicity
    - v. Systemic toxicity
    - vi. Complications & treatment scenarios
    - vii. Patient preparation
    - viii. Infiltration techniques
  - b) Topical (EMLA 5% & Lidocaine 5% gels & BLT)
    - i. Dosage, incubation time, penetration depth
    - ii. Application area & systemic toxicity
    - iii. Allergic reaction
    - iv. Irritant reaction, alkaline burn, acid burn
  - c) Cryo-spray or icepack
2. Peripheral nerve block
  - a) Supraorbital, supratrochlear
  - b) Zygomaticotemporal nerves, auriculotemporal
  - c) Infraorbital
  - d) Mental, buccal
  - e) Superficial transverse cervical, greater auricular nerves
3. Patient specific considerations
  - a) Existing conditions: bleeding, diathesis, poor healing, vasculopathy, malnutrition, diabetes, keloid/hypertrophic tendency, cutaneous viral dermatosis, history of severe allergic reactions, active local skin infection, active local skin inflammation
  - b) Facial implants: rhinoplasty, mentoplasty, other injectable implants
  - c) Lifestyle: martial arts, deep tissue facial massage, etc.
  - d) Patient preparation: aseptic skin preparation, patient positioning
  - e) Pre-injection anxiety management strategies

## PROCEDURAL CONSIDERATION

1. Treatment area specific considerations
  - a) Volume of existing soft tissue
  - b) Blood supply and vascular network
  - c) Skin thickness and elasticity
  - d) Anatomy of subcutaneous fat, SMAS, ligaments, tendons, muscles
2. Selection of PRP injection depth and injection techniques for desired effect and indications
3. Special techniques
  - a) Dilution via luer-toluer syringe connector
    - i. Rheological changes after dilution
    - ii. Diluting agents: lidocaine, epinephrine, normal saline
    - iii. Discussion of proper dilution technique
  - b) Delivery via cannula
    - i. Advantages & disadvantages

## RISK REDUCTION STRATEGIES & MANAGEMENT

1. Ischemic injuries & complications
  - a) Intravascular injection & extravascular compression
  - b) Signs & symptoms
  - c) Concept of “Golden Time”
  - d) Emergency management protocols
    - i. Current consensus & controversies
    - ii. Massages & hot packs
    - iii. Hyaluronidase
      - Local injection technique
      - Retrobulbar injection technique
    - iv. Nitroglycerin, sildenafil, ASA
    - v. Oral antibiotics and systemic steroid
    - vi. Hyperbaric oxygen chamber
    - vii. Surgical removal
    - viii. SVF, PRP
  - e) Risk reduction strategies
    - i. Needle gauge
    - ii. Filler extrusion force
    - iii. Filler deposit technique
    - iv. Cannula
    - v. Danger zones
  - f) Bacterial infection & delayed hypersensitivity reactions
    - i. Signs & symptoms
    - ii. Pharmaceutical management protocol
    - iii. Preventive strategies
    - iv. Best practical aseptic filler injection techniques and field preparations
    - v. Common pitfall and overlooked areas
  - g) Granuloma
    - i. Signs & symptoms
    - ii. Management options
      - Collagenase
      - 5-FU & intralesional steroid
  - h) Bruising
  - i) Swelling
  - j) Allergic reactions & vasovagal response
    - i. Review of proper emergency responses to various levels of allergic reactions to different types of fillers
    - ii. Review of proper management for acute vasovagal response
  - k) Cutaneous viral activation
    - i. Review of antiviral drugs & dosage
  - l) Filler migration
    - i. Post-injection precautions to reduce the change of migration

## PATIENT SELECTION & INFORMED CONSENT

1. Discuss effective communication methods to identify patient expectations, predicting clinical outcomes, and to communicate the risks and benefits for patients considering injectable fillers
2. Discuss necessary clinical forms including informed consent for injectable fillers
3. Discuss recommended photographic equipment and techniques to obtain clinically meaning and consistent pre- & post-injection photographs
4. Discuss pre- & post injection care routines
5. Discuss required level of staff training to answer cosmetic PRP injections related questions and common post-injection inquiries including onset and duration of therapeutic benefit, bruise, and swelling in a professional manner

6. Discussion of procedural charting requirements
7. Discussion of contraindication, comorbidities, and proper patient selection including psychiatric conditions (e.g. body dysmorphic disorder, injection anxiety, etc.)
8. Discuss anti-viral prophylaxis option and dosing methods for patient with history of frequent cutaneous viral breakouts in the treatment area(s) (e.g. herpes simplex, herpes zoster, etc.)

### **RHYTIDOLOGY**

1. Discuss Glogau scale of photoaging
2. Discuss dynamic & static wrinkles and introduction to various therapeutic approach to address different levels of aging and different types of wrinkles
3. Review of normal and photo-aged skin physiology and anatomy

### **GENERAL FILLER INJECTION TECHNIQUES**

1. Review standard aseptic injection techniques and injectable handling including proper skin preparation and field preparation
2. Needle gauge selection
3. Position of bevel
4. Filler transfer to aftermarket syringe
5. Intradermal, subdermal, subcutaneous
6. Linear threading, serial puncture
7. Anterograde, retrograde injections
8. Cross-hatching, fan technique
9. Layering injection technique
10. Dermal-cutting injection technique
11. Cannula injection techniques

### **AREA-SPECIFIC INJECTION TECHNIQUES**

1. Forehead lines
2. Forehead volume augmentation
3. Temple volume augmentation
4. Rolling scars (acne & chicken pox)
5. Nasolabial folds
6. Inferior tarsus (Eyeroll)
7. Tear trough
8. Nose augmentation
9. Cheek augmentation
10. Lip sculpting
  - a) Lip volume expansion
  - b) Vermilion augmentation
  - c) Philtral crest augmentation
  - d) Oral commissure effacement
11. Chin augmentation
12. Hand injection

### **LIVE FILLER INJECTION DEMONSTRATION & HANDS-ON TRAINING**

1. Provide demonstration on live patient by the instructor: consultations, treatment planning, filler injection and post procedural care
2. Provide hands-on injection training with the trainee on live models to achieve technical competency in filler injections
3. Provide mock scenarios of consulting and managing filler related complications including skin blanching, visual disturbance, skin necrosis, and allergic reactions
4. Provide comprehensive feedback on trainee's injection techniques and address any weakness the trainee may have

### WRITTEN EXAM

The written exam consists of 30 multiple choice questions, 10 short answer questions, and 10 clinical cases. Digital media is used to present 10 clinical cases. For the 10 clinical cases, trainee is required to select the injectable filler product(s), injection site(s), injection depth, and injection technique(s), estimation of required filler volume and rationale for his/her selections. For the 10 clinical cases, the trainee automatically fails the exam if trainee's answers include fatal misdiagnosis, omission, and/or errors which may jeopardize the patient's safety. A grade of 70% or higher in the written exam section is required to pass the course.

### PRACTICAL EXAM

On a live patient, trainee must demonstrate proficiency in the following areas to pass the course. A grade of 70% or higher in the written exam section is required to pass the course.

1. Demonstrate comprehensive proficiency in providing anesthesia in the form of peripheral blocks, topical anesthesia, and local anesthesia, and product infused anesthesia. Demonstrate the risks and benefits of each form of anesthesia and suggest the most appropriate form of anesthesia for the patient.
2. Provide an initial consultation, screen for risk factors and contradictions, obtain informed consent, and deliver appropriate filler injection to the patient using hyaluronic acid filler under close supervision. The injection process is terminated immediately when the instructor finds the progression of injection process less than optimal. Such termination disqualifies trainee from passing the course regardless of the final score.
3. Demonstrate the ability to fulfill necessary charting requirement.