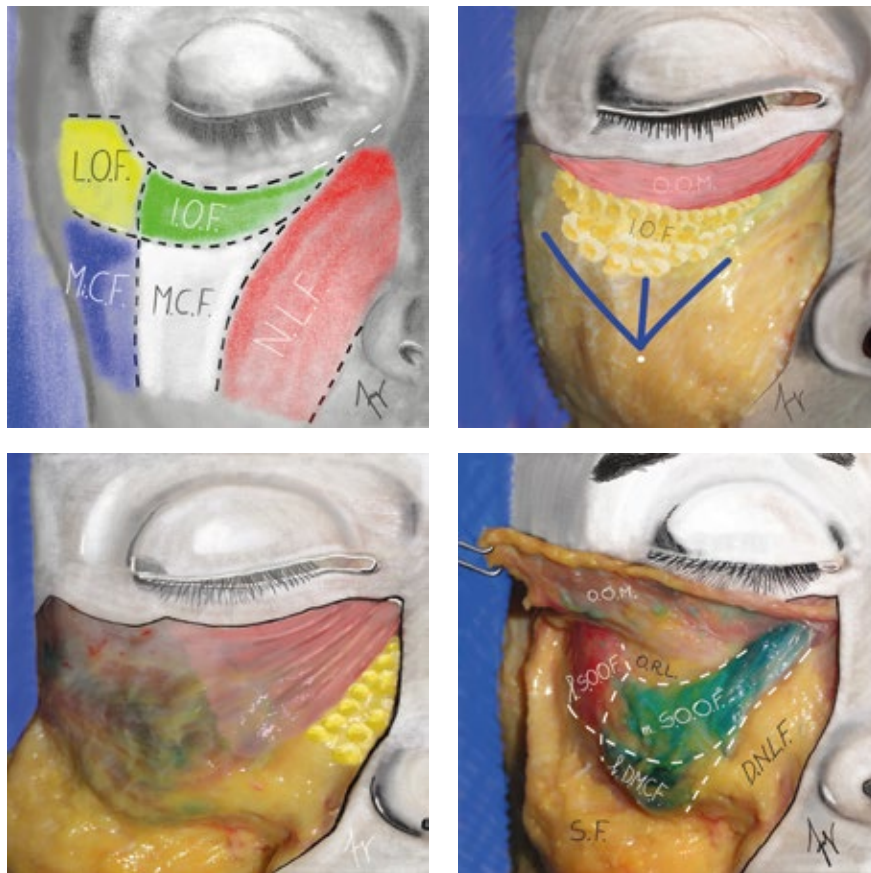


FACIAL ANATOMY & VOLUMIZING INJECTIONS

SUPERIOR & MIDDLE THIRD



ANATOMY in 3D

AGING & AESTHETIC ANALISYS

ADVANCED TECHNIQUES OF INJECTION

FABIO M. INGALLINA

PREFACE

The *Facial Anatomy & Volumizing Injections* is an attempt to translate and concentrate in a book my experience of several years of conducting cadaver dissection courses and live injections workshops finalized to the teaching of the facial anatomy and filler volumizing injection techniques.

The content of this book can be summarized in a phrase: *How to inject fillers in the face according new anatomical evidences.*

The atlas format is a deliberate choice to make the book easily readable. More than 400 photos and draws will lead the reader by hand in discovering in depth the anatomy useful to inject filler and the more advanced techniques of injection.

The aim is to describe the new anatomy of fat compartments and the subjective anatomical variations directly on cadaver dissections images. The reader will understand where the cannula and the needle penetrate and slide, how to avoid the dangerous zones and improve the quality of his result knowing the topography of the fat compartments.

An important chapter is devoted to the description of the superficial cutaneous landmarks that identify the deep anatomical structures: fat compartments, septa, ligaments, arteries and veins. The reader will be able, identifying the cutaneous landmarks, to create a road map of the upper and the middle third of the face.

Different needle or cannula techniques of injection per each region of the face are analyzed and described in depth.

This book is addressed both to experienced doctors that want deeply improve their knowledge of the anatomy and resident or beginners doctors who want to learn how to inject according new anatomical evidences. I hope it will be useful in your daily activity!!

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Dr. Fabio Ingallina received his Medical and Surgery degree at Catania University in 1992. In 1999 he specialised in Plastic Reconstructive & Aesthetic Surgery, still in Catania, and obtained the Microsurgery University Diploma in the Ecole de Chirurgie Université Paris Nord as well. He practiced in the St. Anne Hospital (Paris) and in Mondor Hospital (Paris), where he participated in the "face transplantation project", he also had a fellow-ship in the Universidade do Estado do Rio de Janeiro with Prof. Cardoso de Castro.

In 2002, Dr. Ingallina became the Head of the Aesthetic and Reconstructive Plastic Surgery Department of the Clinic Di Stefano Velona in Catania.

In the last nine years he participated as docent and he has directly organized several anatomy dissection courses and facial volumizing injections masterclass.

ACKNOWLEDGEMENTS

This book is dedicated to the donors and their families that enabled the realization of this work through their noble gift.

I would like to thank both:
Mr. Djamel Taleb and the "Laboratoire d'Anatomie team".
The Laboratoire d'Anatomie - Ecole de Chirurgie
Assistance Publique Hopitaux de Paris
and
The I.C.L.O. Foundation with its team in Arezzo

Where I performed all the dissections.

A special thank to my wife Sonia, my son Mario Bruno and my daughter Carla Alice who have endured my long absences while performing the dissections and writing the book.

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Notice

This book presents current scientific information; knowledge and best practice in this field are constantly changing. It does not provide advice concerning specific diagnosis and treatment of individual cases and is not intended for use by the layperson.

Readers (Practitioners) are strongly advised to rely on their own experience and knowledge in evaluating and using any information, technique and procedure described herein.

It is the responsibility of the practitioners-readers to make diagnosis and determine the correct dosage and the best treatment for each individual patient.

The author and the publisher will not be responsible for any injury and/or damage to persons or properties related to actions taken as a result of information or opinions expressed in this book.

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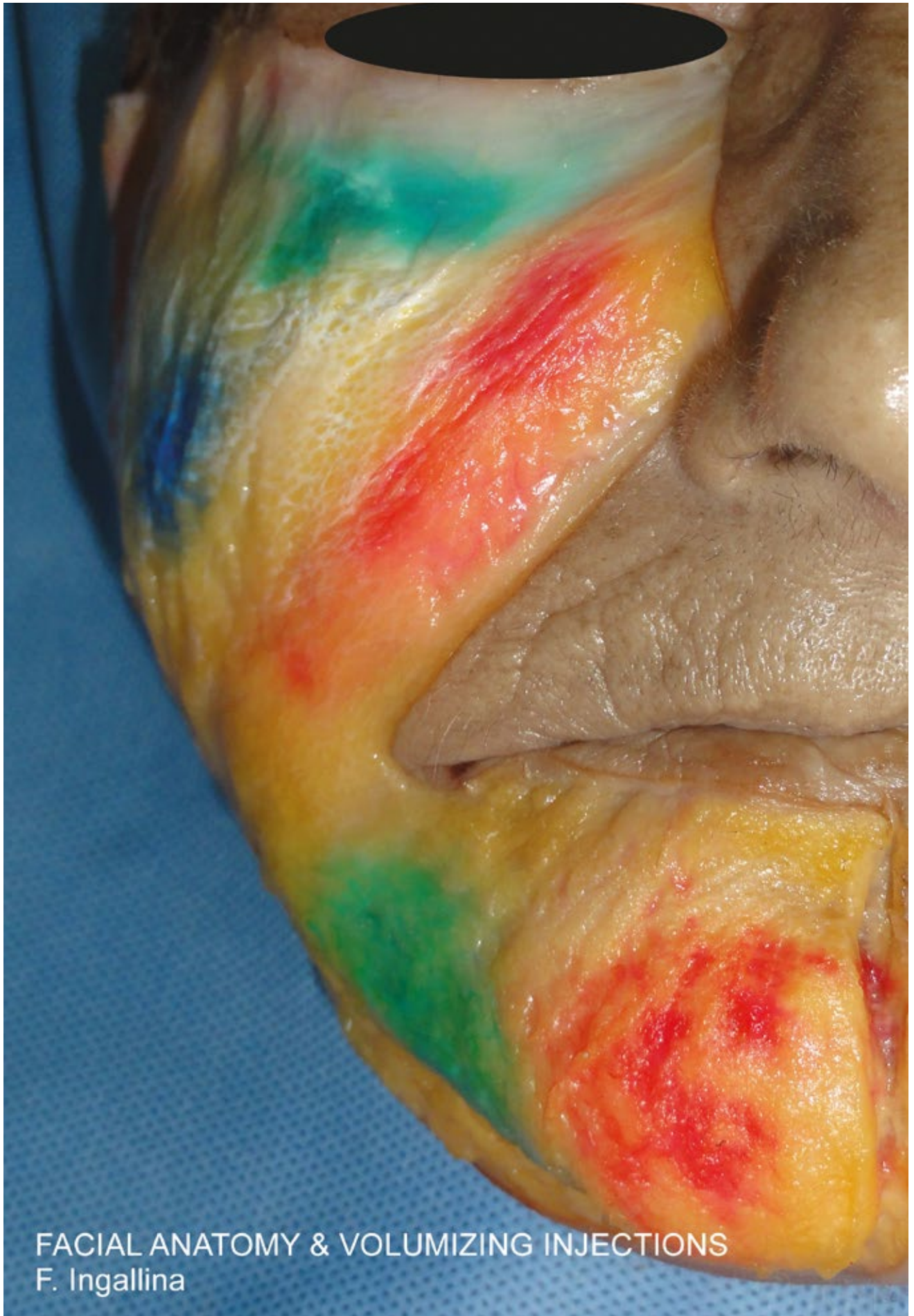
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PART 1.1

GENERAL CONCEPTS



FACIAL ANATOMY & VOLUMIZING INJECTIONS
F. Ingallina

FAT COMPARTMENTS TOPOGRAPHICAL ANATOMY

GENERAL CONCEPTS

The fat of the face, schematically, can be perceived as a bi-layered structure consisting of deep fat (Pre-periosteal) and superficial fat (subcutaneous).

The superficial fat is separated from the deep fat by the Superficial Musculo-Aponevrotic System (S.M.A.S.).

S.M.A.S. is a laminar structure consisting of some of the mimic muscles and of a wide fascia extending along the whole face.

Classically the superficial fat of the face has been considered as a unique, un-

interrupted layer of tissue underlying the skin. Even the deep fat was conceived as a continuous structure that surrounded the mimic muscles and in which vessels, nerves and ligaments travelled.

Since 2007 some studies have suggested that septa and ligaments divide, as barriers, the superficial and the deep fat of the face into separate compartments.

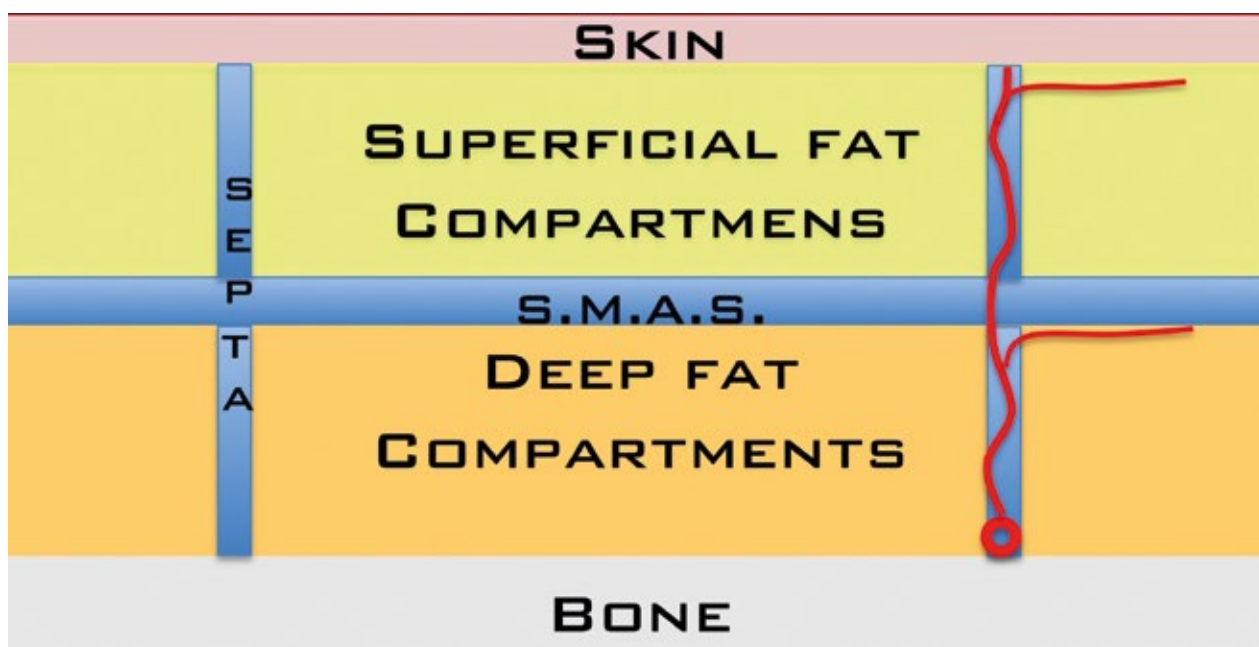


IMAGE 01

Schematic pattern of the bi-layered fat structure of the face.

Behind the skin the superficial fat is separated from the deep fat by the SMAS.

The septa divide both the superficial and the deep fat into well-defined compartments.

The axial vessels and the perforating branches run inside the septa.

Septa are fascial membranes that arise from the superficial fascia (S.M.A.S.) and extend outwards, and inwards.

Septa going outwards define the superficial fat compartment boundaries and insert into the undersurface of the dermis.

Septa going inwards define the deep fat compartment boundaries and insert on the periosteum and bone.

The major perforating vessels, arising from the

deep axial vessels, run within the septa tissue until the skin. The location of the major vascularised septa corresponds with the location of the major facial axial vessels.

Each fat compartment and each septum has a well-defined shape and a quite predictable location in facial topography.

Several external cutaneous landmarks can suggest the shape and the location of the majority of them.

**IMAGE 02**

Example of bi-layered fat structure: the mid-cheek Superficial Fat (SF). Deep Fat (DF). SMAS (Red Dotted line- Orbicularis Oculi Muscle) (Blue Dotted line - Fascia). Nasolabial fat compartment (injected in blue). Infraorbital fat compartment and medial cheek fat compartment (injected in red). The stained HA, injected in the superficial fat, does not migrate in the deep compartment because of the SMAS that divides the two layers.

In several regions of the face the 3D structure of the superficial and deep fat compartments can be schematically conceived as a two-story building, consisting of one apartment per floor. Each apartment has the same number and disposition of rooms but with different dimensions. The rooms represent the fat compartments; the walls are the septa in which the perforating vessels travel, as well as the water pipes and the electrical cables travel inside the walls. The roof of the first floor is represented by the skin, the floor/roof in between the first floor and the ground is the SM.A.S. and the floor of the ground floor is the bone.

In the real anatomy, septa are not always

perpendicular to the skin and to the bone; they travel with oblique pathways and create corresponding superficial and deep fat compartments, of similar shape but different dimensions.

Generally, septa correspond to the most evident folds and grooves of the face and they define the boundaries of the anatomical subunits constituted by corresponding superficial and deep fat compartments.

Typical example of an oblique pathway septum: The medial cheek septum.

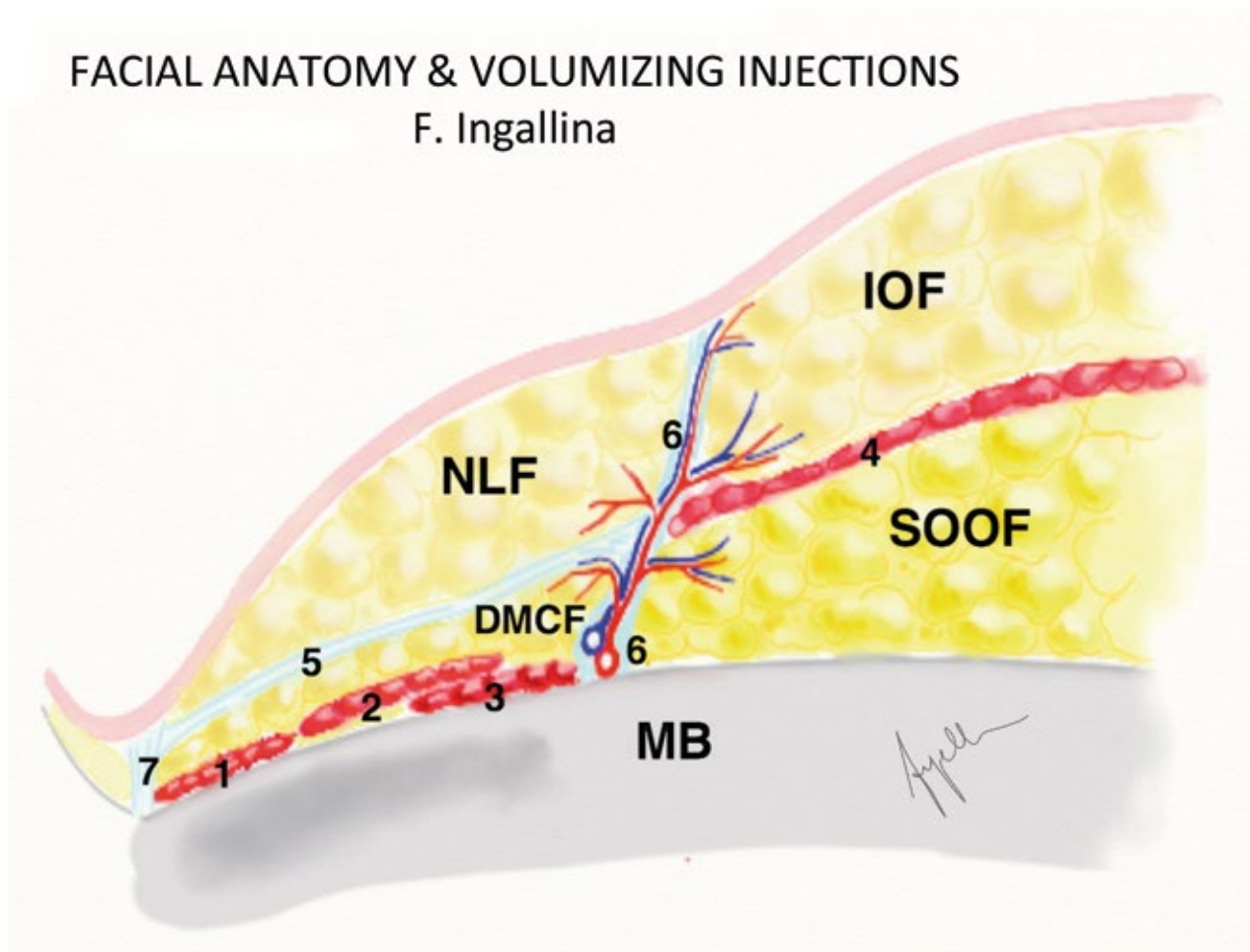
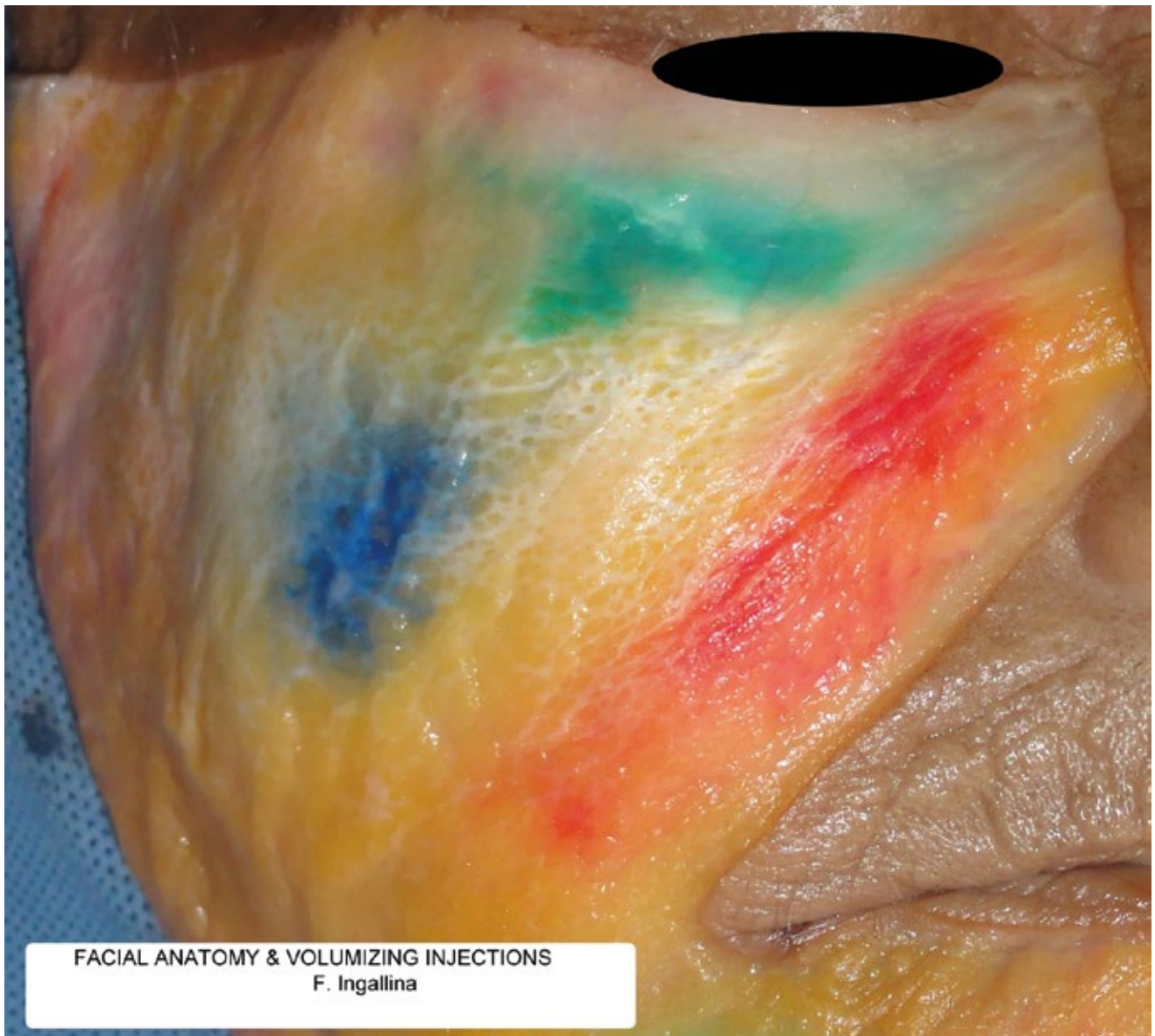


IMAGE 03

Horizontal section of the left mid-cheek about 1cm under the orbital border.

1. Superficial Fat Compartments. Nasolabial Fat Compartment (NLF). Infraorbital Fat Compartment (IOF).
2. Deep Fat Compartments. Medial portion of Deep Medial Cheek Fat Compartment (DMCF). Medial Suborbicularis Oculii Fat Compartment (SOOF).

3. Deep Muscles. Levator Labii Superior Alaquae Nasii (1). Levator Labii Superior (2). Levator Angulis Oris (3).
4. Superficial Musculo-Aponeurotic System. Orbicularis Oculi Muscle (4). Superficial Fascia of the SMAS (5).
5. Septa. Mid-cheek Septum with the axial vessels and the perforating branches (6). Nasolabial Fold Septum (7).
6. Maxillary Bone (MB)



SUPERFICIAL FAT COMPARTMENTS

1. INFRAORBITAL FAT C.
2. LATERAL ORBITAL FAT C.
3. NASOLABIAL FAT C.
4. MEDIAL CHEEK FAT C.
5. MIDDLE CHEEK FAT C.

S.M.A.S.

- ORBICULARIS OCULI MUSCLE
- SUPERFICIAL FASCIA

DEEP FAT COMPARTMENTS

1. Medial SUB-ORBICULARIS OCULI FAT C.
2. Lateral SUB-ORBICULARIS OCULI FAT C.
3. DEEP NASOLABIAL FAT C.
4. DEEP MEDIAL CHEEK FAT C.
5. BUCCAL FAT PAD

SUPERFICIAL & DEEP LIGAMENTS

FACIAL ARTERY

FACIAL VEIN

TOPOGRAPHICAL ANATOMY