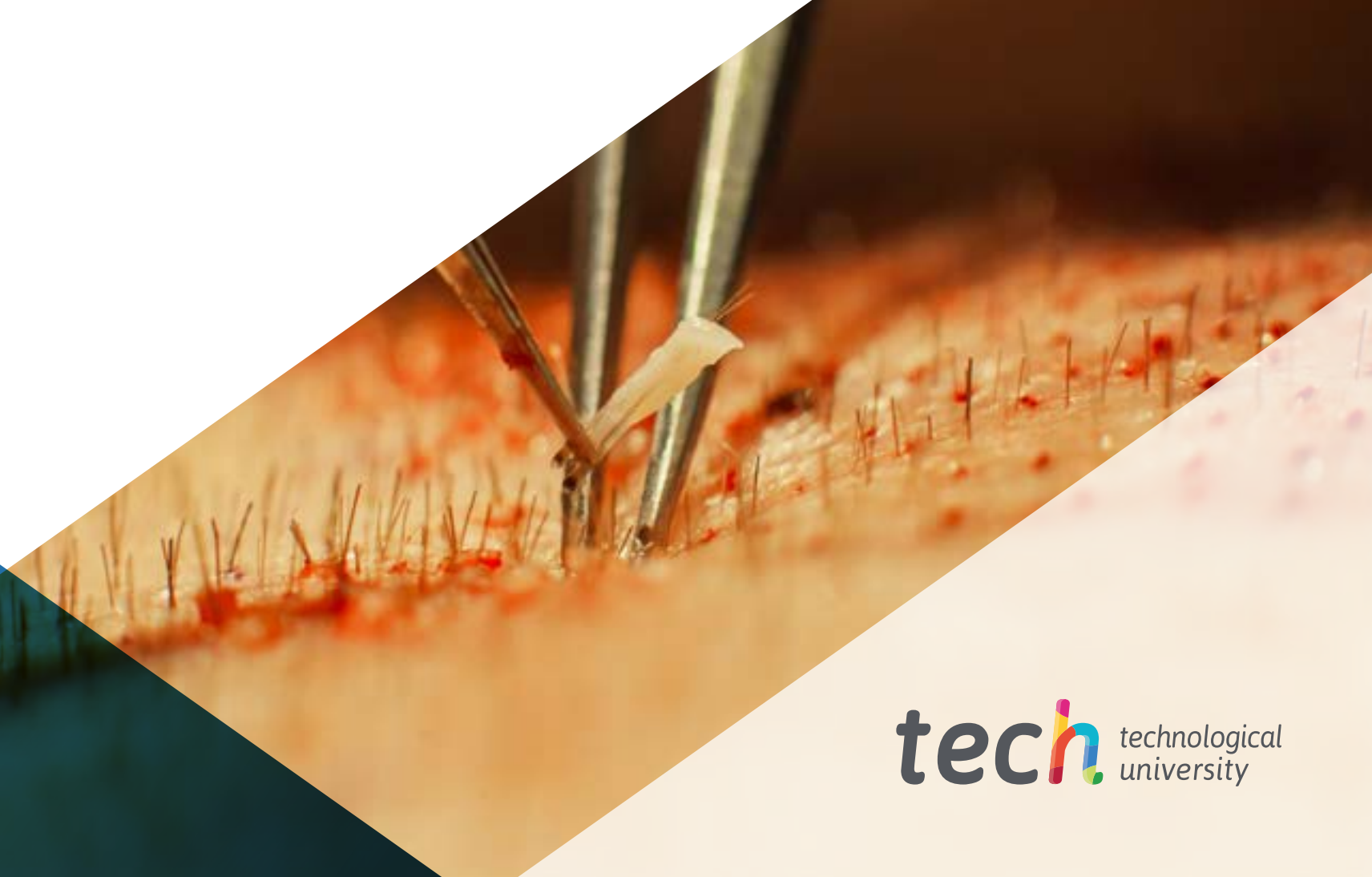


# Professional Master's Degree

## Hair Transplantation





## Professional Master's Degree Hair Transplantation

Course Modality: Online

Duration: 12 months

Certificate: TECH Technological University

Official N° of hours: 1,500 h.

Website: [www.techtute.com/in/medicine/professional-master-degree/master-hair-transplantation](http://www.techtute.com/in/medicine/professional-master-degree/master-hair-transplantation)

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# 01

# Introduction

Advances in hair transplants and the consolidation of some surgical techniques such as FUE have meant that more and more people are turning to clinical centers that perform these treatments, whether for aesthetic or health reasons. Technological progress has led to greater efficiency, reduced recovery times, fewer side effects after the operation and, in short, the general improvement of the process. All this would not be possible without a constant updating of knowledge by the specialist, which has motivated the creation of this program focused on Hair Transplantation. By means of high-quality multimedia material, techniques such as FUSS or the most effective pharmacological treatments will be studied in depth. Moreover, in a 100% online format that allows the professional to combine their professional responsibilities with quality teaching.





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*Thanks to this online program you will be able to update your knowledge on the main pathologies of the scalp and their treatments”*



Scientific studies, the use of new technologies and innovation in intervention methods have given a considerable boost to hair transplants. In this process, the role of medical professionals has undoubtedly been key, since their knowledge and technical skills have allowed surgical treatments to achieve great acceptance among the population and to move away from the taboo and negative image of undergoing this aesthetic therapy.

At the same time, the boom in recent years of these treatments has led to the opening of more specialized clinics in the world, where the profiles of highly qualified surgeons, trichologists, dermatologists or anesthesiologists are increasingly in demand. For all these reasons, this Professional Master's Degree provides the specialist with a university education that will allow them to update their knowledge throughout the 12 months of its duration. The multimedia teaching material will lead the students to deepen their knowledge of the main hair diseases, dedicating a space to androgenic alopecia, cosmetic treatments and FUSS and FUE techniques.

In addition, simulations of clinical cases provided by the expert teaching staff will serve to bring students closer to real situations, helping them to broaden their skills. The professional has before them a program with a theoretical-practical approach oriented to offer the most recent knowledge and scientific rigor in the field of Hair Transplantation.

An advanced and intensive university program, but with the convenience of being able to take it exclusively online, without fixed class schedules. Thus, TECH favors that the medical professional can take a quality education compatible with their work responsibilities. Students only need a computer, tablet or cell phone to connect to the virtual platform where the syllabus is stored. Enriched content is available in full from day one, which gives students the freedom to distribute the course load according to their needs. The professional is, therefore, faced with flexible teaching that is at the academic forefront.

This **Professional Master's Degree in Hair Transplantation** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- Practical cases presented by experts in Hair Transplantation
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection



*A Professional Master's Degree that gives you the opportunity to access the latest content on advances in cloning and pharmacology for the resolution of patients' trichological problems"*

“*A Professional Master's Degree that will give you 24-hour access to scientific and exhaustive content on Hair Transplantation*”

The program's teaching staff includes professionals from sector who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive knowledge programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*A 100% online, flexible educational program that allows you to distribute the course load according to your needs.*

*Deepen your knowledge of androgenetic alopecia and the AGA diagnostic study with this online program.*



# 02

# Objectives

This Professional Master's Degree has as its main goal the updating of knowledge for the medical professional who seeks, in addition, to delve in the main surgical techniques used in Hair Transplantation. This will be possible thanks to the multimedia content based on video summaries, videos in detail or interactive summaries that make up the exhaustive syllabus of this university degree.





“

*The teaching material of this program will lead you to study in a more visual way the trichological knowledge of the different capillary diseases"*



## General Objectives

- Acquire knowledge, skills and abilities, both theoretical and practical, to be able to start working as a hair surgeon
- Acquire diagnostic and treatment skills in cases of patients with alopecia and other hair and scalp problems, as well as to learn clinical-surgical skills, an essential foundation for the acquisition of deeper knowledge in this field
- Learn the required clinical-surgical skills to solve patients' problems in Hair Transplantation and Hair Medicine

“

*Acquire the necessary knowledge to offer quality practice, providing your patients with expert and effective care”*





## Specific Objectives

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### Module 1. Hair Anatomy and Physiology

- ◆ Review and expand knowledge of anatomy and hair physiology, to know in depth both the hair and the dermis and to be able to correctly perform both surgical interventions and the treatment of their pathologies
- ◆ Acquire in-depth knowledge of the physiology of the skin and the pilosebaceous follicle
- ◆ Conduct a study of hair growth cycles
- ◆ Study keratin and keratinization, as well as melanin and melanogenesis of hair
- ◆ Study the embryology and anatomy of the hair follicle, the anatomy of the sebaceous gland, the apocrine gland and the erector muscle, as well as their vascularization and innervation
- ◆ Study the layers of the scalp and study the hair, its composition, properties, and growth phases

### Module 2. Hair Disorders

- ◆ Go through a thorough clinical history, as well as to evaluate in detail both the donor area, which must be adequate, and the recipient area, both key steps for achieving good capillary diagnosis
- ◆ Learn how to perform a proper photographic study for the clinical history
- ◆ Learn to observe a photograph with the microcamera, distinguish the different follicular patterns, perifollicular, intrafollicular, and differences in thickness and texture in the hair as a basis for establishing a correct hair diagnosis, and determine the treatment to be performed based on this
- ◆ Review the history of hair transplantation and medicine over the years and the evolution and changes in this branch of aesthetic medicine, both in diagnosis and surgical techniques



- ♦ Delve into trichological knowledge in relation to the different hair diseases
- ♦ Address the main pathologies of the scalp and their treatment, we will deal in depth with all types of alopecia and dysplasia that exist, their differential characteristics, etiology, development, diagnosis and main treatments currently
- ♦ Classify capillary diseases according to different processes, depending on their resolution, into easily resolvable, potentially resolvable, and difficult to resolve
- ♦ Differentiate between scarring and non-scarring alopecia, adjusting treatment accordingly
- ♦ Classify alopecia into primary alopecia, in which the primary lesion produces inflammation of the hair follicle, and secondary alopecia, in which the damage occurs in the entire dermis, including the follicle
- ♦ Classify alopecia into congenital and acquired alopecia
- ♦ Another classification of scarring alopecia according to the North American Hair Research Society (NAHRS) depending on the type of microscopic infiltrate

### **Module 3. Androgenetic Alopecia**

- ♦ Acquire a solid foundation for solving patients' problems It is the most common form of androgenetic alopecia in men and women
- ♦ Study the changes in the hair cycle in androgenic alopecia, the genetic and hormonal factors involved in it, the role of androgens in this pathology, testosterone, dihydrotestosterone and 5-alpha-reductase as responsible for this type of alopecia
- ♦ Study the clinical characteristics of alopecia
- ♦ Classification of androgenetic alopecia (Norwood-Hamilton)
- ♦ Study the diagnosis of AGA: clinical study with a miniaturized hair pattern, laboratory tests and genetic study
- ♦ Perform a differential diagnosis, with greater importance in women, generally supported by the following characteristics: focal pattern baldness with miniaturized hairs, gradual onset with progression, thinning, onset after puberty, and negative traction test.
- ♦ Know cosmetic, dietary, topical, local, and systemic treatments
- ♦ Review specific treatment techniques: hair mesotherapy and biological therapies with platelet-rich plasma and stem cells

### **Module 4. Physician Attendance/Consultation and Surgery**

- ♦ Establish the necessary medical knowledge foundation, from the patient's first visit for a trichological study, to visagism concepts applied to hair aesthetics, and solve the most common problems that may arise in a hair micrografting intervention
- ♦ Establish the guidelines to be followed in the first medical consultation or diagnostic consultation and in the following consultations, mainly in the consultation prior to surgery, with emphasis on medical documentation and consents
- ♦ Study of the different devices for hair transplantation
- ♦ Review the team collaborating with the surgeon, the nursing team and the hair technicians, describing their roles throughout the hair process
- ♦ Learn the post-surgical treatments for optimal results and the different post-surgical complications and their solutions
- ♦ Review the different local anesthetics, their pharmacokinetic characteristics and maximum dosage, treat the different loco-regional blocks at facial and peripheral level
- ♦ Address how to solve emergencies that may arise in daily practice in capillary medicine consultation, as well as during surgery, and how to act in each case and the different corrective treatments

### **Module 5. Cosmetic Treatments/Hair Cosmetics**

- ♦ Address the main medical-aesthetic treatments that exist today, as well as different techniques and/or treatments in constant progress, such as hair mesotherapy, low-power laser treatment, PRP and stem cell treatments, hair cosmetology and oral supplementation. Learn alternatives to surgical intervention when surgery becomes impossible or not recommended with techniques such as micropigmentation and hair replacement systems or hair prostheses



### **Module 6. Medical/Pharmacological Treatments and Research in Trichology and New Treatment Alternatives**

- ♦ Review the most common pharmacological treatments (minoxidil, finasteride, dutasteride), treatments for alopecia areata with dexamethasone minipulse therapy and anti-JAK drugs, treatment with antiandrogens for frontal fibrosing alopecia, treatment with estrogens
- ♦ Review new treatments or alternative treatments such as platelet rich plasma with its indications and current legislation, low frequency laser or LLLT
- ♦ Show the most current new avenues of research and development to solve unsolved problems and the advances in cloning and pharmacology for the resolution of trichological problems of patients

### **Module 7. Hair Transplantation with the FUSS Technique**

- ♦ Explain the advantages and disadvantages of hair transplantation
- ♦ Address the planning and design of a transplant with this surgical technique, the phases of hair transplantation, and factors that determine the survival of the grafts, as well as the devices and material required to perform a transplant with the FUSS technique and the entire technique of this type of hair transplant, will be discussed in depth
- ♦ Discuss indications and contraindications, the FUSS technique in women, the surgical plan, the marking of the strip and its extraction, slivering, cutting of the follicular units, incisions and implantation
- ♦ Review the specific postoperative period following this technique, including possible complications during and after the extraction and in the postoperative period following the procedure

### **Module 8. Hair Transplantation with the FUE Technique**

- ♦ Acquire the knowledge required to perform the FUE technique. Possess adequate anatomical knowledge to perform anesthesia; both of the donor and recipient sites
- ♦ Discuss the planning and design of a transplant, phases of hair transplantation and factors that condition the survival of grafts, the devices and material necessary to perform a transplant, and the FUE and NON-SHAVE hair transplant techniques will be discussed in depth

- ♦ Focus on how to identify and solve the possible intraoperative complications in the FUE technique
- ♦ Handle the instruments used in the different phases of the surgical procedure
- ♦ An in-depth study of the main indications and contraindications of the FUE technique
- ♦ Take a closer look at and solve possible complications during the postoperative period

### **Module 9. Effluvia**

- ♦ In-depth knowledge of non-scarring alopecia: effluviums
- ♦ Diagnose telogen and anagen effluvia, both chronic and acute
- ♦ Learn how to apply the knowledge acquired in diagnostic techniques, to make differential diagnoses with other alopecias
- ♦ Apply different medical treatments for each of the types of effluvium and indicate a management algorithm for patients with diffuse capillary leakage, based on a targeted and specific clinical history
- ♦ Study the different apparatus for trichological diagnosis of the pathology studied

### **Module 10. Legal, Economic, and Marketing Aspects**

- ♦ Learn how to set up a trichology and surgery unit
- ♦ Learn how to implement this topic in marketing and audiovisual media
- ♦ Be aware of the essential aspects for our business to function
- ♦ Learn how to properly take photographs before and after treatments in a structured and reproducible manner
- ♦ Learn about communication
- ♦ Know the legal aspects of the profession



# 03 Skills

The doctor who studies this program will have the opportunity to broaden their skills through an intensive syllabus, which will allow them to delve into the main techniques and tools used for the treatment of diseases such as alopecia, pityriasis, seborrheic dermatitis or ringworm. The Relearningmethod, used by TECH in its programs, will allow a faster update of skills.





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*With this program you will be able to deepen in a dynamic way in the most used techniques in micropigmentation”*



## General Skills

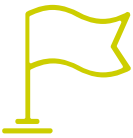
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- Treat the hair patient by initiating themselves in this field as an experienced professional
- Diagnose, plan and carry out from the most elementary to the most complex treatments of Hair Medicine

“

*A Professional Master's Degree of exceptional quality that will allow you to learn with the flexibility of a program designed for you to set the pace of learning"*





## Specific Skills

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- ♦ Classify the different types of alopecia
- ♦ Describe the anatomy and physiology of the hair and scalp, and the differences and similarities according to gender
- ♦ Analyze the main etiopathogenic mechanisms of capillary abnormalities, as well as how to diagnose and treat them
- ♦ Recognize the anatomy, physiology, pathophysiology, and etiopathogenesis of hair and scalp disorders
- ♦ Explain the phases of hair growth and regeneration
- ♦ Monitor the progression of hair diseases
- ♦ Diagnose the main clinical conditions related to hair
- ♦ Apply nutritional aspects and micro and macronutrients in relation to capillary disorders
- ♦ Identify the different capillary disorders
- ♦ Handle the different diagnostic equipment
- ♦ Define and analyze in a global way the structures and functions of each area and open opportunities for new treatments.
- ♦ Analyze any changes for monitoring the progression of hair diseases
- ♦ Identify the possible complications of hair transplantation
- ♦ Use different types of cosmetics to treat certain hair disorders effectively, highlighting the knowledge of the most commonly used active ingredients and their mechanisms of action
- ♦ Select patients appropriately
- ♦ Perform pre-surgery preparation
- ♦ Correctly prescribe and monitor post-surgical treatment, adapted to the usual progression and tailored to each patient's individual needs
- ♦ Present the different surgical alternatives adapted to the existing pathology
- ♦ Prevent and treat possible adverse effects of drugs and their treatment
- ♦ Use the different types of alternative treatments to surgery and, in many cases, pre- and post-surgery
- ♦ Provide current information on the use of low frequency laser in alopecia, differentiating it from LED therapy
- ♦ Select the appropriate technology to allow to adapt to the needs of each patient, highlighting a global vision of treatment strategies, indications, contraindications and possible adverse effects of such treatments
- ♦ Know the types of pharmacological treatments, the precise knowledge of the mechanisms of action of each one of them and their indications and contraindications
- ♦ Manage the therapeutic application of the factors involved in biological processes
- ♦ Use mesotherapy and the drugs applied in it, creating treatment protocols to guarantee that it is safe
- ♦ Perform platelet-rich plasma (PRP) treatments and current legislation for such treatments
- ♦ Learn how to perform adequate clinical diagnoses supported by the best technologies
- ♦ Apply the importance of communication in the aesthetic-capillary medicine sector
- ♦ Design a business communication plan in the field of health and manage the characteristics of social networks in the creation of a hair clinic
- ♦ Carry out marketing campaigns



# 04

# Course Management

This Professional Master's Degree has a management and teaching team that has been selected by TECH based on its high qualification and professional background in the field of Hair Surgery and Transplantation. This guarantees the medical professional receives the most recent information in this sector, from the hands of an outstanding teaching staff in their field. In addition, any doubts about the syllabus will be promptly answered by the teachers of this educational program.





“

*A university program that allows you to update your knowledge with the best professionals in the field of Hair Transplantation"*

## Management



### Dr. Pérez Castaño, Cristina Gema

- ♦ Specialist in Hair Transplant in clinics such as MC360, MAN MEDICAL INSTITUTE
- ♦ Head of the Hair Transplant Unit at the EIVESTETIC clinic in Ibiza
- ♦ PhD in organ transplantation with asystole donors through a Mutua Madrileña Scholarship, specialized training in medical pathology, infectious diseases, organ transplantation and emergency units worldwide
- ♦ Master's Degree in Outpatient Emergency Medicine
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Specialist via MIR in Intensive Care Medicine at the Doce de Octubre Hospital in Madrid

## Professors

### Dr. Alique Garcia, Sergio

- ♦ Area specialist dermatologist at Virgen de La Luz Hospital
- ♦ Specialist in Medical-Surgical Dermatology and Venereology
- ♦ Master's Degree in Aesthetic Medicine, Nutrition and Anti-Aging by the Distance University of Madrid
- ♦ Master's Degree in Trichology and Hair Transplants, Universidad a Distancia de Madrid
- ♦ Expert in Aesthetic Dermatology, Trichology and Dermatological Surgery
- ♦ Degree in Medicine and Surgery from the University of Castilla La Mancha

### Ms. Ángel Navarro, Rosa María

- ♦ Hair Transplant Specialist
- ♦ Specialist in Allergy and Immunopathology at the University of Buenos Aires
- ♦ Specialist in Public Health from the University of Buenos Aires. Argentina
- ♦ Medical specialist in hair micrografting by UDIMA University
- ♦ Four-year residency at the J.M. Ramos Mejía University Hospital
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid

**Ms. García Retorta, María del Carmen**

- ♦ Operating Room Nurse at La Paz University Hospital in Madrid
- ♦ Operating room nurse at La Princesa, Getafe and Marqués de Valdecilla Hospitals
- ♦ Head of the oncological and reparative micropigmentation department of the EGR Medicine Institute
- ♦ University Diploma in Nursing at the University of Cantabria
- ♦ Postgraduate Degree in Dermo-aesthetic and Dermocosmetic Nursing at the University of the Peoples of Europe

**Dr. González Valenzuela, Hugo Alfredo**

- ♦ Hair Surgeon at MASSANA Clinics
- ♦ Medical Surgeon approved by the Illustrious Official College of Physicians of Asturias
- ♦ Master's Degree in Cosmetic Medicine, Rejuvenation and Minor Surgery. International Centre for Postgraduate Studies (CIEP) of Cordoba. UDIMA

**Dr. Jurado Arévalo, Alberto**

- ♦ Medical Director at ADVAN-HAIR Advanced Hair Institute
- ♦ Critical Care Mobile ICU Physician at Asistencia Los Ángeles
- ♦ Primary Care Physician and Critical Care and Emergency Device in the Andalusian Health Service.
- ♦ Master in Aesthetic Medicine at the International Center of Postgraduate Studies Cordoba
- ♦ Master's Degree in Trichology and Hair Surgery at the International Center of Postgraduate Studies Cordoba
- ♦ Degree in Medicine at the Autonomous University of Barcelona

**Mr. Macías Calderón, Francisco José**

- ♦ Hair technician in surgeries with FUE technique in Clínica Face, Badajoz, Spain
- ♦ Hair technician in surgeries with FUE technique in Capilarix, Sevilla, Spain
- ♦ Hair technician in surgeries with FUE technique in Capilarian, Cáceres
- ♦ Superior Technician in Physical and Sports Activities (TAAFFAD)
- ♦ Diploma in Physiotherapy from the University of Extremadura

**Dr. Manzano Martín, Isabel**

- ♦ Specialist Physician in the General and Digestive System Surgery Area
- ♦ Master's Degree in Trichology and Hair Transplants by UDIMA
- ♦ Master's Degree in Esthetic Medicine
- ♦ Degree in Medicine at the University of Extremadura
- ♦ Degree in Pharmacy from the University of Seville

**Mr. Santos Gil, Antonio**

- ♦ Second Degree Specialist in Hairdressing and Aesthetics with dedication since then to hair diagnosis and various hair treatments
- ♦ Characterization specialist in Opera and Theater
- ♦ Trainer in the field of postician with special dedication in the circle of oncology patients with the firm Capel-lo by Aderans.
- ♦ Hair treatment trainer at TICAP Clinics and specialist in Visagism and trichological diagnosis at MC360 Clinics

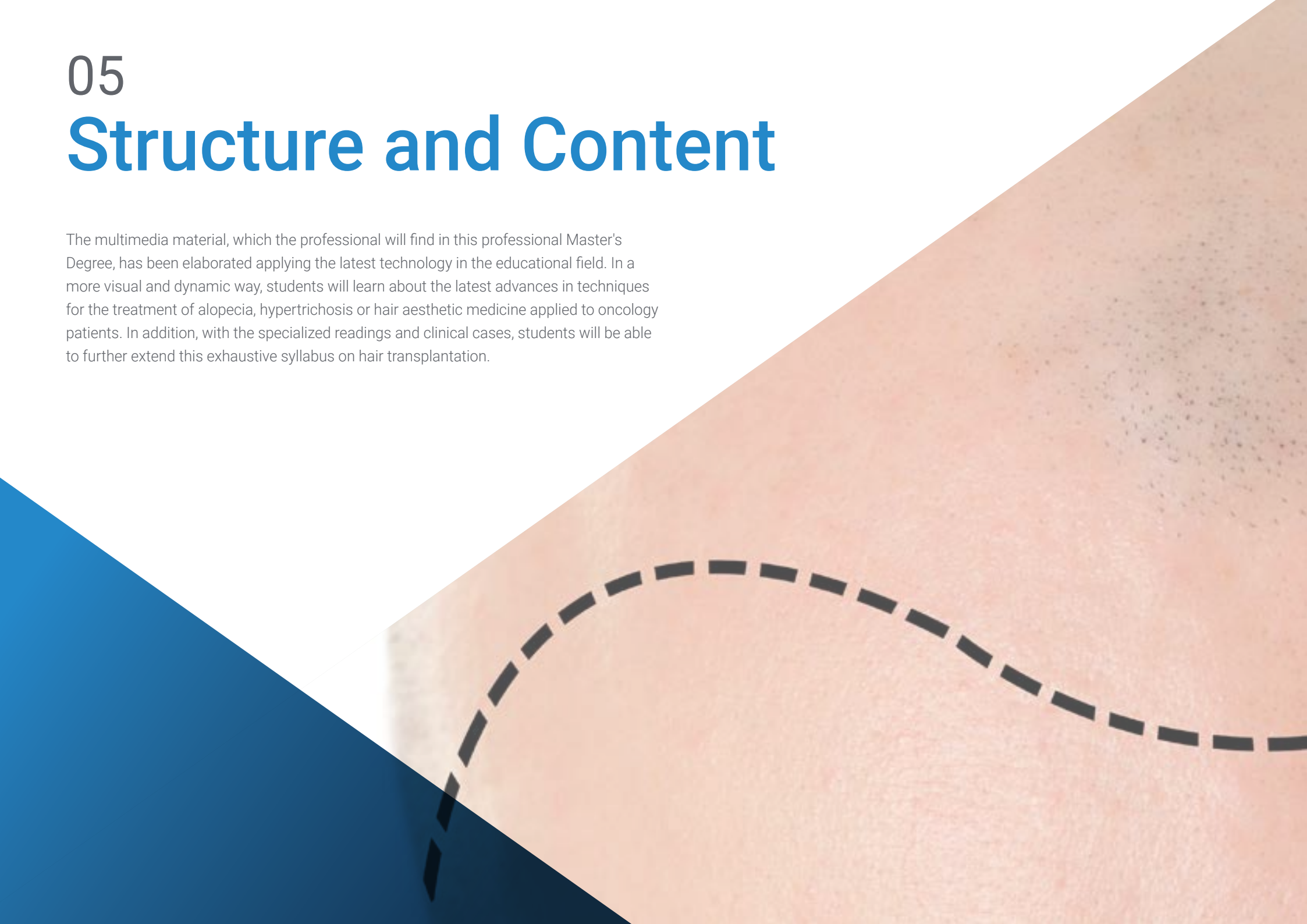
**Dr. Wong Arteta, Jonathan**

- ♦ Capillary Surgeon at CapilClinic - Barcelona
- ♦ Master in Direction and Management of Medical Centres by ESNECA
- ♦ Degree in Trichology and Hair Transplant
- ♦ Degree in Medicine and Surgery from the Catholic University of Santa Maria in Peru

05

# Structure and Content

The multimedia material, which the professional will find in this professional Master's Degree, has been elaborated applying the latest technology in the educational field. In a more visual and dynamic way, students will learn about the latest advances in techniques for the treatment of alopecia, hypertrichosis or hair aesthetic medicine applied to oncology patients. In addition, with the specialized readings and clinical cases, students will be able to further extend this exhaustive syllabus on hair transplantation.





“

*A curriculum with multimedia material that will allow you to delve into the different FUE and FUSS techniques used today”*



## Module 1. Hair Anatomy and Physiology

- 1.1. Normal Hair Follicle: Structure
  - 1.1.1. Parts of the Hair Follicle
    - 1.1.1.1. Upper Part:
      - 1.1.1.1.1. Follicular Ostium
      - 1.1.1.1.2. Infundibulum
      - 1.1.1.1.3. Isthmus
    - 1.1.1.2. Lower Part
      - 1.1.1.2.1. Erector Muscle Insertion
      - 1.1.1.2.2. Hair Bulb: Melanocytes and Matrix Cells
      - 1.1.1.2.3. Sebaceous Glands
  - 1.1.2. Histology of the Hair Follicle
  - 1.1.3. Mature Hair Follicle
    - 1.1.3.1. Hair Shaft: Medulla, Cortex and Cuticle
    - 1.1.3.2. Inner Root Sheath: Cuticle, Huxley's Layer and Henle's Layer
    - 1.1.3.3. Outer Root Sheath
    - 1.1.3.4. Vitreous Layer
    - 1.1.3.5. Outer Fibrous Layer
  - 1.1.4. Cellular Composition of the Hair Follicle
    - 1.1.4.1. Stem Cells
    - 1.1.4.2. Keratinocytes
    - 1.1.4.3. Melanocytes
    - 1.1.4.4. Neurons
    - 1.1.4.5. Blood Vessels
    - 1.1.4.6. Mastocytic Cell Precursor Derivatives
    - 1.1.4.7. Immune Cells
    - 1.1.4.8. Neuronal Stem Cells
- 1.2. Histopathological Signs of Non-Scarring Alopecias
  - 1.2.1. Androgenetic Alopecia
    - 1.2.1.1. Hair Follicle Miniaturization
    - 1.2.1.2. Sebaceous Pseudohyperplasia
  - 1.2.2. Telogen Effluvium
    - 1.2.2.1. Predominance of Hair Follicles in Telogen Phase
    - 1.2.2.2. Absence of Significant Histopathological Changes
  - 1.2.3. Alopecia Areata
    - 1.2.3.1. Peri- and Intrabulbar Lymphocytic Infiltrate (Honeycomb)
    - 1.2.3.2. Several Follicles of the Biopsy in the Same Evolutionary Phase
    - 1.2.3.3. Reversal of the Anagen-Telogen Relationship
  - 1.2.4. Syphilitic Alopecia
    - 1.2.4.1. Abundance of Plasma Cells in the Inflammatory Infiltrate
    - 1.2.4.2. Presence of Treponema Pallidum with HI stains
  - 1.2.5. Trichotillomania
    - 1.2.5.1. Absence of Peribulbar Inflammatory Infiltrate
    - 1.2.5.2. Trichomalacia
    - 1.2.5.3. Incontinentia Pigmenti
    - 1.2.5.4. Intra and Perifollicular Hemorrhages
  - 1.2.6. Traction Alopecia
    - 1.2.6.1. Similar to Trichotillomania
    - 1.2.6.2. Diminution of Terminal Hair Follicles
- 1.3. Anatomy of the Scalp
  - 1.3.1. Scalp Layers (SCALP)
    - 1.3.1.1. Skin
      - 1.3.1.1.1. Epidermis and Dermis
        - 1.3.1.1.1.1. Arrector Pili Muscles Smooth Muscle Fibers Innervation of the Sympathetic Nervous System Inserted into Hair follicle Goosebumps
      - 1.3.1.1.2. Thick. Between 3mm (Vertex) to 8mm (Occipital)
      - 1.3.1.1.3. Contains
        - 1.3.1.1.3.1. Hair Follicles: Rich Innervation
        - 1.3.1.1.3.2. Sebaceous Glands
        - 1.3.1.1.3.3. Sweat Glands
    - 1.3.1.2. Subcutaneous Tissue
      - 1.3.1.2.1. Fat and Fibrous Septa
      - 1.3.1.2.2. Arteries, Veins, Lymphatic Vessels, and Nerves

- 1.3.1.3. Aponeurosis
  - 1.3.1.3.1. Musculoaponeurotic Scalp Layer
  - 1.3.1.3.2. Epicranial Muscle
  - 1.3.1.3.3. Traction Resistance
- 1.3.1.4. Lax Subcutaneous Tissue
  - 1.3.1.4.1. Thin
  - 1.3.1.4.2. Avascular/Emitting Veins
  - 1.3.1.4.3. Infections
- 1.3.1.5. Pericranium/Periosteum
- 1.3.2. Skin Vascularisation
  - 1.3.2.1. Deep Plexus: Vascular Trunks and Superficial Plexus
  - 1.3.2.2. Subcutaneous Plexus, Cutaneous Plexus, Papillary Plexus, and Capillary Loop
- 1.4. Types of Hair
  - 1.4.1. Lanugo
    - 1.4.1.1. Fine
    - 1.4.1.2. Non-Vascular
  - 1.4.2. Vellus
    - 1.4.2.1. Diameter and Length (30u/<1cm)
    - 1.4.2.2. Depigmented and Non-Medullated
    - 1.4.2.3. Vellus Hairs
  - 1.4.3. Terminal Hair
    - 1.4.3.1. Diameter and Length (60u/>1cm)
    - 1.4.3.2. Pigmented and Medullated
  - 1.4.4. According to Area of Growth
    - 1.4.4.1. Asexual Hair
    - 1.4.4.2. Ambosexual Hair
    - 1.4.4.3. Sexual Hair
- 1.5. Chemical Composition of Hair
  - 1.5.1. Protein (28%)
    - 1.5.1.1. Keratin: Hard and Soft
    - 1.5.1.2. Amino Acids: Cysteine, Histidine, Methionine and Tryptophan
  - 1.5.2. Lipids (2%)
  - 1.5.3. Trace Elements
  - 1.5.4. Water (70%)
  - 1.5.5. Pigments
  - 1.5.6. Others
- 1.6. Hair Properties
  - 1.6.1. Permeability: Ability to Absorb Liquids
    - 1.6.1.1. Changes in Length, Diameter, and Shape
  - 1.6.2. Resistance: Ability to Withstand Traction
    - 1.6.2.1. Determined by Its Structure and Chemical Composition
    - 1.6.2.2. Relationship with Sulfur
- 1.7. Hair Phases
  - 1.7.1. Anagen phase
    - 1.7.1.1. 4-6 years
    - 1.7.1.2. Birth and Growth
  - 1.7.2. Catagen Phase
    - 1.7.2.1. 2-3 weeks
    - 1.7.2.2. 1-2% of Hairs
    - 1.7.2.3. Anabolic to Catabolic Transition
  - 1.7.3. Telogen Phase
    - 1.7.3.1. Resting Phase and Hair Shedding
    - 1.7.3.2. 3- 4 Months
    - 1.7.3.3. 4-24% of Hairs
    - 1.7.3.4. Increased In: Postpartum (Physiological) and (Pathological) such as Stress and Fever.
- 1.8. Follicular Unit
  - 1.8.1. Definition
  - 1.8.2. Follicular Unit Density (UF/cm<sup>2</sup>)
  - 1.8.3. Hair Density (Hairs/cm<sup>2</sup>)
  - 1.8.4. Differences between Races
    - 1.8.4.1. Asian vs. Black vs. White Race

- 1.9. History of Hair Surgery
  - 1.9.1 Early Beginnings. The Role of Japan in Hair Surgery
    - 1.9.1.1. Eyebrows and Eyelashes
  - 1.9.2 Beginning of its Development and Practice
  - 1.9.3 The First Hair Transplant
  - 1.9.4 The Evolution of Transplantation
    - 1.9.4.1. The 1960s to the 1970s
    - 1.9.4.2. The 1980s
    - 1.9.4.3. 1984: Dr. John Headington: "Follicular Unit Transplantation"
  - 1.9.5 Evolution of Surgical Techniques
    - 1.9.5.1. Punch Grafts, Mini Grafts, Micro Grafts
  - 1.9.6 Organization
    - 1.9.6.1. Scientific Societies
    - 1.9.6.2. Specific Scientific Journals
    - 1.9.6.3. Specific Textbooks

## Module 2. Hair Disorders

- 2.1. Scalp Pathologies
    - 2.1.1 Dermatitis
      - 2.1.1.1. Dermatoses Affecting the Scalp
        - 2.1.1.1.1. Seborrheic Dermatitis
          - 2.1.1.1.1.1. Description and Origin
          - 2.1.1.1.1.2. Phases of Seborrheic Dermatitis
        - 2.1.1.1.2. Contact Dermatitis
          - 2.1.1.1.2.1. Contact Irritant
            - 2.1.1.1.2.1.1. Chemical Contact
            - 2.1.1.1.2.1.2. Physical Contact (Allergens)
          - 2.1.1.1.2.2. Photocontact or Photosensitive
            - 2.1.1.1.2.2.1. Phototoxic
            - 2.1.1.1.2.2.2. Photoallergic
      - 2.1.1.3. Erosive-Pustular Dermatitis
  - 2.1.2 Pityriasis
    - 2.1.2.1. Pityriasis
    - 2.1.2.2. Cosmetic Pityriasis
    - 2.1.2.3. Pityriasis Simplex Capitis
    - 2.1.2.4. Steatoid Pityriasis
  - 2.1.3 Scalp Infections and Infestations
    - 2.1.3.1. Superficial Folliculitis (Ostiofolliculitis)
    - 2.1.3.2. Deep Folliculitis (Furunculosis and Carbuncles)
      - 2.1.3.2.1. Folliculitis Decalvans
    - 2.1.3.3. Keloid Folliculitis (Keloid Acne)
    - 2.1.3.4. Candidiasis Folliculitis
  - 2.1.4 Tinea Capitis.
    - 2.1.4.1. Non-Inflammatory Tinea (Anthropophilic Dermatophytes)
    - 2.1.4.2. Inflammatory Tinea (By Zoophoric Dermatophytes)
  - 2.1.5 Seborrheic Dermatoses, Description and Types
    - 2.1.5.1. Real Seborrhea
    - 2.1.5.2. Two-Layer Seborrhea
    - 2.1.5.3. Apparent Seborrhea
    - 2.1.5.4. Four-Layer Seborrhea
    - 2.1.5.5. Lichen Planopilaris
    - 2.1.5.6. Pediculosis
    - 2.1.5.7. Capillary Psoriasis
      - 2.1.5.7.1. Exclusive Capillary Involvement: Seborrheic Psoriasis
      - 2.1.5.7.2. Plaques: Types
        - 2.1.5.7.2.1. Isolated
        - 2.1.5.7.2.2. Dispersed
        - 2.1.5.7.2.3. Scarce
- 2.2. Bromhidrosis
  - 2.2.1 Definition
  - 2.2.2 Causes
    - 2.2.2.1. Apocrine Sweating
    - 2.2.2.2. Eccrine Sweating

- 2.2.3 Trigger Foods.
  - 2.2.3.1. Other Triggers
- 2.2.4 Symptoms
- 2.2.5 Diagnosis
- 2.2.6 Treatment
  - 2.2.6.1. Botox
  - 2.2.6.2. Liposuction
  - 2.2.6.3. Surgery
  - 2.2.6.4. Home Remedies
- 2.2.7 Complications
  - 2.2.7.1. Trichomycosis
  - 2.2.7.2. Erythrasma
  - 2.2.7.3. Intertrigo
  - 2.2.7.4. Diabetes Mellitus Type II
  - 2.2.7.5. Obesity
- 2.3. Congenital Alopecia
  - 2.3.1 Universal
  - 2.3.2 Hereditary Hypotrichosis: Marie-Unna Type
  - 2.3.3 Unclassified Types
    - 2.3.3.1. Localized
      - 2.3.3.1.1. Aplasia
      - 2.3.3.1.2. Skin
    - 2.3.3.2. Triangular Alopecia
    - 2.3.3.3. Congenital Anonychia
  - 2.3.4 Ectodermal Dysplasias
    - 2.3.4.1. Hydrotic
    - 2.3.4.2. Anhydrotic
- 2.3.5 Syndromes
  - 2.3.5.1. Autosomal Recessive Conditions
    - 2.3.5.1.1. Cockayne Syndrome
    - 2.3.5.1.2. Werner Syndrome
    - 2.3.5.1.3. Progeria
    - 2.3.5.1.4. Rothmund-Thomson Syndrome
    - 2.3.5.1.5. Seckel Syndrome
    - 2.3.5.1.6. Menkes Syndrome
    - 2.3.5.1.7. Marinesco Syndrome
    - 2.3.5.1.8. Conradi Syndrome
    - 2.3.5.1.9. Dyskeratosis Congenita
    - 2.3.5.1.10. Cartilage-Hair Hypoplasia
    - 2.3.5.1.11. Acrodermatitis Enteropathica
    - 2.3.5.1.12. Syndromes: Tricho-Rhino-Phalangeal
    - 2.3.5.1.13. Homocystinuria
    - 2.3.5.1.14. Lamellar Ichthyosis
    - 2.3.5.1.15. Hartnut Disease
    - 2.3.5.1.16. Citrulinemia
    - 2.3.5.1.17. Tricorhinophalangeal Syndrome
  - 2.3.6 Autosomal Dominant Conditions
    - 2.3.6.1. Pachyonychia Congenita
    - 2.3.6.2. Hallermann-Streiff Syndrome
    - 2.3.6.3. Oculo-Dento-Digital Syndrome
    - 2.3.6.4. Treacher-Collins Syndrome
    - 2.3.6.5. Popliteal Membrane Syndrome
  - 2.3.7 AX-Linked Dominant Disorders
    - 2.3.7.1. Digital Orofacial Syndrome
    - 2.3.7.2. Incontinentia Pigmenti
    - 2.3.7.3. Focal Dermal Hypoplasia
  - 2.3.8 AX-Linked Recessive Disorders.
    - 2.3.8.1. Keratosis Follicularis Spinulosa Decalvans with Ophiasis
  - 2.3.9 Chromosomal Aberrations
    - 2.3.9.1. Down Syndrome - Trisomy 21
    - 2.3.9.2. Trisomy A

- 2.4. Scarring Alopecia
  - 2.4.1 Definition
  - 2.4.2 Types
    - 2.4.2.1. Caused by the Body Itself
      - 2.4.2.1.1. Genetic Factors
    - 2.4.2.2. Abnormalities
      - 2.4.2.2.1. Folliculitis Decalvans
      - 2.4.2.2.2. Keloid Acne
      - 2.4.2.2.3. Lupus Erythematosus
      - 2.4.2.2.4. Pustular Dermatitis
      - 2.4.2.2.5. Lichen Planus
      - 2.4.2.2.6. Frontal Fibrosing Alopecia (FFA)
      - 2.4.2.2.7. Some Types of General Alopecia Areata
    - 2.4.2.3. Acquired
      - 2.4.2.3.1. Radiotherapy
      - 2.4.2.3.2. Burns
      - 2.4.2.3.3. Surgical
- 2.5. Other Classifications of Scarring Alopecia
  - 2.5.1 Lymphocytic Infiltrate
    - 2.5.1.1. Chronic Cutaneous Lupus Erythematosus
    - 2.5.1.2. Follicular Lichen Planus
    - 2.5.1.3. Pseudopelade of Brocq
    - 2.5.1.4. Central Centrifugal Cicatricial Alopecia
  - 2.5.2 Neutrophilic Infiltrate
    - 2.5.2.1. Folliculitis Decalvans
    - 2.5.2.2. Dissecting Cellulitis/Folliculitis
  - 2.5.3 Mixed Infiltrate
    - 2.5.3.1. Keloid Acne of the Nape
    - 2.5.3.2. Varioliform Necrotic Acne
    - 2.5.3.3. Erosive Pustular Dermatitis
  - 2.5.4 Non-Specific Infiltrate
    - 2.5.4.1. Scarring Alopecia in Final Stages
- 2.6. Non-Scarring Alopecia
  - 2.6.1 Definition
  - 2.6.2 Types
    - 2.6.2.1. Androgenetic Alopecia
    - 2.6.2.2. Traumatic or External Agent Alopecia
      - 2.6.2.2.1. Trichotillomania
      - 2.6.2.2.2. Caused by Chemical Misuse
      - 2.6.2.2.3. Traction Alopecia
    - 2.6.2.3. Alopecia Areata
      - 2.6.2.3.1. Common Areata
      - 2.6.2.3.2. General Areata
    - 2.6.2.4. Drug and Pharmaceutical Related Alopecia
      - 2.6.2.4.1. Vitamin A
      - 2.6.2.4.2. Anticoagulants
      - 2.6.2.4.3. Mercury
      - 2.6.2.4.4. Boric Acid
      - 2.6.2.4.5. Beta-Blockers
    - 2.6.2.5. Syphilitic Alopecia
      - 2.6.2.5.1. Description
      - 2.6.2.5.2. Features
    - 2.6.2.6. Alopecia Caused by Systemic Diseases
      - 2.6.2.6.1. Infectious
      - 2.6.2.6.2. Endocrine
      - 2.6.2.6.3. Nutritional Deficiency
    - 2.6.2.7. Effluvia
  - 2.6.3 Histopathological Signs
    - 2.6.3.1. Androgenetic Alopecia
      - 2.6.3.1.1. Hair Follicle Miniaturization
      - 2.6.3.1.2. Sebaceous Pseudohyperplasia
    - 2.6.3.2. Telogen Effluvium
      - 2.6.3.2.1. Predominance of Hair Follicles in Telogen Phase
      - 2.6.3.2.2. Absence of Significant Histopathological Changes



- 2.6.3.3. Alopecia Areata
  - 2.6.3.3.1. Peri- and Intrabulbar Lymphocytic Infiltrate (Honeycomb)
  - 2.6.3.3.2. Several Follicles of the Biopsy in the Same Evolutionary Phase
  - 2.6.3.3.3. Reversal of the Anagen-Telogen Ratio
- 2.6.3.4. Syphilitic Alopecia
  - 2.6.3.4.1. Abundance of Plasma Cells in the Inflammatory Infiltrate
  - 2.6.3.4.2. Presence of Treponema Pallidum with HI stains
- 2.6.3.5. Trichotillomania
  - 2.6.3.5.1. Absence of Peribulbar Inflammatory Infiltrate
  - 2.6.3.5.2. Trichomalacia
  - 2.6.3.5.3. Incontinentia Pigmenti
  - 2.6.3.5.4. Intra and Perifollicular Hemorrhages
- 2.6.3.6. Traction Alopecia
  - 2.6.3.6.1. Similar to Trichotillomania
  - 2.6.3.6.2. Diminution of Terminal Hair Follicles
- 2.7. Hypertrichosis
  - 2.7.1. General
    - 2.7.1.1. Primary or Congenital
      - 2.7.1.1.1. Universal Hypertrichosis or Ambras Syndrome
      - 2.7.1.1.2. Congenital Hypertrichosis Lanuginosa
      - 2.7.1.1.3. Prepubertal Hypertrichosis
      - 2.7.1.1.4. Acquired Hypertrichosis Lanuginosa
    - 2.7.1.2. Secondary or Acquired
      - 2.7.1.2.1. Caused by Drugs or Medication
      - 2.7.1.2.2. Caused by Systemic Diseases
  - 2.7.2. Localized
- 2.8. Hirsutism
  - 2.8.1. Ovarian SAHA Syndrome
  - 2.8.2. Adrenal SAHA Syndrome
  - 2.8.3. SAHA Syndrome with Hyperprolactinemia
  - 2.8.4. SOP
  - 2.8.5. Hypophyseal Hirsutism
  - 2.8.6. Drug Use
  - 2.8.7. Liver Diseases

- 2.9. Hyperhidrosis
  - 2.9.1. Definition
  - 2.9.2. Diagnosis
  - 2.9.3. Causes
    - 2.9.3.1. Education
    - 2.9.3.2. Diffuse
  - 2.9.4. Treatment
    - 2.9.4.1. Antiperspirants
    - 2.9.4.2. Anticholinergics
    - 2.9.4.3. Iontophoresis
    - 2.9.4.4. Botox
    - 2.9.4.5. Microwave Thermolysis

### Module 3. Androgenetic Alopecia

- 3.1. Features
  - 3.1.1. Evolutionary Development
  - 3.1.2. Physiological or Non-Physiological
  - 3.1.3. Mediated by Two Factors: Genetic and Androgenic
- 3.2. Evolution
  - 3.2.1. Hamilton for Boys
  - 3.2.2. Ludwig for Girls
- 3.3. Pathophysiology
  - 3.3.1. Genetic Receptors of the Male Hormone
  - 3.3.2. An Enzyme the 5alpha-Reductase
  - 3.3.3. DHT
- 3.4. Men
- 3.5. Women
  - 3.5.1. Physiology
  - 3.5.2. Hormonal
  - 3.5.3. Genetics
  - 3.5.4. Study of the Hypothalamic-Pituitary-Pituitary-Adrenal-Ovarian Axis
- 3.6. Consequences

- 3.7. AGA Study: Inclusion in Therapeutic Algorithm
  - 3.7.1. Clinical History with Oriented Anamnesis
  - 3.7.2. Macro and Micro Exploration with Use of Dermatoscopes and Micro Cameras
  - 3.7.3. Taking Photographs
  - 3.7.4. Traction Test
  - 3.7.5. Trichogram
    - 3.7.5.1. Optical Microscope: 20-50 Hairs
    - 3.7.5.2. Classification of Growth Phases: Anagen (85%), Catagen (1-2%) and Telogen (10-15%)
    - 3.7.5.3. Daily Hair Loss
    - 3.7.5.4. Features
  - 3.7.6. Wood Light
  - 3.7.7. Biopsy
  - 3.7.8. Targeted Analysis
  - 3.7.9. Diagnostic Approximation
    - 3.7.9.1. Inclusion in Therapeutic Algorithm: Prevention of Baldness
  - 3.7.10. According to Resolution
    - 3.7.10.1. Easily Resolved: Seasonal or Cyclic, Androgenetic (MAGA and FAGA), Menopausal and Senile Effluvium
    - 3.7.10.2. Potentially Resolvable: Pathogen Mediated
      - 3.7.10.2.1. Psychogenic due to Stress
      - 3.7.10.2.2. By Traction and Trichotillomania
      - 3.7.10.2.3. Deficiency (Dietary, Anemic, Vitamin Deficiency)
      - 3.7.10.2.4. Chronic Effluvium
      - 3.7.10.2.5. Hormonal/Androgenic
      - 3.7.10.2.6. Thyrogenic
      - 3.7.10.2.7. Immunogenic
      - 3.7.10.2.8. Chemotherapy
      - 3.7.10.2.9. By Collagenosis
      - 3.7.10.2.10. Areata
      - 3.7.10.2.11. Infectious (Bacterial, Mycotic, Syphilis)
      - 3.7.10.2.12. More Common in Women: Multi-Factorial
    - 3.7.10.3. Difficult to Resolve
      - 3.7.10.3.1. Congenital Scarring
      - 3.7.10.3.2. FFA
      - 3.7.10.3.3. Physical
      - 3.7.10.3.4. Infections
      - 3.7.10.3.5. Tumours
      - 3.7.10.3.6. Dermatitis (Lupus, Lichen, Psoriasis, etc.)
- 3.8. Treatment
  - 3.8.1. Cosmetic
    - 3.8.1.1. Cleanliness and Hygiene: Adequate Shampoo
    - 3.8.1.2. Moisturizes, Nourishes and Repairs the Hair Shaft
    - 3.8.1.3. Powders, Dyes, Volumizing Sprays and Special Hairstyles
    - 3.8.1.4. Keratin Microfibers
    - 3.8.1.5. Extensions and Protheses
  - 3.8.2. Dietetic: Balanced Diet
    - 3.8.2.1. Aminoacids: L-Cysteine
    - 3.8.2.2. Vitamins: B12, Biotin, Folic Acid, etc.
    - 3.8.2.3. Trace Elements: Zinc, Fe, Se, etc.
  - 3.8.3. Topical
    - 3.8.3.1. Non-Specific
      - 3.8.3.1.1. In Shampoos: Antifungal, Antipsoriatic, Keratolytic, etc.
      - 3.8.3.1.2. Creams, Lotions, Gels, etc.
      - 3.8.3.1.3. Corticosteroids, Antibiotics, Seboregulators, etc.
    - 3.8.3.2. Specific
      - 3.8.3.2.1. In Lotions or Foams
      - 3.8.3.2.2. Spinolactone 3
      - 3.8.3.2.3. Canrenone 2%
      - 3.8.3.2.4. Progesterone 0.025%
      - 3.8.3.2.5. 17-Alpha-Estradiol 0.025-0.05%
      - 3.8.3.2.6. Minoxidil 2-5%
      - 3.8.3.2.7. Ac. Retinoic Acid 0.025-0.05%
      - 3.8.3.2.8. Alpha-Tocopherol Nicotinate 5%

- 3.8.4. Local
  - 3.8.4.1. Drug Dermoinfiltration
    - 3.8.4.1.1. Roller
    - 3.8.4.1.2. Dermojet
    - 3.8.4.1.3. Hair Mesotherapy
    - 3.8.4.1.4. Carboxytherapy
  - 3.8.4.2. Micropigmentation
  - 3.8.4.3. Biological Therapies: PRP and Stem Cells
  - 3.8.4.4. Electrophysical Therapy
    - 3.8.4.4.1. Transportation and Ionization
    - 3.8.4.4.2. Infrared and Low-Frequency Lasers
  - 3.8.4.5. Hair Surgery
- 3.8.5. Systemic
  - 3.8.5.1. Underlying Pathology
    - 3.8.5.1.1. Anti-Fungals/Antibiotics, Thyroid, Anxiolytics, Corticosteroids
  - 3.8.5.2. Androgenetic Factor (AGA)
    - 3.8.5.2.1. Finasteride
    - 3.8.5.2.2. Dutasteride
    - 3.8.5.2.3. Oral Minoxidil
  - 3.8.5.3. Of Androgenic Factor: Anti-Androgens of Origin
    - 3.8.5.3.1. Central: Cyproterone with/without Estradiol
    - 3.8.5.3.2. Peripheral: Spironolactone
    - 3.8.5.3.3. Adrenal: Prednisone and Deflazacort
- 3.9. Specific Techniques
  - 3.9.1. Mesocapillary Therapy
  - 3.9.2. Micro Hair Transplants
  - 3.9.3. Biological Therapies
    - 3.9.3.1. Plasma
    - 3.9.3.2. Stem Cells

## Module 4. Physician Attendance/Consultation and Surgery

- 4.1. Diagnostic Medical Consultation
  - 4.1.1. Exploration Methods
    - 4.1.1.1. Visual
    - 4.1.1.2. Optical Microscope
    - 4.1.1.3. Digital Micro Cameras
    - 4.1.1.4. Micrometer
    - 4.1.1.5. Wood Light
    - 4.1.1.6. Traction Tweezers
    - 4.1.1.7. Cigarette Paper
  - 4.1.2. Performing a Trichogram
  - 4.1.3. Dermographic Study
  - 4.1.4. Traction Test
  - 4.1.5. Wood Light
  - 4.1.6. Biopsy (If Required)
  - 4.1.7. Specific Blood Test
  - 4.1.8. Photography
- 4.2. Pre-Surgical Medical Consultation
  - 4.2.1. Medical History of Interest
  - 4.2.2. Photography
  - 4.2.3. Medical Consent
  - 4.2.4. Patient Expectations
  - 4.2.5. Surgical Plan
  - 4.2.6. Pre-Op Instructions
  - 4.2.7. Confirmation of Surgical Suitability
  - 4.2.8. Post-Op Instructions
  - 4.2.9. Surgical Alternatives and Other Treatments

- 4.3. Hair Transplant Devices
  - 4.3.1. Hair Grafting Tools for Extraction
    - 4.3.1.1. Punch or Circular Scalpel
    - 4.3.1.2. SAFE Systems
    - 4.3.1.3. RotoCore
    - 4.3.1.4. NeoGraft® Automated FUE and Implantation System
  - 4.3.2. Hair Grafting Tools for Implantation
    - 4.3.2.1. Implanter
      - 4.3.2.1.1. Advantages
      - 4.3.2.1.2. Disadvantages
    - 4.3.2.2. Corneal Incisions
      - 4.3.2.2.1. Advantages
      - 4.3.2.2.2. Disadvantages
  - 4.3.3. Instruments for Making Incisions
    - 4.3.3.1. Sharp Points
    - 4.3.3.2. Needle
    - 4.3.3.3. Mini-Blades
  - 4.3.4. Main Developments
    - 4.3.4.1. Extractor Machine with 0.7 mm Punch
    - 4.3.4.2. Special Blades for Cutting and Trimming Follicular Units with the Strip Technique
    - 4.3.4.3. High-Resolution Microscope
    - 4.3.4.4. 3-5x Magnifiers
    - 4.3.4.5. 0.8-1.3 Angled Blades for 0.8 mm and 1 mm Implants
    - 4.3.4.6. 0.8mm and 1mm Implanters
  - 4.3.5. Automated Extraction Systems - Capillary Implantation
    - 4.3.5.1. Automatic: Extraction
    - 4.3.5.2. Semi-Automatic: Extraction and Implantation
- 4.4. Aesthetic Eyebrow Procedures
  - 4.4.1. Indications
  - 4.4.2. Diagnosis
  - 4.4.3. Etiology Treatment
  - 4.4.4. Most Common Procedures
    - 4.4.4.1. Recreating the Eyebrow Curve
    - 4.4.4.2. Hair Density Recovery
    - 4.4.4.3. Correcting Drooping Eyebrows
  - 4.4.5. Postoperative Care
  - 4.4.6. Anesthesia in Capillary Surgery
    - 4.4.6.1. Pre-Operative Study
    - 4.4.6.2. EKG and Chest X-Ray
    - 4.4.6.3. Pre-Medication
    - 4.4.6.4. Oral Sedation Model
      - 4.4.6.4.1. Stomach Protector
      - 4.4.6.4.2. Oral Antiemetic
      - 4.4.6.4.3. Oral Dormicum 7.5mg 1 Hour before Surgery
- 4.5. Intravenous Options
  - 4.5.1. Venous Route
  - 4.5.2. Antiemetics
  - 4.5.3. Administer Dormicum (2mg) and Fentanest (50 mg)
  - 4.5.4. Portable Pulse Oximetry without the Need for Cardiac Monitoring
  - 4.5.5. Annexate and Naloxone Availability
- 4.6. Types of Anesthetics
  - 4.6.1. Ester Type: Tetracaine, Chlorprocaine, Benzocaine, and Procaine
  - 4.6.2. Amide Type: Lidocaine, Mepivacaine, Prilocaine, Bupivacaine, Ropivacaine, and Etidocaine

- 4.7. Factors Influencing Its Action
  - 4.7.1. Its Anesthetic Potency Is Related to Liposolubility in a Directly Proportional Manner
  - 4.7.2. Vasodilation Capability
  - 4.7.3. Plasma Protein Binding
  - 4.7.4. Addition of a Vasoconstrictor, such as Adrenaline or Phenylephrine, Increases the Effect
  - 4.7.5. Adrenaline Dosage Should Not Exceed 250ng in Adults
  - 4.7.6. Alkalinization Improves Diffusion and Promotes Latency
  - 4.7.7. Solution Heating Improves Blocking
  - 4.7.8. Complications
    - 4.7.8.1. Local Anesthesia Allergy
    - 4.7.8.2. Local Anesthesia Toxicity
- 4.8. Non-Medical Team
  - 4.8.1. Nursing
    - 4.8.1.1. Functions
      - 4.8.1.1.1. Assisting the Physician in Surgery
      - 4.8.1.1.2. Extracting Follicular Units
      - 4.8.1.1.3. Graft Trimming and Cleaning
      - 4.8.1.1.4. Implanting Micrografts
  - 4.8.2. Capillary Technician
    - 4.8.2.1. Functions
      - 4.8.2.1.1. Assisting the Nurse
      - 4.8.2.1.2. Preparing the Room
      - 4.8.2.1.3. Graft Trimming and Cleaning
      - 4.8.2.1.4. Implanting Micrografts
      - 4.8.2.1.5. Sterilization and Cleaning of the Room and Equipment
- 4.9. Complications/Emergencies in Surgery
- 4.10. Post-Surgery Treatment
  - 4.10.1. Post-Operative Medication
  - 4.10.2. Keep the Graft Site Clean and Hydrated
  - 4.10.3. Sleep in a Half-Seated Position (40°/45°)
  - 4.10.4. Avoid Sun Exposure
  - 4.10.5. Minimal Physical Exercise
  - 4.10.6. Apply Cold to the Face

## Module 5. Cosmetic Treatments/Hair Cosmetics

- 5.1. Hair Cosmetics Definition. Concept. Materials Used
- 5.2. Hair Prosthesis. Definition. Differences between Male and Female
  - 5.2.1. Manufacturing Materials
    - 5.2.1.1. On the Outside of the Prosthesis: Different Types of Human Hair and Synthetic Hair
    - 5.2.1.2. Inside of the Prosthesis: Tulle, Gauze, Mesh, Plasticized.
  - 5.2.2. Manufacturing Techniques
    - 5.2.2.1. Choppy Hair
    - 5.2.2.2. Woven Hair
  - 5.2.3. Fastening Materials
    - 5.2.3.1. Self-Adhesives
    - 5.2.3.2. Glues or Adhesives
    - 5.2.3.3. Stitched
  - 5.2.4. Importance of Hair Prosthesis Maintenance
- 5.3. Micropigmentation
  - 5.3.1. Micropigmentation Techniques
    - 5.3.1.1. Capillary
    - 5.3.1.2. Eyebrows
    - 5.3.1.3. Beard
  - 5.3.2. Aspects to Consider when Applying Hair Micropigmentation
  - 5.3.3. Products Used in Hair Micropigmentation
  - 5.3.4. Equipment Used in Hair Micropigmentation
  - 5.3.5. Micropigmentation Preservation
- 5.4. Hair Fibers
  - 5.4.1. Spray
  - 5.4.2. Powder
- 5.5. Definition of Cosmetic Treatments
  - 5.5.1. Limitations of Cosmetic Treatments
- 5.6. Cosmetic Penetration
  - 5.6.1. Penetration Routes
  - 5.6.2. Degrees of Penetration
  - 5.6.3. Penetration Factors



- 5.7. General Composition of Cosmetics. Active Ingredients, Excipients, Coloring, Perfume, Preservatives, Correcting Agents
  - 5.7.1. Active ingredients
    - 5.7.1.1. Plant: Origin, Procurement, and Composition
    - 5.7.1.2. Animal: Origin, Procurement, and Composition
      - 5.7.1.2.1. Synthetic: Origin, Procurement, and Composition
      - 5.7.1.2.2. Others: Vitamins and Trace Elements
      - 5.7.1.2.3. Excipients
      - 5.7.1.2.4. Dyes
      - 5.7.1.2.5. Perfumes
      - 5.7.1.2.6. Preservatives
      - 5.7.1.2.7. Correctors
- 5.8. Cosmetic Used in Hair Treatments
  - 5.8.1. Dry Hair Cosmetics
  - 5.8.2. Oily and Seborrheic Cosmetics
  - 5.8.3. Pityriasis Cosmetics
  - 5.8.4. Alopecia Cosmetics
- 5.9. Cosmetic Forms of Hair Treatments
  - 5.9.1. Shampoos
  - 5.9.2. Lotions
  - 5.9.3. Peeling and Nourishing Masks
  - 5.9.4. Micronutrients
- 5.10. Appliances Used in Cosmetic Treatments
  - 5.10.1. Electrotherapy
  - 5.10.2. High Frequency
  - 5.10.3. Phototherapy
    - 5.10.3.1. Infrared
    - 5.10.3.2. Ultraviolet
    - 5.10.3.3. Cosmetic Laser
  - 5.10.4. Steamers
  - 5.10.5. Vibrators
- 5.11. Hair Massage
  - 5.11.1. Application Techniques

- 5.12. Treating Cancer Patients
  - 5.12.1. Quality of Life of Cancer Patients and Aesthetic Hair Medicine The Healing Power of Image
  - 5.12.2. Tests Before Procedures in Cancer Patients
  - 5.12.3. Intervention of the Aesthetic Practitioner Before, During, and After Oncological Treatment.
  - 5.12.4. Cancer Patient Micronutrition

## Module 6. Medical/Pharmacological Treatments and Research in Trichology and New Treatment Alternatives

- 6.1. Minoxidi (Rogaine ®) Oral vs. Topical Minoxidil
  - 6.1.1. Antihypertensive.
  - 6.1.2. Available in 2% and 5% Solutions
  - 6.1.3. Desired Effects: Vasodilation, Angiogenesis, and Enhanced Cell Proliferation
  - 6.1.4. Side Effects: Contact Dermatitis and Temporary Hair Loss during the First Four Months of Use
  - 6.1.5. Minoxidil 5% Foam Does Not Contain Propylene Glycol (potential irritant) and Lowers the Incidence of Pruritus
- 6.2. Oral Dutasteride (Avodart ®): Effectiveness and Safety
  - 6.2.1. Dihydrotestosterone Production Inhibitor for the Treatment of Benign Prostatic Hyperplasia (BPH)
  - 6.2.2. Dutasteride efficacy at 2.5 mg/day
  - 6.2.3. Side Effects:
- 6.3. Finasteride (Propecia®): Most Common for Male Pattern Baldness
  - 6.3.1. A Reductase Inhibitor that Reduces the Conversion of Testosterone to Dihydrotestosterone or DHT Better than Finasteride
  - 6.3.2. More Effective Equal Safety for Men and Women
  - 6.3.3. Women: Avoid Pregnancy during Treatment and 6 Months After. It Is Not Officially Approved for Use in Women
    - 6.3.3.1. Combination with an Effective Oral Contraceptive
  - 6.3.4. Finasteride vs Dutasteride Safety
  - 6.3.5. Dutasteride Microinjections
  - 6.3.6. Improved Hair Quantity and Thickness
  - 6.3.7. Progress Over Time: 6 Months to 1 Year
  - 6.3.8. Daily Dose: 1mg
  - 6.3.9. Problems of a Sexual Nature

- 6.4. 2% Ketoconazole Topical Shampoo (Nizoral ®)
  - 6.4.1. Antifungal Agent
  - 6.4.2. Treatment for Dermatitis and Dandruff
  - 6.4.3. Action on Scalp Microflora
  - 6.4.4. Beneficial Effect on Androgenetic Alopecia Associated with Hair Follicle Inflammation
- 6.5. Dexamethasone Minipulse Therapy (alopecia areata): Risks vs. Continuous Corticosteroids
- 6.6. JAK Inhibitor Drugs (Alopecia Areata)
  - 6.6.1. Clinical Trials: Ruxolitinib or Tofacitinib (Extensive Alopecia Areata)
  - 6.6.2. Efficacy and Safety Results
- 6.7. Anti-Androgens (Frontal Fibrosing Alopecia): Finasteride and Oral Dutasteride in Females with Frontal Fibrosing Alopecia
  - 6.7.1. Loss of Eyebrows and Hair in the Frontal and Temporal Region ("Headband Area").
  - 6.7.2. Block the Binding of Androgen Receptor to Testosterone
  - 6.7.3. Cyproterone Acetate and Spironolactone
- 6.8. Prostaglandin Analogs
  - 6.8.1. Lipidic Substances Derived from 20-Carbon Fatty Acids (Eicosanoids)
  - 6.8.2. They Affect and Act on Different Systems of the Organism: Nervous System, Smooth Muscle, Blood, and Reproductive System
  - 6.8.3. They Regulate Various Functions: Blood Pressure, Blood Clotting, Allergic Inflammatory Response and Digestive System Activity
  - 6.8.4. Bimatoprost (Latisse®) Is Now Available as a Treatment for Eyelash Growth
  - 6.8.5. Latanoprost Increases Hair Density and May Increase Pigmentation
- 6.9. Estrogens
  - 6.9.1. Indirect Anti-Androgens
- 6.10. Hair Cloning:
  - 6.10.1. Future Therapies. Unlimited Follicles from Hair Stem Cells. Human Clinical Trials
  - 6.10.2. Two Main Approaches under Investigation: Direct Injection of Cultured Cells or Use of Factors that Promote Cell Multiplication
  - 6.10.3. Cells Are Cultured and the Culture Supernatant Is Processed to Produce a Rich Hair Growth Promoting Compound
  - 6.10.4. PRP: Biostimulation Techniques
    - 6.10.4.1. Increase the Number of Blood Vessels and Improve Circulation
    - 6.10.4.2. Promote the Production of Collagen
    - 6.10.4.3. Counteract the Negative Effect of Free Radicals and Prevent Cellular Aging
    - 6.10.4.4. Closed Technique
- 6.11. Hair Transplantation with Micrografts in Men and Women
  - 6.11.1. Robots Capable of Automated Extraction
- 6.12. Low-Power Laser
  - 6.12.1. Different Wavelengths and Different Modes
  - 6.12.2. Low-Level Laser Intensive (LLLI) Laser Therapy
  - 6.12.3. Uses: Female Androgenetic Alopecia and/or MAGA Male Androgenetic Alopecia. Treatments in Monotherapy or as Combined Therapies
  - 6.12.4. Penetrates the Surface of the Skin. Stimulates Blood Flow. Helps Nutrients, Blood, and Oxygen Reach Hair Follicles.
  - 6.12.5. Hair Revitalization, Elimination of Toxins and any Blockages Found within the Follicle
- 6.13. Alternative Treatments
  - 6.13.1. Herbs, Vitamins, and Minerals
  - 6.13.2. Biotin, Caffeine, Melatonin, Copper Complexes
- 6.14. Considerations
  - 6.14.1. Minoxidil and Finasteride Must Be Used Continuously for Results and Once Discontinued, the Natural Balding Process Will Resume
  - 6.14.2. PG Analogs Have a Much More Potent and Longer Lasting Effect, Although Not Permanent
  - 6.14.3. Prostaglandin F2 Alpha Analogs Latanoprost and Bimatoprost Are Used in the Treatment of Ocular Hypertension and Glaucoma

## Module 7. Hair Transplantation with the FUSS Technique

- 7.1. Concept/Definition
  - 7.1.1. History & evolution
- 7.2. Safe Area Definition
- 7.3. Advantages
- 7.4. Disadvantages
  - 7.4.1. Scar
  - 7.4.2. Pain
  - 7.4.3. Suture
- 7.5. Indications
- 7.6. Contraindications
  - 7.6.1. Keloids
  - 7.6.2. Black Race
- 7.7. Technical Aspects
  - 7.7.1. Dissection
  - 7.7.2. Trichophytic Closure
- 7.8. Pain
- 7.9. Complications
  - 7.9.1. During Extraction Undermining
  - 7.9.2. After Extraction: Bruising, Pain, Necrosis
    - 7.9.2.1. Treating Complications

## Module 8. Hair Transplantation with the FUE Technique

- 8.1. Hair Micrograft. Concept. Theory. History & Evolution
- 8.2. Indications for Hair Transplantation
- 8.3. Contraindications of Hair Transplant
- 8.4. Advantages and Disadvantages of the FUE Technique
  - 8.4.1. Current Status of the FUE Technique
- 8.5. Anesthesia of the Donor and Recipient Region
- 8.6. Allergic Reactions and Anaphylactic Shock

- 8.7. FUE Technique in Hair Implantology
  - 8.7.1. Choice of Follicular Units
  - 8.7.2. Instruments Used in the FUE Technique
  - 8.7.3. Patient Design
  - 8.7.4. Preparation of the Patient and Donor Site
  - 8.7.5. Extracting Follicular Units
  - 8.7.6. Follicular Unit Maintenance Solutions
  - 8.7.7. Preparing the Receptor Site
  - 8.7.8. Incisions
  - 8.7.9. Implementation.
- 8.8. Implantation with Implanters
- 8.9. FUE Technique Complications
  - 8.9.1. Intra-Operative
  - 8.9.2. Postoperative

## Module 9. Effluvia

- 9.1. Concept of Effluvium
- 9.2. Epidemiology
- 9.3. Effluvia Classification
- 9.4. Guided Clinical History
- 9.5. Acute Anagen Effluvium
  - 9.5.1. Pathophysiology of Acute Anagen Effluvium
  - 9.5.2. Diagnosis of Acute Anagen Effluvium
    - 9.5.2.1. Types of Acute Anagen Effluvium
    - 9.5.2.2. Chemotherapy-Induced Dystrophic Effluvium
    - 9.5.2.3. Radiotherapy-Induced Dystrophic Effluvium
    - 9.5.2.4. ToxinInduced Dystrophic Effluvium.
- 9.6. Chronic Anagen Effluvium
  - 9.6.1. Pathophysiology of Chronic Anagen Effluvium
  - 9.6.2. Diagnosis of Chronic Anagen Effluvium

- 9.7. Acute Telogen Effluvium
  - 9.7.1. Pathophysiology of Acute Telogen Effluvium
  - 9.7.2. Diagnosis of Acute Telogen Effluvium
  - 9.7.3. Types of Acute Telogen Effluvium
- 9.8. Chronic Telogen Effluvium
  - 9.8.1. Pathophysiology of Chronic Telogen Effluvium
  - 9.8.2. Diagnosis of Chronic Telogen Effluvium
- 9.8. Differential Diagnosis of Chronic Telogen Effluvium
- 9.9. Effluvia Treatment
- 9.10. Algorithm for Managing Patients with Diffuse Capillary Leakage

## Module 10. Legal, Economic, and Marketing Aspects

- 10.1. Introduction to the Legal Regulations of Professional Development
- 10.2. Medicolegal Aspects in the Practice of Trichology
  - 10.2.1. Current Legislation on Medical, Cosmetic and Phytotherapeutic Products. Authorized Products, Spanish Drug Agency, Sanitary Alert, Sanitary Registration
  - 10.2.2. Civil and Health Liability
- 10.3. Legal and Economic Aspects of Free Exercise, Contracting Regimes, Personal Income Tax, VAT, etc.
- 10.4. Patient-Doctor Relationship
  - 10.4.1. Informed Consent in Capillary Medicine and Surgery
  - 10.4.2. Data Protection, Medical Records Management and Archiving, Iconography (Acquisition and Archiving)
  - 10.4.3. Regulations in Relation to Patients

- 10.5. Management of a Hair Transplantation and Capillary Medicine Practice
  - 10.5.1. Regulations Regarding Human Resources
  - 10.5.2. Managing Complaints
- 10.6. Communication Skills in Hair Transplantation and Capillary Medicine
- 10.7. Media Communication
- 10.8. Interprofessional Communications
  - 10.8.1. Ethical Principles
- 10.9. Planning of a Hair Transplantation and a Capillary Medicine Unit
- 10.10. Organization and Marketing. Sales Techniques for Capillary Surgeons
- 10.11. Social Networks: Importance and Proper Use



*An online program that will allow you to delve into the main sales techniques for the hair surgeon"*

06

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

“

*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

*Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*





At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.





This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



# 07 Certificate

The Professional Master's Degree in Hair Transplantation guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree issued by TECH Technological University.



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*Successfully complete this program  
and receive your university degree  
without travel or laborious paperwork”*

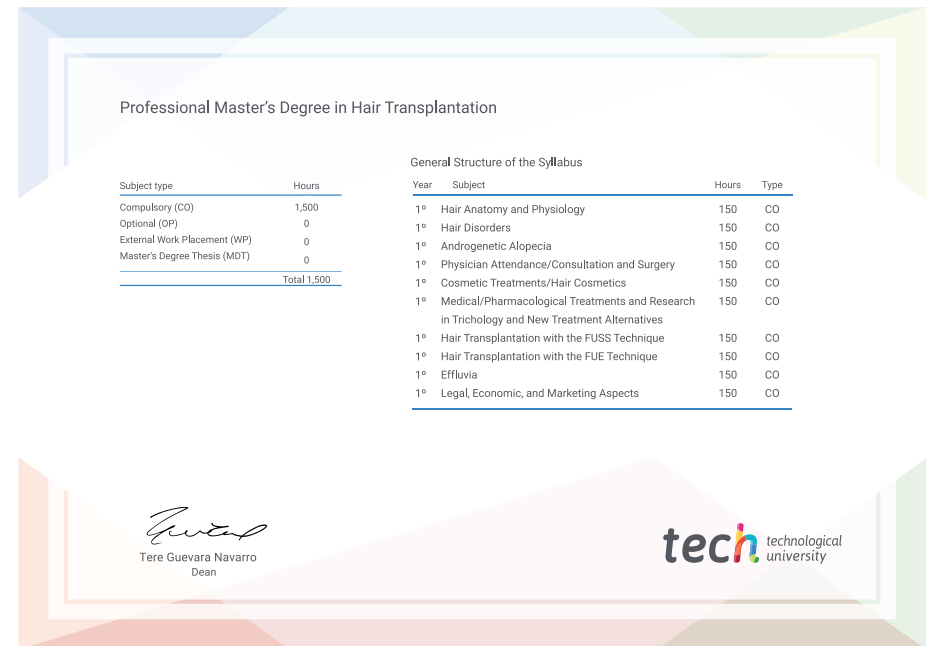
This **Professional Master's Degree in Hair Transplantation** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Professional Master's Degree** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH University** will reflect the qualification obtained in the Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Professional Master's Degree in Hair Transplantation**

Official N° of hours: **1,500 h.**



\*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.





## Professional Master's Degree

Hair Transplantation

Course Modality: Online

Duration: 12 months

Certificate: TECH Technological University

Official N° of hours: 1,500 h.

# Professional Master's Degree

## Hair Transplantation

