



# Master's Degree

# Locoregional Anesthesia

» Modality: Online

» Duration: 12 months.

» Certificate: TECH Global University

» Accreditation: 60 ECTS

» Schedule: at your own pace

» Exams: online

Website:\_www.techtitute.com/us/medicine/master-degree/master-locoregional-anesthesia

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# tech 06 | Introduction to the Program

Locoregional Anesthesia has taken on a key role in modern medicine, thanks to its ability to improve pain control and reduce postoperative complications. Its evolution has been driven by advancements in ultrasound-guided techniques and the development of new anesthetic agents, allowing for greater precision and safety in procedures. Therefore, it is crucial for specialists to stay at the forefront of this field in order to provide excellent and precise clinical care.

In this regard, TECH Global University offers an exclusive Master's Degree in Locoregional Anesthesia. The curriculum will delve into the management of peripheral nerve blocks and their application in various surgical environments. Additionally, the syllabus will explore different strategies for selecting the most appropriate anesthetic techniques based on individual patient needs. In line with this, the instructional materials will cover critical care for patients and provide various techniques for optimal pain management. As a result, graduates will acquire advanced competencies to implement Locoregional Anesthesia techniques with precision and safety, designing personalized plans and effectively managing pain in the perioperative setting.

Furthermore, the online methodology of this program offers total flexibility, allowing professionals to access the content without time or location restrictions. In fact, all that healthcare providers will need is an electronic device with internet access to immerse themselves in the Virtual Campus. There, they will find a variety of multimedia resources, such as detailed videos, specialized readings grounded in the latest evidence, and interactive summaries

This **Master's Degree in Locoregional Anesthesia** contains the most complete and upto-date university program on the market. Its most notable features are:

- The development of practical case studies presented by experts in Medicine
- 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
- Special emphasis on innovative methodologies in Medicine
- 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



You will use ultrasound as a key tool to enhance the precision and safety in the administration of local anesthetics"

# Introduction to the Program | 07 tech



You will delve into the pharmacology of anesthetics, their mechanisms of action, interactions, and clinical considerations"

The teaching staff includes professionals belonging to the field of medicine, who contribute their work experience to this program, as well as renowned specialists from reference 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 an immersive learning experience designed to prepare for real-life situations.

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

You will master the management of perioperative pain with sophisticated strategies that reduce the need for opioids and improve patient recovery.

The distinctive Relearning System at TECH Global University will enable you to update your knowledge with less effort and greater effectiveness, allowing you to become more engaged in your specialization as a healthcare professional.







# tech 10 | Why Study at TECH?

### The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

### The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

### The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.



The most complete syllabus





World's
No.1
The World's largest
online university

# The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

### A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

### The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

### **Leaders in employability**

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.









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### **Google Premier Partner**

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.

### The top-rated university by its students

Students have positioned TECH as the world's toprated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

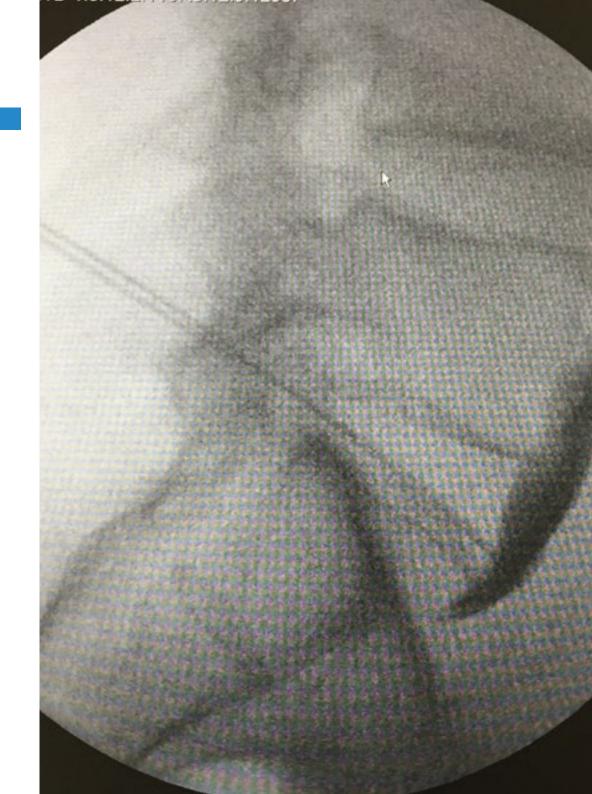




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# Module 1. Regional Anesthesia

- 1.1. Temporal Development
  - 1.1.1. History of Regional Anesthesia
  - 1.1.2. Historical Evolution of Regional Techniques
  - 1.1.3. Importance of Regional Anesthesia in the 21st century
- 1.2. Fundamentals of Neurostimulation
  - 1.2.1. Introduction
  - 1.2.2. Principles of Neurostimulation
    - 1.2.2.1. Physiology of Nerve Conduction
    - 1.2.2.2. Physical Fundamentals
    - 1.2.2.3. Characteristics of Electric Current
    - 1.2.2.4. Characteristics of Devices
  - 1.2.3. Neurostimulation Technique
    - 1.2.3.1. Preparation Phase
    - 1.2.3.2. Localization and Approach Phase
    - 1.2.3.3. Infusion Phase
    - 1.2.3.4. Installation Phase
  - 1.2.4. Sources of Error
    - 1.2.4.1. Neurostimulator
    - 1.2.4.2. Electrodes
    - 1.2.4.3. Needles
    - 1.2.4.4. Patient
  - 1.2.5. Equipment Maintenance
  - 1.2.6. Role of Neurostimulation Today
- 1.3. Fundamentals of Ultrasound
  - 1.3.1. Physical Principles of Ultrasound
    - 1.3.1.1. Sound and Ultrasound
    - 1.3.1.2. Image Formation
    - 1.3.1.3. Ecogenicity of Tissues
  - 1.3.2. Components of the Ultrasound Machine
    - 1.3.2.1. Processing System
    - 1.3.2.2. Transducer/Ultrasound Machine
    - 1.3.2.3. Apparatus
    - 1.3.2.4. Ultrasound Parameters



# 1.4. Ultrasound Applied to Regional Anesthesia 1.4.1. Ultrasound of Key Structures 1.4.1.1. Vessels 1.4.1.2. Bone 1.4.1.3. Muscle 1.4.1.4. Tendons 1.4.1.5. Pleura 1.4.1.6. Thyroid and Trachea 1.4.2. Artifacts 1.4.2.1. Acoustic Shadow 1.4.2.2. Posterior Acoustic Enhancement 1.4.2.3. Comet Tail 1.4.2.4. Refraction 1.4.2.5. Mirror Image 1.4.2.6. Anisotropic Reflectors 1.4.3. Systematic Use of the Ultrasound Machine 1.4.3.1. Probe Orientation 1.4.3.2. Approaches 1.4.3.3. Factors Affecting Visualization 1.4.3.4. Ultrasound Image of Local Anesthetics and Catheters 1.4.4. Preparation of an Ultrasound Training Model 1.5. Local Anesthetics 1.5.1. Structure and Classification 1.5.2. Pharmacology 1.5.2.1. Pharmacokinetics 1.5.2.2. Pharmacodynamics 1.5.2.3. Adjuvants 1.5.3. Mechanism of Action 1.5.4. Choice of Local Anesthetic 1.5.5. Toxicity 1.6. Local Anesthetic Toxicity 1.6.1. Introduction 1.6.2. Pathophysiology 1.6.3. Risk Factors 1.6.4. Symptoms 1.6.5. Management

		1.7.2.1. Neuroaxial Steroids					
		1.7.2.2. Perineural Steroids					
	1.7.3.	Alpha Agonists					
		1.7.3.1. Clonidine					
		1.7.3.2. Dexmedetomidine					
	1.7.4.	Opioids					
		1.7.4.1. Neuroaxial Opioids					
		1.7.4.2. Perineural Opioids					
	1.7.5.	Other Adjuvants					
	1.7.6.	Future Strategies					
1.8.	Sedation in Regional Anesthesia						
	1.8.1.	Pharmacology of Hypnotics					
	1.8.2.	Total Intravenous Anesthesia Technique (TIVA-TCI					
	1.8.3.	Sedation as a Complement to Regional Anesthesia					
1.9.	Materia	ls					
	1.9.1.	Introduction					
	1.9.2.	Basic Monitoring					
	1.9.3.	Asepsis and Sterility in Regional Anesthesia					
	1.9.4.	Needles					
		1.9.4.1. Spinal Block					
		1.9.4.2. Epidural block					
		1.9.4.3. Peripheral Nerve Block and Other Blocks					
	1.9.5.	Catheters for Continuous Analgesia					
	1.9.6.	Infusion Systems					
		1.9.6.1. Elastomers					
		1.9.6.2. Infusion Pumps					
1.10.	Preanes	sthesia Consultation					
	1.10.1.	Preanesthetic Assessment					
	1.10.2.	Complementary Tests					
	1.10.3.	Information and Informed Consent					

1.7. Adjuvant Drugs in Regional Anesthesia

1.7.1. Introduction

Steroids

1.7.2.

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# Module 2. Neuroaxial Blocks

- 2.1. Neuroaxis Blocks
  - 2.1.1. Definition
  - 2.1.2. History
  - 2.1.3. Current Use and Utility
- 2.2. Anatomy and Physiology Applied to Neuroaxial Blocks
  - 2.2.1. Applied Anatomy
  - 2.2.2. Applied Physiology
- 2.3. Pharmacology Applied to Neuroaxial Blocks
  - 2.3.1. Local Anesthetics
  - 2.3.2. Opioids
  - 2.3.3. Clonidine
  - 2.3.4. Corticosteroids
  - 2.3.5. Neostigmine
  - 2.3.6. Ketamine
  - 2.3.7. Others
- 2.4. Spinal Block
  - 2.4.1. Definition and Anatomical Recall
  - 2.4.2 Indications
  - 2.4.3. Contraindications
  - 2.4.4. Required Materials
  - 2.4.5. Technique for Single Puncture Spinal Block
  - 2.4.6. Technique for Continuous Spinal Block
  - 2.4.7. Effects of the Block and Management
  - 2.4.8. Specific Complications

- 2.5. Epidural Block
  - 2.5.1. Definition and Anatomical Recall
  - 2.5.2. Indications
  - 2.5.3. Contraindications
  - 2.5.4. Required Materials
  - 2.5.5. Technique for Exclusive Epidural Block
  - 2.5.6. Technique for Combined Spinal-Epidural Block
  - 2.5.7. Effects of the Block and Management
  - 2.5.8. Specific Complications
- 2.6. Caudal Block
  - 2.6.1. Definition and Anatomical Recall
  - 2.6.2. Indications
  - 2.6.3. Contraindications
  - 2.6.4. Materials Needed
  - 2.6.5. Technique
  - 2.6.6. Effects of the Block and Management
  - 2.6.7. Specific Complications
- 2.7. Paravertebral Block
  - 2.7.1. Definition and Anatomical Recall
  - 2.7.2. Indications
  - 2.7.3. Contraindications
  - 2.7.4. Materials Needed
  - 2.7.5. Technique
  - 2.7.6. Effects of the Block and Management
  - 2.7.7. Specific Complications

- 2.8. Neuroaxial Blocks in Obstetrics
  - 2.8.1. Physiological Changes During Pregnancy
  - 2.8.2. Neuroaxial Analgesia for Labor
  - 2.8.3. Neuroaxial Anesthesia for Cesarean Section, Instrumental Delivery, and Postoperative Analgesia
  - 2.8.4. Effects of Neuroaxial Blocks on Labor Progression and the Fetus
  - 2.8.5. Specific Complications
- 2.9. Complications of Neuroaxial Blocks
  - 2.9.1. Low Back Pain/Dorsalgia
  - 2.9.2. Hypotension
  - 2.9.3. Accidental Dural Puncture and Post-Dural Puncture Headache
  - 2.9.4. Hemorrhagic Puncture, Intravascular Injection, and Local Anesthetic Toxicity
  - 2.9.5. Subarachnoid Injection
  - 2.9.6. Intraosseous Injection
  - 2.9.7. High Spinal Block and Total Spinal Block
  - 2.9.8. Failed Block
  - 2.9.9. Neurological Injury
  - 2.9.10. Urinary Retention
  - 2.9.11. Pneumocephalus
  - 2.9.12. Pneumothorax
  - 2.9.13. Venous Air Embolism
  - 2.9.14. Spinal Hematoma
  - 2.9.15. Infectious Complications: Spinal Abscess, Arachnoiditis, and Meningitis
  - 2.9.16. Complications Due to Drug Effects
- 2.10. Ultrasound in Neuroaxial Blocks
  - 2.10.1. General Principles and Limitations
  - 2.10.2. Ultrasound-Guided Spinal Block
  - 2.10.3. Ultrasound-Guided Epidural Block
  - 2.10.4. Ultrasound-Guided Caudal Block
  - 2.10.5. Ultrasound-Guided Paravertebral Block

# Module 3. Upper Limbs

- 3.1. Anatomy of the Brachial Plexus
  - 3.1.1. Anatomy
  - 3.1.2. Nerve Territory and Exploration
  - 3.1.3. Cutaneous and Motor Distribution of the Brachial Plexus Nerves
- 3.2. Superficial and Deep Cervical Block
  - 3.2.1. Anatomy
  - 3.2.2. Indications
  - 3.2.3. Contraindications
  - 3.2.4. Anatomical Landmarks, Position, and Puncture Site
  - 3.2.5. Materials
  - 3.2.6. Response to Neurostimulation
  - 3.2.7. Ultrasound-Guided Block
  - 3.2.8. Complications
- 3.3. Interscalene Block
  - 3.3.1. Anatomy
  - 3.3.2. Indications
  - 3 3 3 Contraindications
  - 3.3.4. Anatomical Landmarks, Position, and Puncture Site
  - 3.3.5. Materials
  - 3.3.6. Response to Neurostimulation
  - 3.3.7. Ultrasound-Guided Block
  - 3.3.8. Complications
- 3.4. Supraclavicular Block
  - 3.4.1. Anatomy
  - 3.4.2. Indications
  - 3.4.3. Contraindications
  - 3.4.4. Anatomical Landmarks, Position, and Puncture Site
  - 3.4.5. Materials
  - 3.4.6. Response to Neurostimulation
  - 3.4.7. Ultrasound-Guided Block
  - 3.4.8. Complications

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- 3.5.1. Anatomy
- 3.5.2. Indications
- 3.5.3. Contraindications
- 3.5.4. Anatomical Landmarks, Position, and Puncture Site
- 3.5.5. Materials
- 3.5.6. Response to Neurostimulation
- 3.5.7. Ultrasound-Guided Block
- 3.5.8. Complications

### 3.6. Axillary Block

- 3.6.1. Anatomy
- 3.6.2. Indications
- 3.6.3. Contraindications
- 3.6.4. Anatomical Landmarks, Position, and Puncture Site
- 3.6.5. Materials
- 3.6.6. Response to Neurostimulation
- 3.6.7. Ultrasound-Guided Block
- 3.6.8. Complications

# 3.7. Humeral Canal Blocks (Mid-Humeral Block)

- 3.7.1. Anatomy
- 3.7.2. Indications
- 3.7.3. Contraindications
- 3.7.4. Anatomical Landmarks, Position, and Puncture Site
- 3.7.5. Materials
- 3.7.6. Response to Neurostimulation
- 3.7.7. Ultrasound-Guided Block
- 3.7.8. Complications





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- 3.8.1. Shoulder-Level Blocks
  - 3.8.1.1. Supraclavicular Nerve Block
  - 3.8.1.2. Suprascapular Nerve Block
  - 3.8.1.3. Lateral Antebrachial Cutaneous Nerve Block
  - 3.8.1.4. Medial Antebrachial Cutaneous Nerve Block
- 3.8.2. Isolated Elbow-Level Blocks
  - 3.8.2.1. Median Nerve Block
  - 3.8.2.2. Radial Nerve Block
  - 3.8.2.3. Ulnar Nerve Block
- 3.8.3. Isolated Wrist and Hand-Level Blocks
  - 3.8.3.1. Median Nerve Block
  - 3.8.3.2. Radial Nerve Block
  - 3.8.3.3. Ulnar Nerve Block
  - 3.8.3.4. Digital Blocks
- 3.9. Intravenous Regional Anesthesia for the Upper Limbs
  - 3.9.1. Indications
  - 3.9.2. Contraindications
  - 3.9.3. Materials
  - 3.9.4. Methodology
- 3.10. Infiltrations in the Upper Limbs
  - 3.10.1. General Considerations
  - 3.10.2. Indications
  - 3.10.3. Contraindications
  - 3.10.4. Materials and Drugs
  - 3.10.5. Methodology
  - 3.10.6. Adverse Effects
  - 3.10.7. Shoulder-Level Infiltrations
  - 3.10.8. Elbow-Level Infiltrations
  - 3.10.9. Hand-Level Infiltrations

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# Module 4. Lower Limbs

- 4.1. Anatomy of the Lumbar Plexus
  - 4.1.1. Anatomy
  - 4.1.2. Nerve Territory and Exploration
  - 4.1.3. Cutaneous and Motor Distribution of the Lumbar Plexus Nerves
- 4.2. Anatomy of the Sacral Plexus
  - 4.2.1. Anatomy
  - 4.2.2. Nerve Territory and Exploration
  - 4.2.3. Cutaneous and Motor Distribution of the Sacral Plexus Nerves
- 4.3. Lumbar Block via the Posterior Approach
  - 4.3.1. Anatomy
  - 4.3.2. Indications
  - 4.3.3. Contraindications
  - 4.3.4. Materials
  - 4.3.5. Anatomical Landmarks, Position, and Puncture Site
  - 4.3.6. Response to Neurostimulation
  - 4.3.7. Ultrasound-Guided Block
  - 4.3.8. Complications
- 4.4. Femoral Block
  - 4.4.1. Anatomy
  - 4.4.2. Indications
  - 4.4.3. Contraindications
  - 4.4.4. Anatomical Landmarks, Position, and Puncture Site
  - 4.4.5. Materials
  - 4.4.6. Response to Neurostimulation
  - 4.4.7. Ultrasound-Guided Block
  - 4.4.8. Complications

- 4.5. Obturator and Femoral Cutaneous Nerve Blocks
  - 4.5.1. Obturation Nerve Block
    - 4.5.1.1. Anatomy
    - 4.5.1.2. Indications
    - 4.5.1.3. Contraindications
    - 4.5.1.4. Anatomical Landmarks, Position, and Puncture Site
    - 4.5.1.5. Materials
    - 4.5.1.6. Response to Neurostimulation
    - 4.5.1.7. Ultrasound-Guided Block
    - 4.5.1.8. Complications
  - 4.5.2. Femoral Cutaneous or Lateral Femoral Cutaneous Nerve Block
    - 4.5.2.1. Anatomy
    - 4.5.2.2. Indications
    - 4.5.2.3. Contraindications
    - 4.5.2.4. Anatomical Landmarks, Position, and Puncture Site
    - 4.5.2.5. Materials
    - 4.5.2.6. Response to Neurostimulation
    - 4.5.2.7. Ultrasound-Guided Block
    - 4.5.2.8. Complications
- 4.6. Interfascial Blocks for Hip Surgery
  - 4.6.1. Introduction
  - 4.6.2. PENG or Pericapsular Nerve Group Block
  - 4.6.3. Iliac Fascia Block
    - 4.6.3.1. Suprainguinal
    - 4.6.3.2. Infrainguinal
  - 4.6.4. Benefits of Peripheral Nerve Blocks for Hip

- 4.7. Saphenous Nerve Block and Intraarticular Block for Knee Surgery
  - 4.7.1. Introduction
  - 4.7.2. Saphenous Nerve Block
    - 4.7.2.1. Saphenous Nerve Block in the Adductor Canal
    - 4.7.2.2. Other Block Sites
  - 4.7.3. Intra-articular Knee Block
- 4.8. Sciatic Block
  - 4.8.1. Gluteal Sciatic Block
    - 4.8.1.1. Anatomy
    - 4.8.1.2. Indications
    - 4.8.1.3. Contraindications
    - 4.8.1.4. Anatomical Landmarks, Position, and Puncture Site
    - 4.8.1.5. Materials
    - 4.8.1.6. Response to Neurostimulation
    - 4.8.1.7. Ultrasound-Guided Block
    - 4.8.1.8. Complications
  - 4.8.2. Subgluteal Sciatic Block
    - 4.8.2.1. Anatomy
    - 4.8.2.2. Indications
    - 4.8.2.3. Contraindications
    - 4.8.2.4. Anatomical Landmarks, Position, and Puncture Site
    - 4.8.2.5. Materials
    - 4.8.2.6. Response to Neurostimulation
    - 4.8.2.7. Ultrasound-Guided Block
    - 4.8.2.8. Complications

- 4.9. Sciatic Nerve Block at the Popliteal Level
  - 4.9.1. Anatomy
  - 4.9.2. Indications
  - 4.9.3. Contraindications
  - 4.9.4. Anatomical Landmarks, Position, and Puncture Site
  - 4.9.5. Materials
  - 4.9.6. Response to Neurostimulation
  - 4.9.7. Ultrasound-Guided Block
  - 4.9.8. Complications
- 4.10. Terminal Nerve Blocks of the Sciatic Nerve
  - 4.10.1. Posterior Tibial Nerve
  - 4.10.2. Sural Nerve
  - 4.10.3. Common Peroneal Nerve
  - 4.10.4. Deep Peroneal Nerve
  - 4.10.5. Superficial Peroneal Nerve

# Module 5. Thoraco-Abdominal Interfascial Blocks

- 5.1. Interfascial Blocks
  - 5.1.1. What is an Interfascial Block?
  - 5.1.2. History and Evolution
  - 5.1.3. Advantages and Disadvantages
- 5.2. Anatomy of the Thoracic Wall
  - 5.2.1. Musculoskeletal Component
  - 5.2.2. Nervous Component
  - 5.2.3. Cutaneous Innervation

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5.4.2.7. Complications

### Other Thoracic Wall Blocks 5.3. Intercostal Blocks 5.3.1. Block of the Anterior Cutaneous Branches of the Intercostal Nerves (BCRA) or 5.5.1. Erector Spinae Block Pecto-Intercostal Block 5.5.1.1. Introduction 5.3.1.1. Introduction 5.5.1.2. Indications and Contraindications 5.3.1.2. Indications and Contraindications 5.5.1.3. Position and Patient Preparation 5.3.1.3. Position and Patient Preparation 5.5.1.4. Materials 5.3.1.4. Materials 5.5.1.5. Anatomical Image vs. Ultrasound Image 5.3.1.5. Anatomical Image vs. Ultrasound Image 5.5.1.6. Block Under Ultrasound Guidance 5.3.1.6. Block Under Ultrasound Guidance 5.5.1.7. Complications 5.3.1.7. Complications 532 BRII MA 5.5.2. Serratus Plane Block 5.5.2.1. Introduction 5.3.2.1. Introduction 5.3.2.2. Indications and Contraindications 5.5.2.2. Indications and Contraindications 5.3.2.3. Position and Patient Preparation 5.5.2.3. Position and Patient Preparation 5.3.2.4. Materials 5.5.2.4. Materials 5.3.2.5. Anatomical Image vs. Ultrasound Image 5.5.2.5. Anatomical Image vs. Ultrasound Image 5.3.2.6. Block Under Ultrasound Guidance 5.5.2.6. Block Under Ultrasound Guidance 5.3.2.7. Complications 5.5.2.7. Complications 5328 Modified BRII MA Anatomy of the Abdominal Wall 5.4 Pectoral Blocks 5.6.1. Musculoskeletal Component 5.4.1. PEC I 5.6.2. Nervous Component 5 4 1 1 Introduction Cutaneous innervation 5.4.1.2. Indications and Contraindications Transversus Abdominis Plane block (TAP Block 5.4.1.3. Position and Patient Preparation 5.4.1.4. Materials 5.7.1. Introduction 5.4.1.5. Anatomical Image vs. Ultrasound Image 572 Indications and Contraindications 5.4.1.6. Block Under Ultrasound Guidance 5.7.3. Position and Patient Preparation 5.4.1.7. Complications 5.7.4. Materials 5.4.2. PEC II Anatomical Image vs. Ultrasound Image 5.4.2.1 Introduction Block Under Ultrasound Guidance 5.7.6. 5.4.2.2. Indications and Contraindications 5.7.7. Complications 5.4.2.3. Position and Patient Preparation Variants of TAP block 5.7.8. 5.4.2.4. Materials 5.7.8.1. Subcostal TAP 5.4.2.5. Anatomical Image vs. Ultrasound Image 5.7.8.2. Posterior TAP 5.4.2.6. Block Under Ultrasound Guidance

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	5.8.1.	Introduction					
	5.8.2.	Indications and Contraindications					
	5.8.3.	Position and Patient Preparation					
	5.8.4.	Materials					
	5.8.5.	Anatomical Image vs. Ultrasound Image					
	5.8.6.	Block Under Ultrasound Guidance					
	5.8.7.	Complications					
5.9.	Other a	Other abdominal wall blocks					
	5.9.1.	Locking of the Rectus Sheath					
		5.9.1.1. Introduction					
		5.9.1.2. Indications and Contraindications					
		5.9.1.3. Position and Patient Preparation					
		5.9.1.4. Materials					
		5.9.1.5. Anatomical Image vs. Ultrasound Image					
		5.9.1.6. Block Under Ultrasound Guidance					
		5.9.1.7. Complications					
	5.9.2.	Semilunar block					
		5.9.2.1. Introduction					
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		5.9.2.4. Materials					
		5.9.2.5. Anatomical Image vs. Ultrasound Image					
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		5.9.2.7. Complications					
	5.9.3.	Lumbar Square Block					
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		5.9.3.2. Indications and Contraindications					
		5.9.3.3. Position and Patient Preparation					
		5.9.3.4. Materials					
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		5.9.3.6. Block Under Ultrasound Guidance					
		5.9.3.7. Complications					

- 5.10. Incisional analgesia
  - 5.10.1. Infiltration of local anesthetic in surgical wound
  - 5.10.2. Continuous Analgesia Delivery Systems. Incisional Catheters
  - 5.10.3. Infusion Rates
  - 5.10.4. Efficacy and Safety

### Module 6. Head and Neck

- 6.1. Regional Anesthesia for Oral and Maxillofacial Surgery
  - 6.1.1. Introduction
  - 6.1.2. Anatomy of the Trigeminal Nerve
  - 6.1.3. Equipment for Maxillary and Mandibular Regional Anesthesia
- 6.2. Facial Nerve Blocks
  - 6.2.1. Superficial Trigeminal Block
    - 6.2.1.1. Frontal Nerve Block
    - 6.2.1.2. Infraorbital Nerve Block
    - 6.2.1.3. Mental Nerve Block
    - 6.2.1.4. Ultrasound-Guided Technique
  - 6.2.2. Jaw Nerve Block
  - 6.2.3. Maxillary Nerve Block
  - 6.2.4. Regional Nerve Block of the Nose
- 6.3. Maxillary Regional Anesthesia
  - 6.3.1. Supraperiosteal Infiltration
  - 6.3.2. Periodontal Intraligamentary Infiltration
  - 6.3.3. Superior Alveolar Nerve Block
    - 6.3.3.1. Posterior Superior Alveolar Nerve
    - 6.3.3.2. Middle Superior Alveolar Nerve
    - 6.3.3.3. Anterior Superior Alveolar or Infraorbital Nerve
  - 6.3.4. Greater Palatine Nerve Block
  - 6.3.5. Nasopalatine Nerve Block
  - 6.3.6. Maxillary Nerve Block

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- 6.4. Mandibular Regional Anesthesia
  - 6.4.1. Inferior Alveolar Nerve Block
  - 6.4.2. Buccal Nerve Block
  - 6.4.3. Mandibular Nerve Block
  - 6.4.4. Mental Nerve Block
  - 6.4.5. Incisive Nerve Block
- 6.5. Regional Blocks of the External Ear
  - 6.5.1. Anatomy
  - 6.5.2. Indications
  - 6.5.3. Classic Block Technique
  - 6.5.4. Complications
- 6.6. Nerve Blocks of the Head
  - 6.6.1. Greater Occipital Nerve Block
  - 6.6.2. Scalp Block
  - 6.6.3. Anesthesia for Awake Craniotomy
- 6.7. Anesthesia for Ophthalmic Surgery
  - 6.7.1. Anatomy and Innervation of the Orbit
  - 6.7.2. Surgical Considerations
  - 6.7.3. Perioperative Management
- 6.8. Anesthetic Techniques for Ophthalmic Surgery
  - 6.8.1. Local Anesthesia
  - 6.8.2. Subtenon or Episcleral Block
  - 6.8.3. Subconjunctival Anesthesia
  - 6.8.4. Oculoplastic Nerve Blocks
  - 6.8.5. Retrobulbar Anesthesia
  - 6.8.6. Peribulbar Anesthesia
  - 5.8.7. Complications
- 6.9. Superficial Cervical Plexus Block
  - 6.9.1. General Considerations
  - 6.9.2. Anatomy
  - 6.9.3. Ultrasound-Guided Block
  - 6.9.4. Nerve Stimulation Technique
  - 6.9.5. Anesthesia for Carotid Endarterectomy

- 6.10. Regional Anesthesia for Airway Management
  - 6.10.1. Introduction
  - 6.10.2. Airway Innervation
  - 6.10.3. Local Anesthesia
  - 6.10.4. Regional Anesthesia
    - 6.10.4.1. Superior Laryngeal Nerve Block
    - 6.10.4.2. Glossopharyngeal Nerve Block
    - 6.10.4.3. Recurrent Laryngeal Nerve Block
    - 6.10.4.4. Transtracheal Block
  - 6.10.5. Sedation for Awake Intubation

# Module 7. Major Outpatient Surgery

- 7.1. Major Outpatient Surgery
  - 7.1.1. What is Major Outpatient Surgery?
  - 7.1.2. History
- 7.2. Current Situation of Major Outpatient Surgery
  - 7.2.1. Implementation Challenges
  - 7.2.2. Cost-Effectiveness Approach
  - 7.2.3. Achievements of Major Outpatient Surgery
- 7.3. Major Outpatient Surgery Circuit
  - 7.3.1. Types of Units
  - 7.3.2. Structure and Organization
- 7.4. Selection Criteria
  - 7.4.1. What Surgical Procedures Can Be Performed?
  - 7.4.2. Which Patients Do We Select?
- 7.5. Role of the Preanesthesia Consultation
  - 7.5.1. Preanesthesia Consultation
  - 7.5.2. Patient Preparation
- 7.6. Anesthetic Technique Selection
  - 7.6.1. What Anesthetic Technique Do We Use?
  - 7.6.2. Opioids in Major Outpatient Surgery
- 7.7. Pain Management in Major Outpatient Surgery
  - 7.7.1. Analgesic Techniques
  - 7.7.2. Multimodal Analgesia

- 7.8. Complications in Major Outpatient Surgery
  - 7.8.1. Nausea and Vomiting
  - 7.8.2. Pain
  - 7.8.3. Urinary Retention
  - 7.8.4. Other Complications
- 7.9. Discharge from the Major Outpatient Surgery Unit
  - 7.9.1. Discharge Criteria at Home
  - 7.9.2. Hospital Admission Criteria
- 7.10. Morbidity, Mortality, Safety, and Quality in Major Outpatient Surgery
  - 7.10.1. Morbidity and Mortality Data
  - 7.10.2. Safety
  - 7.10.3. Healthcare Quality Indicators

### Module 8. Critical Care and Regional Anesthesia

- 8.1. Peculiarities of Critical Patients
  - 8.1.1. Pathophysiology of Critical Patients
  - 8.1.2. Special Considerations for the Locoregional Techniques
- 8.2. Pain Assessment in the Critical Patients
  - 8.2.1. Introduction
  - 8.2.2. Pain Assessment in Conscious and/or Communicative Patients
  - 8.2.3. Pain Assessment in Unconscious and/or Non-Communicative Patients
- 8.3. Pain Control in Critical Care Units
  - 8.3.1. Source of Pain
  - 8.3.2. Impact of Pain on the Critical Patient
  - 8.3.3. Therapeutic Options for Pain
- 8.4. Locoregional Technique in Critical Care Units
  - 8.4.1. Upper Limb Blocks
  - 8.4.2. Lower Limb Blocks
  - 8.4.3. Central Blocks
  - 8.4.4. Thoraco-Abdominal Wall Blocks

- 3.5. The Polytraumatized Patient
  - 8.5.1. Etiopathogenesis
  - 8.5.2. Characteristics of the Polytraumatized Patient
  - 8.5.3. Locoregional Techniques in the Polytraumatized Patient
- 8.6. Amputee Patient and Phantom Limb
  - 8.6.1. Amputee Patient. Incidence and Characteristics
  - 8.6.2. Phantom Limb. Incidence and Characteristics
  - 8.6.3. Prevention and Management of Phantom Limb
- 8.7. Burn Patient
  - 8.7.1. Etiopathogenesis
  - 8.7.2. Characteristics of the Burn Patient
  - 8.7.3. Locoregional Techniques in the Burn Patient
- 8.8. Regional Anesthesia and Microvascularized Flap
  - 8.8.1. The Flap
  - 8.8.2. Physiological Considerations
  - 8.8.3. Anesthetic Approach
- 8.9. Ultrasound in Critical Care Units
  - 8.9.1. Usefulness of Ultrasound in Critical Care Units
  - 8.9.2. Ultrasound-Guided Techniques in Critical Care Units
- 8.10. Central Venous Access
  - 8.10.1. Internal Jugular Vein Cannulation
  - 8.10.2. Subclavian Vein Cannulation
  - 8.10.3. Femoral Vein Cannulation
  - 8.10.4. Central Access via Peripheral Approach
  - 8.10.5. Other Techniques

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### Module 9. Locoregional Anesthesia and Pain Management

- 9.1. Pathophysiological Foundations of Pain. Types of Pain
  - 9.1.1. Neuroanatomy Lesson
  - 9.1.2. Somatic Nociceptive Pain Lesson
  - 9.1.3. Visceral Nociceptive Pain Lesson
  - 9.1.4. Neuropathic Pain Lesson
  - 9.1.5. From Acute Pain to Chronic Pain: Peripheral and Central Sensitization Lesson
- 9.2. Locoregional Anesthesia in the Management of Postoperative Acute Pain
  - 9.2.1. Regional Analgesia as a Key Component of Multimodal Acute Postoperative Pain Management
  - 9.2.2. Regional Analgesia in Shoulder and Upper Limb Surgery
  - 9.2.3. Regional Analgesia in Hip Surgery
  - 9.2.4. Regional Analgesia in Knee Surgery
  - 9.2.5. Regional Analgesia in Foot Surgery
  - 9.2.6. Regional Analgesia in Thoracotomy
  - 9.2.7. Regional Analgesia in Breast Surgery
  - 9.2.8. Regional Analgesia in Laparotomy
  - 9.2.9. Regional Analgesia in Laparoscopy
- 9.3. Locoregional Anesthesia in the Management of Neuropathic Pain (NP)
  - 9.3.1. Diagnostic Blocks in the Management of NP
  - 9.3.2. Pulsed Radiofrequency in the Management of NP in Upper Limbs
  - 9.3.3. Pulsed Radiofreguency in the Management of NP in the Thorax
  - 9.3.4. Pulsed Radiofreguency in the Management of NP in the Abdomen
  - 9.3.5. Pulsed Radiofrequency in the Management of NP in the Lumbar Region
  - 9.3.6. Pulsed Radiofreguency in the Management of NP in Lower Limbs
- 9.4. Locoregional Anesthesia in the Management of Oncological Pain and Palliative Care
  - 9.4.1. Invasive Techniques as a Complement to Pain Management in Palliative Care: General Considerations and Differences in These Patients. Neurolysis Neurolysis
  - 9.4.2. Stellate Ganglion Block for Pain from Neck and Upper Extremity Cancer
  - 9.4.3. Celiac Plexus Block for Pain from Supramesocolic Cancer
  - 9.4.4. Superior and Inferior Hypogastric Plexus Block and Ganglion Impar Block in Pelvic Oncological Pain
  - 9.4.5. Peripheral and Plexus Nerve Blocks in Oncological Patients
  - 9.4.6. Long-Term Epidural Catheter for Oncological Patients
  - 9.4.7. Intrathecal Pumps for Oncological Pain Management
- 9.5. Locoregional Anesthesia in the Treatment of Low Back Pain

- 9.5.1. Block and Radiofrequency in Lumbar Facet Syndrome
- 9.5.2. Regional Approach to Discogenic Pain
- 9.5.3. Pain from Lumbosacral Radiculopathy
- 9.5.4. Lumbar Epidural Steroids
- 9.5.5. Radiofreguency in Lumbosacral GRD
- 9.5.6. Lumbar Myofascial Syndrome
- 9.5.7. Botulinum Toxin Injection and Block in the Piriformis Muscle
- 9.5.8. Botulinum Toxin Injection and Block in the Psoas and Quadratus Lumborum Muscles
- 9.5.9. Pain from Sacroiliac Joint Dysfunction: Diagnostic Block and Radiofrequency
- 9.5.10. Epiduralysis and Epiduroscopy
- 9.6. Regional Anesthesia and Craniofacial Pain. Cervicalgia
  - 9.6.1. Trigeminal Neuralgia. Block and Radiofrequency of the Gasserian Ganglion
  - 9.6.2. Other Orofacial Pain: Block and Radiofreguency of the Sphenopalatine Ganglion
  - 9.6.3. Cervicogenic Headache: Block and Radiofrequency of the TON and GON
  - 9.6.4. Cervicalgia from Facet Pathology: Diagnostic Block and Radiofrequency in Cervical Facet Syndrome
  - 9.6.5. Cervical Discogenic Pain: Cervical Epidural Steroids
  - 9.6.6. Upper Limb Radiculopathy: Epidural, Radicular Blocks, and Radiofrequency in Cervical Root GRD
- 9.7. Regional Anesthesia, Visceral Pain, and CRPS (Complex Regional Pain Syndrome)
  - 9.7.1. Regional Anesthesia in Acute and Chronic Pancreatitis
  - 9.7.2. Regional Anesthesia in Acute and Chronic Renal Lithiasis
  - 9.7.3. Regional Anesthesia in Chronic Non-Oncological Pelvic Pain
    - 9.7.3.1. Diagnostic and Therapeutic Block of the Superior Hypogastric Plexus
    - 9.7.3.2. Diagnostic and Therapeutic Block of the Ganglion Impar
    - 9.7.3.3. Block and Radiofrequency of the Pudendal Nerve
    - 9.7.3.4. Block and Radiofreguency of the Iliolingual and Iliohypogastric Nerves
  - 9.7.4. Complex Regional Pain Syndrome (CRPS)
    - 9.7.4.1. Pathophysiology of CRPS
    - 9.7.4.2. CRPS in Upper Limbs: Peripheral Techniques and Stellate Ganglion Block
    - 9.7.4.3. CRPS in Lower Limbs: Peripheral Techniques and Lumbar Sympathetic Block

- 9.8. Regional Anesthesia and Musculoskeletal Pain. Thorax and Major Joints
  - 9.8.1. Regional Anesthesia in Painful Shoulder. Intraarticular Block. Supraescapular Nerve Radiofreguency
  - 9.8.2. Regional Anesthesia in Hip Osteoarthritis. Intraarticular Block. Denervation Techniques
  - 9.8.3. Regional Anesthesia in Knee Osteoarthritis. Intraarticular Block. Denervation Techniques (Radiofrequency of Genicular Nerves)
  - 9.8.4. Regional Anesthesia in Myofascial Syndrome. Trigger Point Blocks. Intrafascial Blocks
  - 9.8.5. Regional Anesthesia in Discogenic Low Back Pain. Epidural Steroids
  - 9.8.6. Regional Anesthesia in Degenerative Back Pain. Diagnostic Block and Radiofrequency in Dorsal Facet Syndrome
- 9.9. Regional Anesthesia in the Fourth Step. Neurostimulation and Spinal Drug Infusion
  - 9.9.1. Pathophysiological Foundations of Neurostimulation and Spinal Drug Infusion
  - 9.9.2. Neurostimulation in Failed Back Surgery Syndrome (FBSS)
    - 9.9.2.1. Posterior Cord Stimulation
    - 9.9.2.2. GRD Stimulation
  - 9.9.3. Neurostimulation in Peripheral Neuropathies
  - 9.9.4. Neurostimulation of Posterior Cord in Angina and Visceral Pain
  - 9.9.5. Neurostimulation of Sacral Roots in Chronic Pelvic Pain
  - 9.9.6. Intra and Transcranial Stimulation
  - 9.9.7. Spinal Drug Infusion in Non-Oncological Pathologies
- 9.10. Regional Anesthesia in Labor Pain Relief (LPR)
  - 9.10.1. Pathophysiology of Pain in Labor Stages
  - 9.10.2. Regional Analgesia in LPR: Epidural Analgesia. Drug Administration Modalities in LPR
  - 9.10.3. LPR and Other Regional Analgesia Modalities: Combined Epidural-Intradural Analgesia (CIE). CIE without Intradural Drug
  - 9.10.4. Regional Anesthesia in Cesarean Section. Epidural Anesthesia. Intradural Anesthesia. Anesthesia CIE
  - 9.10.5. Special Situations in LPR and Regional Anesthesia
    - 9.10.5.1. LPR, Regional Anesthesia, and Obese Patients: Ultrasound Guidance. Ultrasound. Epidural-Caudal Approach
    - 9.10.5.2. DAP in Cesarean Section Without Epidural Catheter. Abdominal Wall Block
    - 9.10.5.3. Transvaginal/Transperineal Pudendal Nerve Block

# Module 10. Specific Situations in Regional Anesthesia

- 10.1. Regional Anesthesia in Patients with Pre-existing Neurological Disease
  - 10.1.1. Introduction
  - 10.1.2. Peripheral Nervous System Disorders
    - 10.1.2.1. Hereditary Peripheral Neuropathy
    - 10.1.2.2. Acquired Peripheral Neuropathy. Diabetic Polyneuropathy
    - 10.1.2.3. Chemotherapy-Induced Neuropathy
    - 10.1.2.4. Entrapment Neuropathy
    - 10.1.2.5. Inflammatory Neuropathy. Guillén-Barré Barré Syndrome
    - 10.1.2.6. Post-Surgical Inflammatory Neuropathy
  - 10.1.3. Central Nervous System Disorders
    - 10.1.3.1. Multiple Sclerosis
    - 10.1.3.2. Post-Polio Syndrome
    - 10.1.3.3. Amyotrophic Lateral Sclerosis
    - 10.1.3.4. Spinal Stenosis and Neural Disc Disease
    - 10.1.3.5. Spinal Cord Injury
- 10.2. Anti-Aggregation Therapy, Anticoagulation Therapy
  - 10.2.1. Introduction
  - 10.2.2. Minimum Hemostatic Values
  - 10.2.3. Anticoagulants, Antiplatelet Agents and Anesthesia
    - 10.2.3.1. Unfractionated Heparin
    - 10.2.3.2. Low Molecular Weight Heparin
    - 10.2.3.3. Fondaparinux
    - 10.2.3.4. Antivitamin K Drugs (Acenocoumarol, Warfarin)
    - 10.2.3.5. Platelet Aggregation Inhibitors
  - 10.2.4. Ophthalmological Procedures
    - 10.2.4.1. Surgeries in which Antithrombotic Treatment can Be Continued
    - 10.2.4.2. Surgeries in which Antithrombotic Treatment Should Be Discontinued and Bridging Therapy Considered
    - 10.2.4.3. How to Use Guides in Peripheral Nerve Blocks

# 10.3. Continuous Techniques for Postoperative Pain Control 10.3.1. Introduction 10.3.2. Drugs 10.3.2.1. Adjuvants 10.3.2.2. Continuous Perfusions Through Catheters 10.3.2.3. New Local Anesthetics 10.3.3. Material 10.3.3.1. Needle and Catheter 10.3.3.2. Infusion Pumps 10.3.4. Modes of Administration 10.3.4.1. Boluses 10.3.4.2. Continuous Administration 10.3.5. Techniques 10.3.5.1. Interscalene Block

10.3.5.2. Infraclavicular Block 10.3.5.3. Axillary Block

10.3.5.8. Distal Blocks

10.3.5.4. Posterior Lumbar Plexus Block

10 3 5 5 Anterior Lumbar Plexus Block

10.3.5.6. Proximal Sciatic Nerve Blocks

10.3.5.7. Proximal Sciatic Nerve Blocks

10.5.4. Obesity 10.5.5. Cancer

10.4. Regional Anesthesia and Pulmonary Disease 10.4.1. Introduction 10.4.2. Epidural and Spinal Anesthesia 10.4.3. Brachial Plexus Block 10.4.4. Paravertebral Blockade and Intercostal Nerves 10.4.5. Importance of Regional Anesthesia during the COVID-19 Pandemic 10.5. Regional Anesthesia and other Systemic Diseases 10.5.1. Renal Disease 10.5.1.1. Introduction 10.5.1.2. Effects on Renal Function 10.5.1.3. Considerations in Patients with Renal Pathology 10.5.2. Liver Diseases 10.5.2.1. Introduction 10.5.2.2. Effects on Hepatic Blood Flow 10.5.2.3. Hepatic Coagulopathy 10.5.3. Diabetes Mellitus 10.5.3.1. Introduction 10.5.3.2. Effects on Glucose Homeostasis 10.5.3.3. Peripheral Neuropathy in the Diabetic Patient

- 10.6. Regional Anesthesia in the Elderly
  - 10.6.1. Introduction and Definition of the Elderly
    - 10.6.1.1. Is Anesthetic Risk Increased in the Elderly?
    - 10.6.1.2. What is the Reason for this?
    - 10.6.1.3. How is this Organ Degradation Reflected at the Level of all Systems?
    - 10.6.1.4. Is the Metabolism of Anesthetic Drugs Altered in the Elderly Patient?
    - 10.6.1.5. What type of Interventions are Most Common in the Elderly?
    - 10.6.1.6. Is Regional Anesthesia Specially Indicated in these Patients?
  - 10.6.2. Physiologic Changes Associated with Aging and Considerations for Regional Anesthesia/Analgesia
    - 10.6.2.1. Nervous System Function
    - 10.6.2.2. Pulmonary Function
    - 10.6.2.3. Pharmacokinetic and Pharmacodynamic Changes in the Elderly
    - 10.6.2.4. Multimodal Pharmacotherapy and the Elderly
    - 10.6.2.5. Kidney
    - 10.6.2.6. Physiology and Perception of Pain in the Elderly
  - 10.6.3. Assessment of Pain in Elderly Patients with Cognitive Impairment
  - 10.6.4. Considerations for the Use of Regional and Neural Blockade
  - 10.6.5. Types of Regional Blocks in the Elderly
    - 10.6.5.1. Epidural Anesthesia and Analgesia
    - 10.6.5.2. Intrathecal Opioid Analgesia
    - 10.6.5.3. Peripheral Nerve and Nerve Plexus Blockage
- 10.7. Regional Anesthesia in Pediatrics

- 10.7.1. Introduction
  - 10.7.1.1. Why Regional Anesthesia in Pediatric Patients?
  - 10.7.1.2. Applications of Pediatric Regional Anesthesia
  - 10.7.1.3. Regional anesthesia: Awake or Asleep?
- 10.7.2. Peculiarities of Pediatric Regional Anesthesia
- 10.7.3. Neurostimulation
  - 10.7.3.1. Anatomical Differences Between Children and Adults
  - 10.7.3.2. Pharmacology of Local Anesthetics
  - 10.7.3.3. Dosage of Local Anesthetics
  - 10.7.3.4. Toxicity of Local Anesthetics
- 10.7.4. Types of Peripheral Blocks
  - 10.7.4.1. Upper Limb Blocks
  - 10.7.4.2. Lower Limb Blocks
  - 10.7.4.3. Penile Block
  - 10.7.4.4. Ilioinguinal/Iliohypogastric Block
  - 10.7.4.5. Rectus Sheath Block or Umbilical Blockade
  - 10.7.4.6. Caudal Block
- 10.7.5. Central Blocks
  - 10.7.5.1. Epidural Anesthesia
  - 10.7.5.2. Subarachnoid Anesthesia
- 10.7.6. Complications of Pediatric Regional Anesthesia
- 10.8. Allergy and Regional Anesthesia

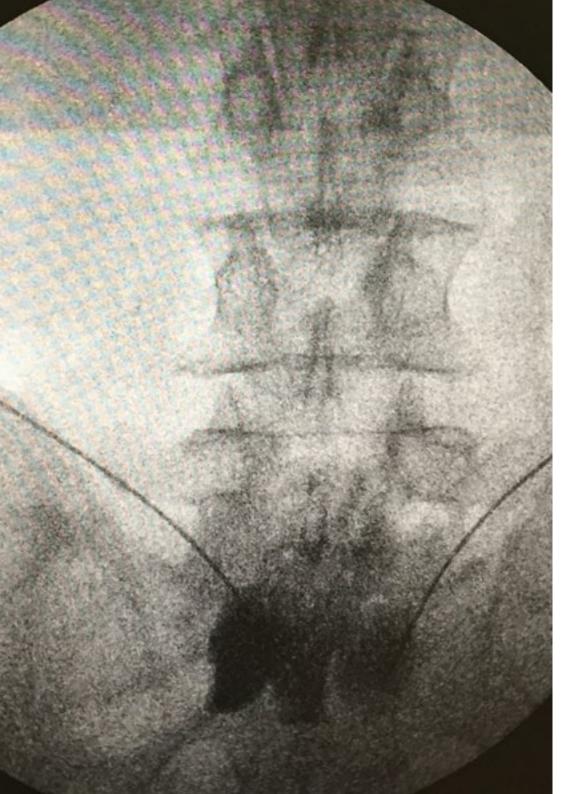
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10.8.1. Introduction 10.8.1.1. Type A Reactions 10.8.1.2. Type B Reactions 10.8.1.3. Type C Reactions 10.8.2. Epidemiology 10.8.3. Pathophysiology 10.8.3.1. Type I: Immediate Hypersensitivity or IgE Mediated Hypersensitivity. 10.8.3.2. Type II: Cytotoxic or IgG, IgM Mediated Reaction 10.8.3.3. Type III: Immunocomplex-Mediated Reaction 10.8.3.4. Type IV: Delayed Hypersensitivity or T-Cell Mediated reaction 10.8.4. Etiology 10.8.5. Signs and Symptoms 10.8.6. Diagnosis 10.8.7. Differential Diagnosis 10.8.7.1. Reddening Syndrome 10.8.7.2. Syndromes Associated with Substance Use 10.8.7.3. Increased Endogenous Histamine Production 10.8.7.4. Functional 10.8.7.5. Other 10.8.8. Treatment 10.9. Complications in Regional Anesthesia

10.9.1. Introduction 10.9.2. Complications following Neuroaxial Block Procedures 10.9.2.1. Post-Dural Puncture Headache 10.9.2.2. Complications due to Air Injection. Pneumoencephalon 10.9.2.3. Spinal Cord Compression 10.9.2.4. Neurological Damage. Neurotoxicity 10.9.2.5. Infectious Complications 10.9.2.6. latrogenic Spinal Tumors 10.9.2.7. Tattoos and Anesthetic Considerations 10.9.3. Complications after Peripheral Nerve Blocks 10.9.3.1. Introduction 10.9.3.2. Preventive Measures 10.9.3.3. Classification of Acute Nerve Injuries 10.9.4. Mechanisms Capable of Producing Complications During the Performance of Nerve Blocks 10.9.4.1. Mechanical Mechanism 10.9.4.2. Vascular Mechanism 10.9.4.3. Chemical Mechanism

10.9.4.4. Infectious Mechanism

10.9.4.5. Systemic Toxicity



# Syllabus | 31 tech

10.10. Regional Anesthesia and Patient Safety

10.10.1. Introduction

10.10.2. How Has Regional Anesthesia Evolved Over the Years?

10.10.3. Advantages and Disadvantages of Different Types of Regional Anesthesia

10.10.4. What Is ISO 80369-6 and How Does It Affect Regional Anesthesia?

10.10.5. Comparison Between Traditional Spinal Needles and Their New NRFIT Version

10.10.6. Checklist for Regional Anesthesia

10.10.7. SENSAR



Analyze the monitoring protocols and emergency management associated with anesthetic blocks, optimizing patient safety in the surgical environment"





# tech 34 | Teaching Objectives



# **General Objectives**

- Deepen the anatomical and physiological foundations of Locoregional Anesthesia
- Master the main techniques of peripheral and central nerve blocks, exploring their application in various medical specialties
- Incorporate ultrasound as an essential tool in the practice of Locoregional Anesthesia
- Apply advanced monitoring protocols and emergency management for anesthetic block complications, ensuring a swift and effective response to any intraoperative or postoperative contingency
- Integrate the latest technological innovations in the practice of Locoregional Anesthesia, including new devices, image-guided techniques, and advancements in local anesthetic formulations
- Develop analytical and decision-making skills in complex clinical scenarios, strengthening the professional's autonomy in selecting and applying the most appropriate anesthetic technique
- Foster continuous updates based on scientific evidence and sector trends, ensuring practice is aligned with the highest standards of quality and safety



Enhance the use of multimodal approaches in postoperative pain management, combining regional blocks with innovative strategies for more effective recover"





# Module 1. Regional Anesthesia

- Define the basic principles and anatomical foundations of Regional Anesthesia
- Identify the factors that influence the efficacy and safety of anesthetic blocks

### Module 2. Neuroaxial Blocks

- Explain the anatomy and physiology of the spinal cord and its associated structures
- Describe the indications and contraindications for epidural and spinal anesthesia
- Apply strategies to minimize complications and improve patient safety in neuroaxial blocks

# Module 3. Upper Limbs

- Deepen the understanding of the anatomy of the brachial and cervical plexuses in the context of Locoregional Anesthesia
- Identify the most effective techniques for upper extremity blocks based on the type of procedure
- Evaluate the utility of ultrasound in administering blocks for arm, elbow, and hand surgery
- Develop protocols for managing postoperative pain in orthopedic upper extremity procedures

### Module 4. Lower Limbs

- Describe the innervation of the lower extremity and its relevance to Locoregional Anesthesia
- Explain the indications and applications of blocks such as the femoral, sciatic, and popliteal blocks
- Analyze the advantages of using ultrasound for precision and safety in lower extremity blocks
- Evaluate the impact of Locoregional Anesthesia on functional recovery in knee and foot surgeries

### Module 5. Thoraco-Abdominal Interfascial Blocks

- Identify the anatomy of muscle and fascial planes in the thoraco-abdominal region
- Analyze the role of these blocks in postoperative pain management for abdominal and thoracic surgeries

### Module 6. Head and Neck

- Explain the neurovascular anatomy of the head and neck relevant to Regional Anesthesia
- Analyze the risks and complications associated with Locoregional Anesthesia in the cephalic region

# tech 36 | Teaching Objectives

### Module 7. Major Outpatient Surgery

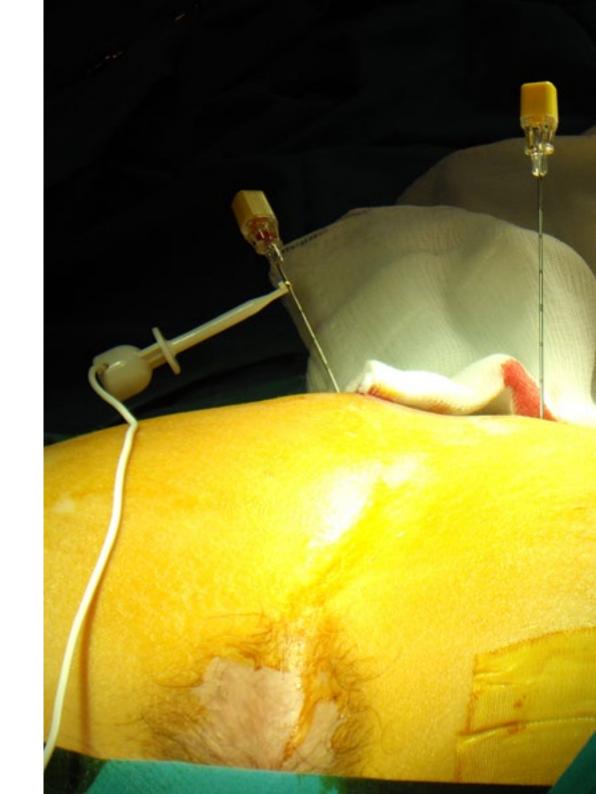
- Describe the role of Locoregional Anesthesia in optimizing outpatient procedures
- Analyze the most appropriate regional anesthesia techniques for outpatient surgery in various specialties
- Evaluate the reduction of complications and recovery times through the use of Locoregional Anesthesia
- Identify strategies for postoperative pain management in major outpatient surgery patients

## Module 8. Critical Care and Regional Anesthesia

- Analyze the interaction of local anesthetics with the hemodynamic and metabolic state of the critically ill patient
- Evaluate the use of regional blocks for pain management in intensive care units
- Describe safety and monitoring protocols for critically ill patients undergoing Locoregional Anesthesia

# Module 9. Locoregional Anesthesia and Pain Management

- Study the pathophysiology of pain and its management through Regional Anesthesia techniques
- Identify the most effective blocks for controlling chronic and acute pain in various clinical scenarios
- Analyze multidisciplinary approaches to pain management through anesthetic blocks



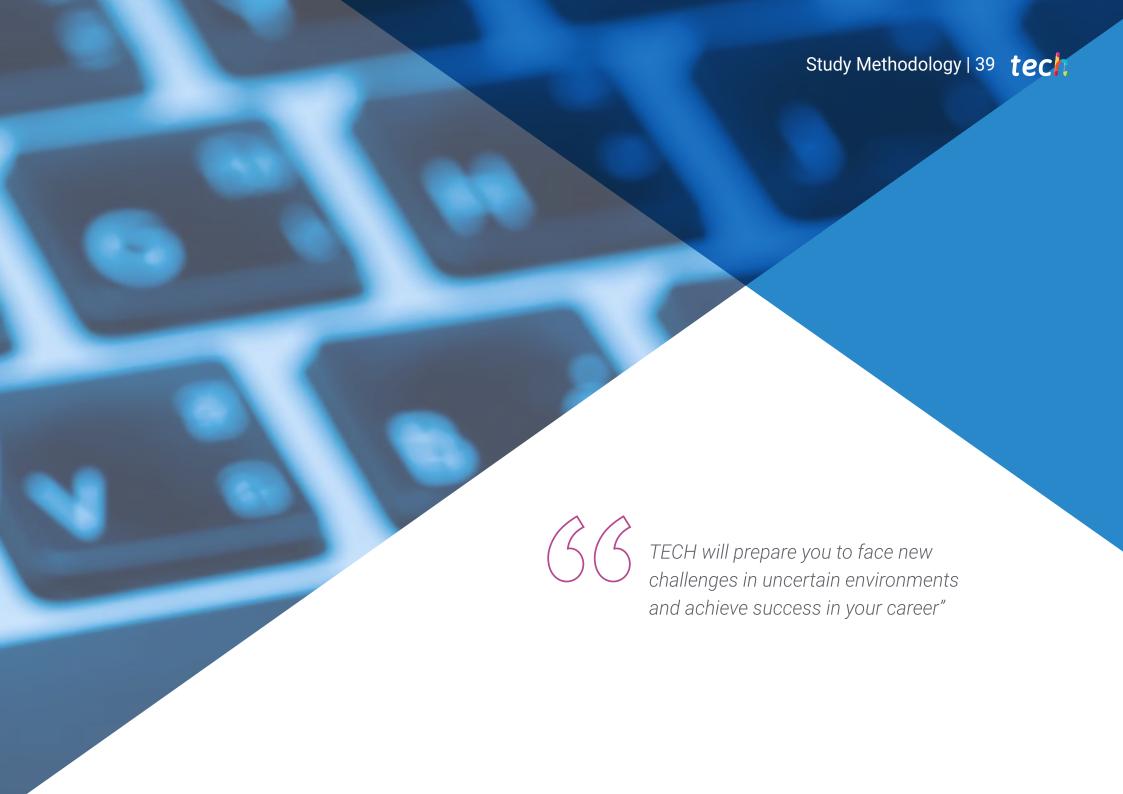


## Teaching Objectives | 37 tech

## Module 10. Specific Situations in Regional Anesthesia

- Describe the special considerations when applying Regional Anesthesia in vulnerable populations
- Analyze the adaptation of anesthetic techniques in cases such as pregnancy, pediatrics, and geriatrics
- Evaluate the use of Locoregional Anesthesia in emergency and trauma procedures



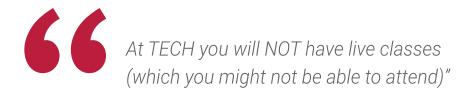


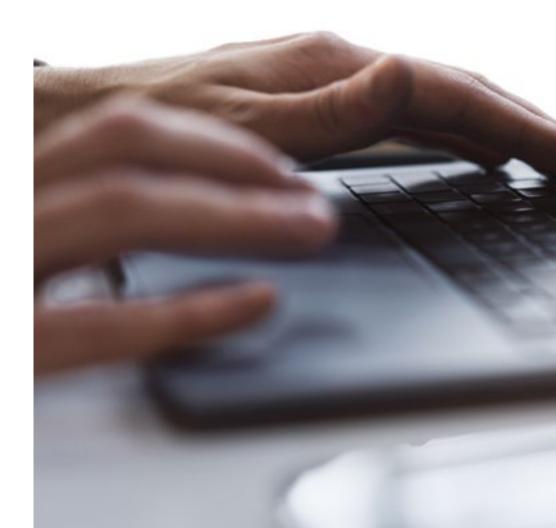
## The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.









### The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.



TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want"

## tech 42 | Study Methodology

#### Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



## Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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.



## tech 44 | Study Methodology

### A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"

### 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 assess 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.

## Study Methodology | 45 tech

## The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.

## tech 46 | Study Methodology

As such, the best educational materials, thoroughly prepared, will be available in this program:



#### **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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### **Practicing Skills and Abilities**

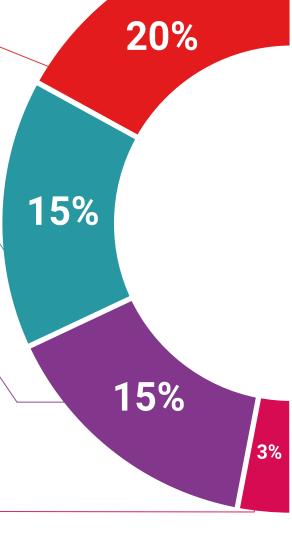
You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



#### **Interactive Summaries**

We present 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, international guides... In our virtual library you will have access to everything you need to complete your education.

## Study Methodology | 47 tech

Case Studies

Students will complete a selection of the best case studies in the field.

Cases that are presented, analyzed, and supervised by the best specialists in the world.



**Testing & Retesting** 



We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.





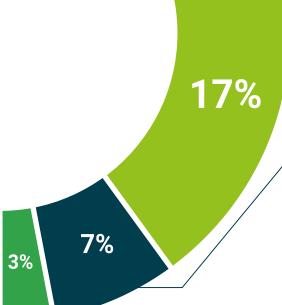
There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an expert strengthens knowledge and memory, and generates confidence for 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.







### Management



### Dr. Burgueño González, María Dolores

- Specialist in Anesthesiology and Resuscitation at the La Paz University Hospital, Madrid
- Anesthesia Coordinator of Cantoblanco Hospital
- Responsible for Surgical Patient Safety at Cantoblanco Hospital
- · Specialist Physician at the Virgen del Mar Hospital
- MIR in Anesthesiology, Resuscitation, and Pain Therapy at La Paz University Hospital, Madrid
- Master PROANES: Official Updating Program in Anesthesiology, Resuscitation and Pain Therapy by the Catholic University of Valencia.
- University Expert in Airway Management by the Catholic University of Valencia

### **Teachers**

### Canser Cuenca, Enrique

- Specialist in Anesthesiology and Resuscitation at the El Escorial Hospital, Madrid
- Specialist in Anesthesiology and Resuscitation at the La Paz University Hospital, Madrid
- Residency in the Anesthesiology and Resuscitation Service at the La Paz University Hospital, Madrid
- PhD in Neurosciences: Morphofunctional Organization of the Nervous System
- Master's Degree in Pathophysiology and Pain Management from the Autonomous University of Barcelona
- Master's Degree in Palliative Medicine and Supportive Care for Cancer Patients

### Dr. Martín Martín, Almudena

- Specialist in Anesthesiology and Resuscitation at the La Paz University Hospital, Madrid
- Clinical Teaching Collaborator at the La Paz University Hospital, Madrid
- MIR in Anesthesiology, Resuscitation, and Pain Therapy at the La Paz University Hospital, Madrid
- Master's Degree in Patient Management

### Dr. Salgado Aranda, Patricia

- Specialist in Anesthesiology and Resuscitation at the La Paz University Hospital, Madrid
- Teaching and Research Experience
- Clinical Teaching Collaborator at the La Paz University Hospital, Madrid
- Doctor from the Autonomous University of Madrid
- Degree in Medicine from the University of Alcalá
- Master's Degree in Infectious Diseases in Intensive Care
- Member of: Illustrious Official College of Physicians of Madrid

### Dr. Sancho De Ávila, Azahara

- Freelance Anesthesiologist at the La Zarzuela Hospital, Madrid
- Specialist in Anesthesiology and Resuscitation at the La Paz University Hospital, Madrid
- Freelance Anesthesiologist at Quirónsalud La Luz Hospital
- Freelance Anesthesiologist at Nuestra Señora del Rosario Hospital
- Doctor in Medicine and Surgery from the University of La Laguna.
- Specialist in Anesthesiology, Resuscitation and Pain Therapy by MIR examination at the University Hospital Nuestra Señora de la Candelaria.

### Dr. Vallejo Sanz, Irene

- Specialist in Anesthesiology and Resuscitation at the La Paz University Hospital, Madrid
- Collaborator in Clinical Simulation workshops
- MIR in Anesthesiology, Resuscitation and Pain Therapy
- European Diploma of Anaesthesiology and Intensive Care, EDAIC part I
- Member of: Illustrious Official College of Physicians of the Spanish Society of Anesthesiology and Pain Treatment (SEDAR)

### Dr. Rodríguez Roca, María Cristina

- Specialist in Anesthesiology and Resuscitation at La Paz University Hospital, Madrid
- Teaching and research experience in several university centers
- Doctor from the Autonomous University of Madrid
- European Postgraduate Certificate in Anesthesia and Critical Care (EDAIC)
- Member of the Spanish Society of Anesthesiology and Pain Treatment (SEDAR).
- Member of the working group of Chronic Pain of the Spanish Society of Anesthesiology and Resuscitation.

### Dr. Zurita Copoví, Sergio

- Specialist in Anesthesiology and Resuscitation at La Paz University Hospital, Madrid
- · Specialist Physician at the Virgen del Mar Hospital of Madrid
- Resident Tutor at the La Paz University Hospital, Madrid
- Clinical Teaching Collaborator at the Autonomous University of Madrid
- Master's Degree in Clinical Management, Medical and Health Care Management.
- Master in Patient Management
- European Postgraduate Certificate in Anesthesia and Critical Care
- Member of: Spanish Society of Anesthesiology and Pain Treatment (SEDAR)





## tech 54 | Certificate

This private qualification will allow you to obtain **Master's Degree in Locoregional Anesthesia** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics

This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

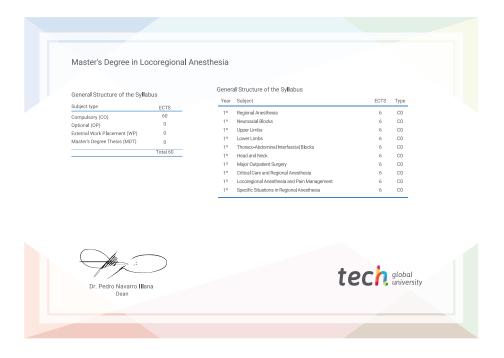
Title: Master's Degree in Locoregional Anesthesia

Modality: Online

Duration: 12 months.

Accreditation: 60 ECTS





<sup>\*</sup>Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

health confidence people
leducation information tutors
guarantee accreditation teaching
institutions technology learning
community commitment



# Master's Degree Locoregional Anesthesia

- » Modality: Online
- » Duration: 12 months.
- » Certificate: TECH Global University
- » Accreditation: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

