

# Hybrid Professional Master's Degree Spine Surgery

Endorsed by:





## Hybrid Professional Master's Degree Spine Surgery

Course Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

Website: [www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-spine-surgery](http://www.techtitute.com/us/medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-spine-surgery)

# Index

01

Introduction

---

*p. 4*

02

Why Study this Hybrid  
Professional Master's Degree?

---

*p. 8*

03

Objectives

---

*p. 12*

04

Skills

---

*p. 18*

05

Course Management

---

*p. 22*

06

Educational Plan

---

*p. 28*

07

Clinical Internship

---

*p. 40*

08

Where Can I Do the Clinical  
Internship?

---

*p. 46*

09

Methodology

---

*p. 52*

10

Certificate

---

*p. 60*



# 01

# Introduction

The specialization in Spine Surgery has acquired great relevance in recent years, favored by new advances in health technology, which have allowed a superior management of different pathologies for which it is necessary to perform a surgical intervention. For this reason, TECH proposes the completion of this very complete academic program in which the most updated theoretical content is perfectly combined with a practical stay in a reference hospital, for 3 weeks and next to versed professionals in the area. In this way, keeping up to date with advances in Spine Surgery will be much more effective.





“

*With this Hybrid Professional Master's Degree you will be updated on the latest advances in Spine Surgery alongside the best professionals in the field, both in theory and practice”*

Subspecialization within the medical-surgical specialties is becoming increasingly important, which is no less so in Spine Surgery, due to the wide range of lesions it covers. Hence the need for a complete and high quality scientific program to help and guide in this specific and exciting field, but, above all, with a practical training that allows to develop in real situations. As in any other profession, practical training is really important to acquire the knowledge studied, since the best way to specialize is to get to know the work in situ and in depth.

With this Hybrid Professional Master's Degree, physicians who wish to enhance their skills will have a complete vision of spinal pathologies and possible surgical interventions to improve the health of patients. To this end, they will have the opportunity to learn about advances in surgical practice that directly affect people's quality of life.

In addition, during the practical stay they will be able to learn both the classic and usual techniques used in specialized surgery centers, as well as the surgical techniques that are currently setting trends in the sector. This will allow the professional to be more confident and skilled in making decisions in their daily clinical practice.

TECH presents this innovative program that will allow you to be trained with the most updated theory of the moment, but also to work with a real patient and in a hospital setting with state-of-the-art resources, which will develop your maximum potential and growth in the surgical area. Thus, you will work with patients hand in hand with the best specialists, using the latest techniques based on scientific evidence, and achieving results previously difficult to achieve.

This **Hybrid Professional Master's Degree in Spine Surgery** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of more than 100 clinical cases presented by spine surgery professionals and experienced university professors
- ♦ 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
- ♦ Comprehensive systematized action plans for spine surgery patients
- ♦ Algorithm-based interactive learning system for decision-making in the situations that are presented to the student
- ♦ Practical clinical guides on approaching different pathologies
- ♦ Its special emphasis on evidence-based medicine and research methodologies in spine surgery
- ♦ All this will be complemented with theoretical lessons, questions to the expert, discussion forums on controversial issues and individual reflection work
- ♦ Availability of content from any fixed or portable device with an Internet connection
- ♦ In addition, you will be able to carry out a clinical internship in one of the best hospitals in the world



*Add to your online study the realization of a clinical internship in a hospital center that meets the highest standards of quality and technological level"*

“

*Take an intensive 3-week internship in a prestigious hospital center and acquire all the knowledge to grow personally and professionally”*

In this proposed Hybrid Professional Master's Degree, of a professionalizing nature and blended learning modality, the program is aimed at updating medical professionals who require a high level of qualification. The contents are based on the latest scientific evidence and oriented in a didactic way to integrate theoretical knowledge into medical practice, and the theoretical-practical elements will facilitate the updating of knowledge and will allow decision making in patient management.

Thanks to its multimedia content elaborated with the latest educational technology, they will allow the professional to obtain situated and contextual learning, that is, a simulated environment that will provide immersive learning programmed to train in real situations. The design of this program focuses on Problem Based Learning, through which the student will have to try to solve the different professional practice situations that will arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

*With the most specialized teaching staff, it will allow you to delve into the advances in Spine Surgery with the latest materials and equipment.*

*The most complete academic itinerary and the possibility of performing face-to-face internships are the perfect combination to catch up with the latest advances in Medicine.*





02

# Why Study this Hybrid Professional Master's Degree?

In order to keep up to date with the latest scientific findings in Medicine, in this case in Spine Surgery, TECH has developed this program that combines the most innovative and effective methodologies to assimilate new advances and findings in the specialty much more quickly. Thus, in 12 months the professional will delve into both the theory and practice of surgical approaches to the spine, advances in minimally invasive surgery, complications in spine surgery, among other relevant aspects. For this purpose, you will have at your disposal a complete syllabus of 10 modules with well-developed sections by the most expert teachers and the practical on-site training in a hospital center, to complete the update of the latest scientific and technological findings in the field.





Why Study this Hybrid Professional | 09  
Master's Degree?



“

*By enrolling in this Hybrid Professional Master's Degree you will be up to date with the latest advances in evaluation and follow-up tools in Spine Surgery”*

### 1. Updating from the latest technology available

In order to effectively perform surgical procedures in spine pathologies, it is essential to use the most sophisticated technological means and materials in accordance with ISO standards and with the necessary quality to be able to be implanted in humans. Thanks to the specialization offered by this program, the professional will be able to achieve this based on the latest technology available in a reference hospital center.

### 2. Gaining In-Depth Knowledge from the Experience of Top Specialists

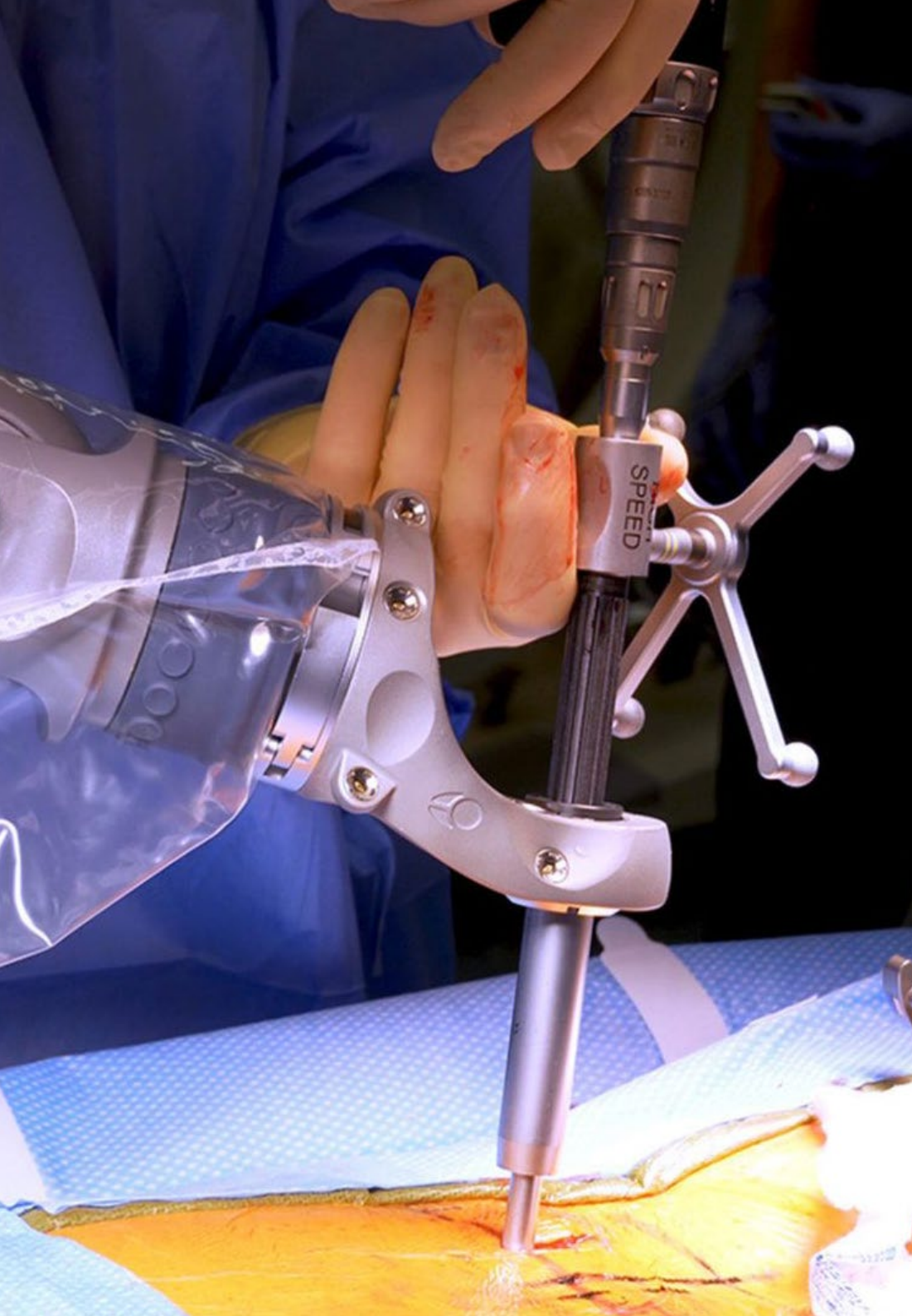
The medical professional will enter a modern clinical environment with the most experienced professionals to meet their expectations. In the same way, the content will be adjusted to the most recent findings of science regarding procedures in Spine Surgery, thanks to the valuable contribution of the teachers who have configured all the content. In addition, you will be accompanied by an assigned tutor and will be progressing towards the goal without complications.

### 3. Entering First-Class Clinical Environments

In order to offer a state-of-the-art academic space, TECH has carefully selected all the available centers with the latest technology for the treatment of patients with spine pathologies, located in different locations. Thanks to this, the specialist will have guaranteed access to a prestigious clinical environment and will be able to experience the day-to-day life of a modern and demanding work area.







## Why Study this Hybrid Professional | 11 tech Master's Degree?

### 4. Combining the Best Theory with State-of-the-Art Practice

This Hybrid Professional Master's Degree combines the most efficient methodologies to catch up with the latest scientific evidence. In a first phase the theoretical part is developed 100% online, with the contents configured and verified by great experts and a practical part in a prestigious hospital center that will allow you its facilities to enter a multidisciplinary team with extensive experience, for 3 weeks.

### 5. Expanding the Boundaries of Knowledge

Every medical professional understands the importance of keeping up to date with the most modern postulates in their area of specialization. Therefore, TECH gives you the opportunity to expand your knowledge frontiers and enhance your skills with this Hybrid Professional Master's Degree unique in today's educational market.

“

*You will have full hands-on immersion  
at the center of your choice”*

# 03 Objectives

The main purpose of this Hybrid Professional Master's Degree is based on the acquisition of the most advanced and innovative scientific knowledge in the area of Vertebral Surgery, from the hands of leading specialists. This will allow you to develop the skills that will turn your daily clinical practice into a bastion of the standards of the best available scientific evidence, with a critical, innovative, multidisciplinary and integrative sense.







“

*The best program on the current academic market to bring you up to date on advances in degenerative pathologies of the lumbar spine”*



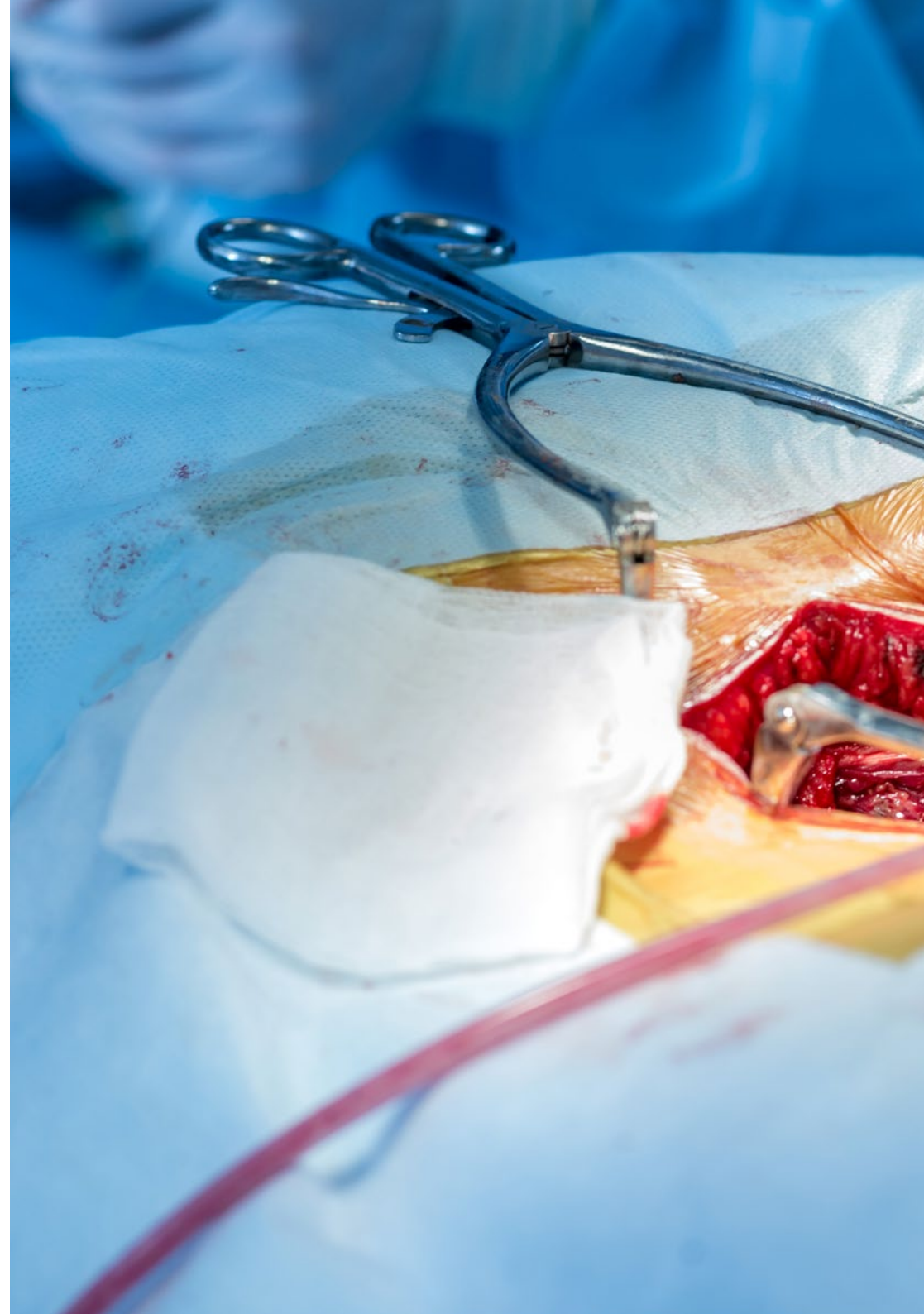
## General Objective

---

- This Hybrid Professional Master's Degree in Spine Surgery has been designed by TECH and its team of experts with the aim of establishing the latest biological, biomechanical, procedure indication and analysis criteria in spinal fusion. In addition, by completing the course, the graduate will guarantee the improvement of their professional skills in the clinical and comprehensive evaluation of the spine of their patients. All this 100% online



*Enhance your management of patients with spinal pathologies and achieve the upgrade you desire with the comfort and quality you deserve"*







## Specific Objectives

---

### Module 1. Surgical approaches to the Spine

- ♦ Gain knowledge about the anatomical areas of the cervical, thoracic, lumbar and sacral spine, as well as their surgical approaches
- ♦ Know the anatomy of the usual sites of access to the spine by Minimally Invasive Techniques

### Module 2. Cervical Spine Pathologies

- ♦ Describe the surgical steps of the surgical procedure
- ♦ Establish the surgical differences between box fusion and the use of prosthetic discs
- ♦ Know the tricks and risks of decompression of the spinal canal and foramina
- ♦ Identify tricks and risks in the installation of anterior plates
- ♦ Know the techniques of cervical total disc replacement, posterior to lumbar
- ♦ Know all about vertebral fractures, which in the cervical territory involve great danger to the patient's life, and are sometimes difficult to detect
- ♦ Differentiate Posterior Fixation Systems (screws to lateral masses and screws to C1 and C2 or posterior craniocervical fusions)

### Module 3. Herniated Discs, Diagnosis and Treatment of Radicular Pain. Emerging Technologies for the Treatment of Low Back Pain

- ♦ Explain the impact of spinal disorders and problems on each individual in particular and on society in general
- ♦ Assess the spine of patients in a correct and effective way, for a better understanding of the problems they suffer and to favor their better resolution
- ♦ Recognize those pathologies that represent a serious and urgent disease for the patient and may compromise his life or functionality

- ♦ Formulate appropriate action plans for early and simple management of these serious spinal problems in the emergency department based on sound treatment principles
- ♦ Demonstrate solid clinical judgment in the therapeutic management of these patients based on selected cases
- ♦ Discuss multidisciplinary approaches and the role of conservative treatment in patients with chronic low back pain
- ♦ Explain the role of Evidence-Based Medicine and the different registries and diagnostic tests
- ♦ Discuss the use of clinical outcome rating scales
- ♦ Explain the application and limitations of biomechanics of the lumbar spine in vitro and in finite element models
- ♦ Identify the advances in Molecular Medicine in the regeneration of the Intervertebral Disc

#### **Module 4. Degenerative Dorsolumbar Pathology Advances**

- ♦ Identify Lumbar Canal Stenosis and its clinical manifestations
- ♦ Identify key structures and assess risks related to local vascular and neurological anatomy
- ♦ Identify by fluoroscopy the targets for posterior and lateral approaches to the lumbar spine
- ♦ Perform a minimally invasive lateral approach to the L2-L3, L3-L4 and L4-L5 discs
- ♦ Address the disc using Neuro-monitoring and tubular system
- ♦ Know how and when to perform laminectomies and foraminotomies
- ♦ Identify entry points for insertion of the pedicle screw
- ♦ Prepare the pedicles for insertion of the lumbar pedicle screws
- ♦ Review the neural anatomy of the lumbar spine
- ♦ Convert the approach to a mini lumbotomy and access to the disc by resection of the psoas muscle
- ♦ Perform a facetectomy, prepare the intervertebral disc and vertebral plates
- ♦ Identificar el procedimiento de Discectomía e inserción de cajas Intersomáticas
- ♦ Recognize the advances in the design of new fixation and interbody implants

#### **Module 5. Advances in Vertebral Deformities Treatment**

- ♦ Perform the diagnosis and treatment of coronal and sagittal spinal deformities
- ♦ Know the types of scoliosis depending on the age of onset
- ♦ Identify risk factors and know the diagnostic tests and evolutionary patterns
- ♦ Use conservative therapies for the treatment of scoliosis Use of braces and functional therapies
- ♦ Know the surgical treatment algorithms of the different scoliosis, taking into consideration new technologies
- ♦ Understand surgical principles and how they apply to each patient's needs and expectations
- ♦ Know the frequent complications and postoperative management of these patients

#### **Module 6. Spinal Tumors**

- ♦ Know the current options in the management of spinal tumor through decision-making processes, therapeutic planning, surgical techniques and perioperative care through knowledge based on scientific evidence
- ♦ Attain an understanding of the different primary benign spinal tumors
- ♦ Analyze the different current therapeutic options in benign primary tumors of the spine, using the development and presentation of different clinical cases
- ♦ Learn about the use of denosumab in giant cell tumors
- ♦ Verify the current management of low-grade primary malignant tumors, especially chondrosarcoma and chordoma
- ♦ Know the therapeutic options and indications in acute spinal cord compression
- ♦ Know the management of vertebral metastases



**Module 7. Advances in Vertebral Fractures Treatment**

- ♦ Correctly select and interpret the most appropriate radiographic, computed tomography (CT) and magnetic resonance imaging (MRI) for the diagnosis of traumatic spinal injuries
- ♦ Correctly classify upper cervical C 0-2, cervical subaxial spine, thoracolumbar spine and sacral fractures
- ♦ Compare surgical and conservative treatment alternatives for different levels including upper cervical spine C 0-2, subaxial and thoracolumbar and sacral
- ♦ Define the special features including vertebral fractures of patients with Ankylosing Spondylitis (AS), vertebral osteoporotic fractures and fractures of the immature pediatric spine
- ♦ Analyze the appropriate plan to prevent complications of spinal cord trauma
- ♦ Describe the characteristics of spinal cord shock and the different spinal cord injury syndromes

**Module 8. Advances in Minimally Invasive Surgery**

- ♦ Learn the minimally invasive techniques by reviewing all of them, from video-assisted surgery and microsurgery to XLIF techniques, including the most implemented TLIF interbody fusion techniques
- ♦ Recognize the need for the assistance of Neurophysiology for the guaranteed performance of this type of technique
- ♦ Apply grafting contribution, learning curve or approach to complications
- ♦ Know the use of all Minimally Invasive Techniques, anterior, posterior, percutaneous, mini-open
- ♦ Determine the main complications that occur in Minimally Invasive Techniques

**Module 9. Spinal Surgery in the Elderly**

- ♦ Gain knowledge about the surgical complications in minimally invasive surgical procedures in elderly patients
- ♦ Master the difficulties encountered with the use of instrumentation

**Module 10. Complications in Spine Surgery Miscellaneous**

- ♦ Learn about advances in the use of new instrumentation, improvements in manufacturing materials and the use of new grafts
- ♦ Use the advances in antibiotherapies and in the use of vacuum devices
- ♦ Gain knowledge about the problems of the sacroiliacs

# 04 Skills

After passing the evaluations of the Hybrid Professional Master's Degree in Spine Surgery, the professional will have enhanced the professional competencies necessary for quality medical care, and updated based on the latest scientific evidence, which will allow them to enhance their skills and perform procedures with greater safety and efficiency.





“

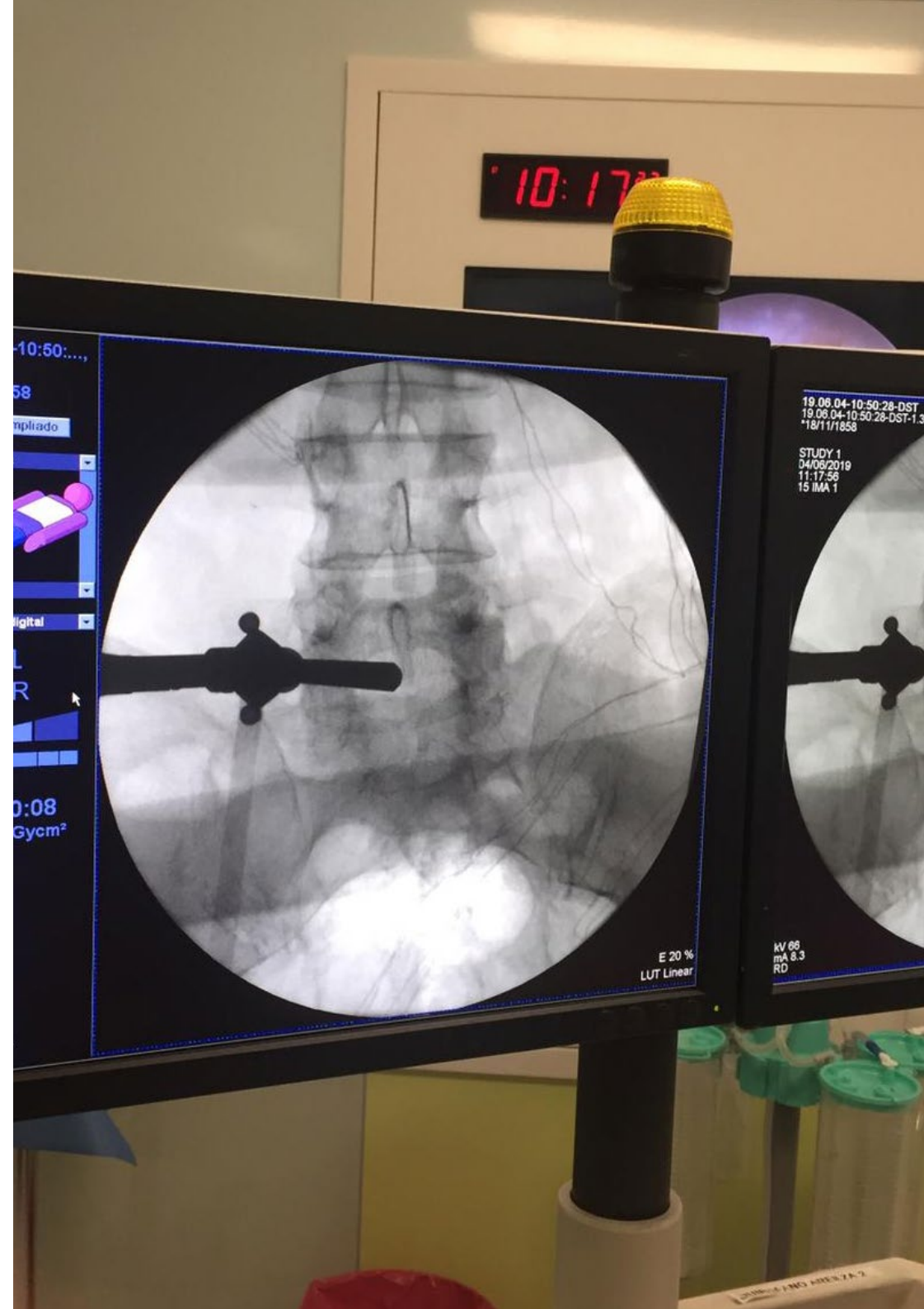
*Develop your career with total guarantees of success once you finish this Hybrid Professional Master's Degree in Spine Surgery”*





## General Skills

- Know the different pathologies of the spine specific to each anatomical area, starting with the cervical spine, passing through the dorsal spine, up to the lumbar and sacral spine
- Apply acquired knowledge and problem-solving skills in new or unfamiliar environments, within broader (or multidisciplinary) contexts related to their area of study
- Integrate knowledge and face the complexity of making judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities related to the application of their knowledge and judgments
- Communicate its conclusions, knowledge and the ultimate reasons that support them, to specialized and non-specialized audiences, in a clear and unambiguous manner
- Acquire the learning skills that will enable further studying in a self-directed or autonomous manner
- Develop within the profession in terms of working with other health professionals, acquiring skills to work as a team
- Recognize the need to maintain and update professional competence, giving special importance to autonomous and continuous learning of new knowledge
- Develop the capacity for critical analysis and research in your professional field







## Specific Skills

---

- Identify cervical myelopathy and know how to choose which attitude to take and which approach to adopt
- Deepen the debate between anterior fusion and cervical disc prosthesis and the controversy of their possible relationship in the appearance of the adjacent segment
- Perform indications for anterior fixation or Corpectomy. Make a correct posterior fixation with C1-C2 screws or fixation to the lateral masses
- Define current controversies, complications, risk analysis and clinical outcomes, with a broad spectrum of lumbar spine conditions, including Lumbar Spondylolisthesis, Lumbar Degenerative Disc Disease and Lumbar Spine Deformities
- Understand the latest trends in emerging technologies targeting low back pain
- Identify the latest surgical trends in degenerative pathology of the lumbar spine
- Identify any type of dorsolumbar spine deformity and know the classifications that will lead to correct treatment decisions
- Apply the knowledge of the different vertebral osteotomies (pedicular subtraction, Ponte) and know which are their indications to be performed, what correction each one provides and what other alternatives are available nowadays
- Classify the different types of spine fractures, whether cervical, thoracolumbar or sacral
- Apply the correct surgical techniques and know when to perform them
- Follow latest recommendations, percutaneous treatment of thoracolumbar vertebral fractures
- Identify all primary and secondary spinal tumors in the spine. Gain knowledge about the surgical and adjuvant treatment alternatives, following the classic classifications of great masters such as Tomita or Karnofsky, as well as the latest advances. Also, determine the multidisciplinary approach to this pathology of the spine
- Delve into the latest trends in minimally invasive approaches, either anterior or posterior
- Identify the possible complications that may arise during spine surgery, in order to know what solutions can be given to each of them Understand the complications that may arise in the evolution over time, such as vertebral instability, either iatrogenic or degenerative evolutionary or pseudarthrosis, and how to solve them in the most efficient way for the patient's quality of life



*Get up to date on the most efficient methods to treat different spine pathologies and provide personalized care to your patients, based on the latest scientific evidence”*

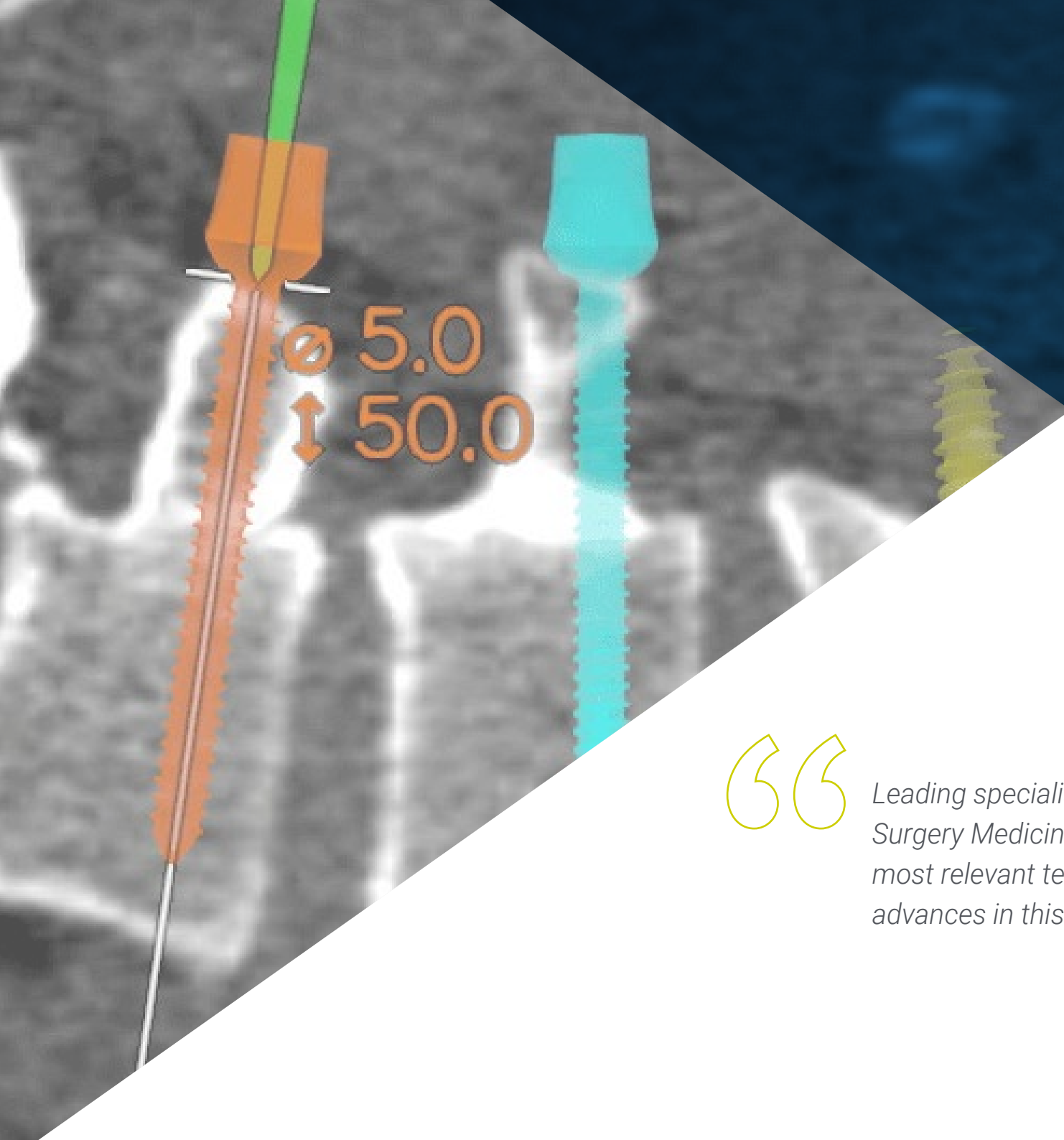
05

# Course Management

In order to offer the highest possible quality in each of the sections of study, TECH has a team of teachers with extensive experience for the development of this program that combines the most efficient methodology and technology. It will be a unique experience of updating with renowned specialists who develop their careers in different areas of research and application of the latest therapeutic methods in Spine Surgery.

R F





“

*Leading specialists in the field of Spine Surgery Medicine will provide you with the most relevant technological and scientific advances in this field”*



## Management



### Dr. José Isaac Losada Viñas

- ♦ Coordinator of the Pelvic Floor Unit, Hospital Universitario Fundación Alcorcón, Madrid
- ♦ Specialist of Traumatology Service at the Ciudad Real. Hospital Complex
- ♦ Member of the: Communication Committee of the Study Group of Spine Diseases (GEER), Spanish Society of Orthopedic Surgery and Traumatology, Society of Surgery of the Hand (SECMA) and the Association of Specialists in Orthopedic Surgery and Traumatology of the University Clinic of Navarra
- ♦ Specialised doctor in Traumatology and Surgery from the Universidad de Navarra
- ♦ PhD in Medicine and Surgery from the Universidad de Navarra
- ♦ Degree in Medicine and Surgery from University of Salamanca



### Dr. Rafael González Díaz

- ♦ Head of the Spine Surgery Unit at Niño Jesús University Children's Hospital
- ♦ Head of the Spine Surgery Unit, Orthopedic Surgery, Traumatology and Rehabilitation Area Fundación Alcorcón University Hospital
- ♦ Spine specialist. MD Anderson Hospital International Spain and Hospital Sanitas La Moraleja
- ♦ Former President of the Spanish Spine Society, Spine Diseases Study Group
- ♦ Member of the Scientific Committee of the Ibero-Latin American Spine Society
- ♦ Doctor in Orthopedic Surgery and Traumatology, Extraordinary Doctorate Award. University of Salamanca
- ♦ Master's Degree in Medical and Clinical Management from the School of Health/UNED
- ♦ Specialist in Orthopedic Surgery and Traumatology University Hospital La Paz
- ♦ Bachelor of Medicine and Surgery University of Salamanca

## Professors

### Dr. Máximo Alberto Díez Ulloa

- ♦ Specialist in Traumatology and Orthopedic Surgery
- ♦ Educational Advisor, AOSpine International
- ♦ Member EUROSPINE (European Spine Society)
- ♦ NASS (North American Spine Society) Member
- ♦ Professor. Assoc. USC (University of Santiago de Compostela)
- ♦ PhD in Medicine and Surgery Univ. Autónoma de Madrid
- ♦ European Diploma of Spine Surgery, EUROSPINE (European Spine Society)
- ♦ Diploma Ibérico de Columna, Sociedad Española de Columna y Sociedad Portuguesa de Patología de la Columna Vertebral

### Dr. Ana García de Frutos

- ♦ Reviewer for Revista Española de Cirugía Ortopédica y Traumatología, European Spine Journal and EFORT Open Reviews
- ♦ Medical Professional at the Teaching Unit of the Hospital de la Santa Creu i Sant Pau. Barcelona
- ♦ Associate Physician of the Spine Unit at Vall d'Hebron University Hospital
- ♦ Orthopedic Surgery and Traumatology Doctor at the Hospital de la Santa Creu i Sant Pau. Barcelona
- ♦ Specialist in Spine Surgery at the Spine Unit of the University Hospital Vall d'Hebrón
- ♦ Specialist in Spine Surgery at the ICATME Spine Unit at Clínica Quirón Dexeus. Barcelona
- ♦ Member of: the Spanish Spine Society (GEER) and the Spanish Society of Traumatology and Orthopedic Surgery (SECOT)
- ♦ Degree in Medicine from the Autonomous University of Barcelona

### Dr. Juan Antonio Martín Benlloch

- ♦ Head of the Spine Surgery Unit at Doctor Peset Hospital
- ♦ Head of the Multidisciplinary Unit of Vertebral Pathology at the University Hospital Doctor Peset of Valencia, Reference Unit
- ♦ Head of Section of the Spine Unit of the University Hospital Doctor Peset of Valencia
- ♦ Specialist in Orthopedic and Trauma Surgery
- ♦ Member of the Society for the Study of Spine Diseases (GEER)

### Dr. Andrés Barriga Martín

- ♦ Head of the COT department at Paraplegics National Hospital of Toledo
- ♦ Secretary of the Spanish Society of Orthopedic Surgery and Traumatology (SECOT)
- ♦ Member of the Scientific Committee of the Spanish Spine Society (GEER)
- ♦ Author of multiple research papers on spine and spinal cord injuries
- ♦ Doctor of Medicine and Surgery, University of Navarra
- ♦ Specialist in Orthopedic Surgery and Traumatology, Clínica Universitaria de Navarra, Spain
- ♦ Degree in Medicine and Surgery, Navarra University

### Dr. Ángel Hidalgo Ovejero

- Chief of Orthopedic Surgery and Traumatology Service at Ubarmin Clinic. Pamplona
- Head of the Spine Surgery Section at the Navarra Hospital Complex
- Honorary Professor of Surgery at the Public University of Navarra
- Associate Clinical Professor of the University of Navarra
- Former member of the Communication Committee of the Society for Spine Surgery (GEER)
- Former member of the Scientific Committee of the Society for Spine Surgery (GEER)
- President and Organizer of the Congress of the Society for Spine Surgery (GEER)
- Author of more than 50 articles referenced in Medline
- Author of several papers and communications
- Specialist in Orthopedic and Trauma Surgery
- Sub-specialization in Pathology and Surgery of the Spinal Column
- Degree of Doctor of Medicine and Surgery

### Dr. Miguel Sanfeliu Giner

- Head of Section in the Spine Unit of the Orthopedic Surgery and Traumatology Service at the Hospital General Universitario de Valencia
- Head of Section in the Spine Unit of the Orthopedic Surgery and Traumatology Service at the University Hospital La Paz
- Member of: the Spanish Society of Orthopedic Surgery and Traumatology (SECOT), Study Group for Spine Diseases (GEER) and Founder of the Spanish Society of Minimally Invasive Spine Surgery (SEMISS)
- Doctorate in Radiological and Normal Pathological Anatomy
- Fellowship in Arthroscopic Surgery at the Orthopedic Surgery and Traumatology Unit of the Fremap Hospital
- Degree in General Medicine and Spine Surgery (BMBS) with thesis with the highest qualification from the Faculty of Medicine of the University of Valencia





**Dr. Alberto Hernández Fernández**

- ◆ Specialist in Spine Surgery at Gipuzkoa Polyclinic from Quirónsalud
- ◆ Specialist in the Spine Surgery Unit of the Orthopedic Surgery and Traumatology Service at the University Hospital of Donostia
- ◆ Spine Specialist at Sendagrup Medical Center
- ◆ Former Vice President of the Board of Directors of the Basque-Navarre Society of Orthopedic Surgery and Traumatology (SVNCOT)
- ◆ Lecturer of the programs of the Spanish and Portuguese Spine Society
- ◆ Associate Professor of the Faculty of Medicine at the University of the Basque Country/ Euskal Herriko Unibertsitatea (UPV/EHU)
- ◆ Master's Degree in Hospital Management from the University of Alcalá de Henares, Spain
- ◆ Graduate in Medicine and Surgery from the Universidad de Navarra

“

*A prestigious team of specialists in Spine Surgery has configured this curriculum for your update from their broad vision and trajectory”*

# 06

## Educational Plan

This Hybrid Professional Master's Degree stands out for its up-to-date content on all the advances and most effective therapeutic methods for the approach to Spine Surgery. An academic itinerary has been configured for the theoretical study of 10 modules with the most relevant aspects in the area. In addition, the ease of the methodology implemented by TECH through its modern Virtual Campus, which facilitates 100% online study from wherever you are.





“

*You will be able to identify all primary and secondary vertebral tumors in the spine. Know the surgical and coadjuvant treatment alternatives, following the classic classifications of great masters such as Tomita or Karnofsky”*



## Module 1. Surgical approaches to the Spine

- 1.1. Cervical Column Approaches
  - 1.1.1. Cervical Anatomy
  - 1.1.2. Muscles and Anatomical Limits
  - 1.1.3. Neurological Structures and Their Location
  - 1.1.5. Anterior Approaches to the Cervical Spine
  - 1.1.6. C1-C2 Transoral Approach
  - 1.1.7. Lateral Approaches to the Cervical Spine
  - 1.1.8. Which Approach to Perform: Right or Left?
  - 1.1.9. Approaches to the Cervicothoracic Junction
  - 1.1.10. Posterior Approaches to the Cervical Spine
  - 1.1.11. Posterior Approach to the C1-C2 Joints
  - 1.1.12. Posterior Cervical Foraminotomy
  - 1.1.13. Complications of Cervical Spine Surgery
  - 1.1.14. Bleeding
  - 1.1.15. Durable Lesions
  - 1.1.16. Alterations of Pharynx
  - 1.1.17. Esophageal Injuries
  - 1.1.18. Postoperative Management of Cervical Surgery Patients
- 1.2. Thoracic Spine Approaches
  - 1.2.1. General Indications
  - 1.2.2. Absolute and Relative Contraindications
  - 1.2.3. Preoperative Planning
  - 1.2.4. Anterior Approaches to Thoracic Spine
  - 1.2.5. DIV-DXI Transthoracic Approach
  - 1.2.6. Transpleural Anterior Approach DIII-DXI. Louis
  - 1.2.7. Thoracolumbar Junction Approaches
  - 1.2.8. Transpleural-Retroperitoneal Approach
  - 1.2.9. Extrapleural Approaches
  - 1.2.10. Video-endoscopic Approach to the Thoracic Spine
  - 1.2.11. Posterior and Posterolateral Approaches to the Thoracic Spine
  - 1.2.12. Costotransversectomy
  - 1.2.13. Post-Operative Care

- 1.3. Lumbar Spine Approaches
  - 1.3.1. Anterior Approach
  - 1.3.2. L2-L5 Retroperitoneal Anterior Approaches
  - 1.3.3. Extraperitoneal Anterior Approach with Median Incision for L2-L Levels
  - 1.3.4. Anterior Pararectal Approach Retroperitoneal to L5-S1
  - 1.3.5. Laparoscopic Transperitoneal Approach to L5-S1
  - 1.3.6. Lateral Oblique Approach of the Lumbar Spine to L2-L5
  - 1.3.7. En Bloc Sacrectomy
- 1.4. Lateral Approaches
  - 1.4.1. Lateral Approach for Discectomies, Foraminotomies or XLIF Lateral Fusions
  - 1.4.2. Microscopic or Minimally Invasive Lumbar Discectomy
- 1.5. Posterior Approach
  - 1.5.1. Posterior Approaches to the Cervical Spine
  - 1.5.2. Lumbar Paraspinal Spinal Cord Approaches
  - 1.5.3. Foraminal Approach to the Lumbar Disc
- 1.6. Complications of Thoracolumbar and Lumbar Spine Approaches

## Module 2. Cervical Spine Pathologies

- 2.1. General Aspects. Cervical Pain Diagnosis
  - 2.1.1. Anatomy and Biomechanics of the Cervical Spine, Applied to the New Surgical Techniques
  - 2.1.2. Biochemical and Cellular Bases of Intervertebral Disc Degeneration
  - 2.1.3. Advances in Diagnostic Imaging of Cervical Spine Diseases
  - 2.1.4. Assessment of Neurological Compromise. Clinical and Neurophysiology
  - 2.1.5. Posterior Access to the Craniovertebral Junction: Importance of Developing a Very Meticulous Technique
- 2.2. Therapeutic Overview Cervical Pain
  - 2.2.1. Cervical Pain, Radiculopathy and Cervical Myelopathy. Pathophysiology and Natural History
  - 2.2.2. Outcome Measurement Scales in Cervical Pathology
  - 2.2.3. Semi-Invasive Treatment of Cervical Pain and Cervicobrachialgia
  - 2.2.4. Role of Rehabilitation in the Treatment of Cervical Degenerative Processes. Different Protocols

- 2.3. Cervical Radicular Pain Surgery
  - 2.3.1. Analyze the Causes and Incidence of Radicular Pain in the Cervical Spine
  - 2.3.2. Justify the Different Indications for Surgery
  - 2.3.3. Role of Posterior Approach and Microsurgery in Cervical Radiculopathy
  - 2.3.4. Evidence on Conservative versus Surgical Treatment of Cervical Radiculopathy. Literature Review
  - 2.3.5. Herniated Cervical Disc. Anterior or Posterior Approach
  - 2.3.6. Fusion Techniques or Disc Prosthesis
  - 2.3.7. Identify Factors Influencing the Regression of Cervical Hernia Symptoms
  - 2.3.8. Evaluate the Surgical Options
  - 2.3.9. Anticipate Possible Complications and Find a Return to Work Plan and Activity
  - 2.3.10. Formulate a Plan for When Problems Arise at the Adjacent Level
- 2.4. Whiplash Syndrome. Whiplash
  - 2.4.1. Pathophysiology, Anatomopathologic Alterations
  - 2.4.2. Initial Assessment of the Patient. Prognostic Factors
  - 2.4.3. Acute Phase Treatment. Treatment in the Sequelae Phase
  - 2.4.4. Socioeconomic Impacts of Whiplash Syndrome
- 2.5. Cervical Degenerative Pathology
  - 2.5.1. Multilevel Cervical Spondylosis
  - 2.5.2. Anterior Approach
  - 2.5.3. Posterior Approach
  - 2.5.4. Adjacent Segment Degeneration. How To Act
  - 2.5.5. Cervical Spine Deformities
- 2.6. Cervical Myelopathy
  - 2.6.1. Manifestations, Causes and Natural History of Myelopathy
    - 2.6.1.1. Compare the Clinical and Functional Presentation of Spondylotic Myelopathic Syndromes
    - 2.6.1.2. Degrees of Disease Using Validated Scales
    - 2.6.1.3. Anticipate Appearance of Clinical Signs and Consider Differential Diagnoses
    - 2.6.1.4. Describe the Natural History of the Disease
    - 2.6.1.5. Identify the Particular Clinical Presentation of Cervico-Cranial Myelopathy
  - 2.6.2. Clinical and Surgical Decision Making in Myelopathy
    - 2.6.2.1. Define a Treatment Plan for Patients with Myelopathy
    - 2.6.2.2. Identify the Absolute and Relative Indications for Surgery in Spondylotic Myelopathy
    - 2.6.2.3. Compare the Different Surgical Approaches in Myelopathy and Define a Rational Treatment Plan
    - 2.6.2.4. Justification of the Anterior Route
    - 2.6.2.5. Discuss the Role of Intraoperative Neuromonitoring in Cervical Myelopathy
    - 2.6.2.6. Cervical Spondylotic Myelopathy Updating and Therapeutic Guidance
    - 2.6.2.7. Management of Cervical Myelopathy Anterior Route. Multilevel Pathology
    - 2.6.2.8. Use of Corpectomy or Boxes
    - 2.6.2.9. Management of Cervical Myelopathy Posterior Route. Multilevel Pathology
    - 2.6.2.10. Thoracic Scalene Gorge Syndrome
- 2.7. Cervical Spine Trauma
  - 2.7.1. Imaging in Cervical Trauma
    - 2.7.1.1. Selection of Appropriate Imaging to Detect Cervical Fracture
    - 2.7.1.2. Evaluate Radiological Imaging Options
    - 2.7.1.3. Select Appropriate CT or MRI Images
    - 2.7.1.4. Differentiate Between Major and Minor Trauma of the Upper Cervical Spine
  - 2.7.2. Occipito-Cervical Instability
    - 2.7.2.1. Anatomy and Biomechanics of the Upper Cervical Spine
    - 2.7.2.2. Types of Instabilities
    - 2.7.2.3. Post-traumatic
    - 2.7.2.4. Congenital
  - 2.7.3. Fractures of the Upper C0-C2 Region: Classification and Management
    - 2.7.3.1. Define the Role of Ligaments in the Stability of the Cervical Spine
    - 2.7.3.2. Classify in Relation to Subsequent Treatment
    - 2.7.3.3. Occipital Condyle Fractures
    - 2.7.3.4. Occipito-Cervical Dislocation, Occipito-Atlod Dislocation, or Attalanto-Axoid Instability. Atlas or C1 Fractures
    - 2.7.3.5. Atlas or C2 Fractures
    - 2.7.3.6. Traumatic Spondylolisthesis of C2

- 2.7.4. Subaxial Cervical Spine Traumas
  - 2.7.4.1. Subaxial Cervical Spine Trauma. Classification and Management
  - 2.7.4.2. Estimate Incidence and Classify using AO Classification
  - 2.7.4.3. Use Other Classifications to Determine Treatment
  - 2.7.4.4. Anticipate Errors in Diagnosis
  - 2.7.4.5. Evaluate Non-Surgical Treatment Options and When They Are Appropriate
  - 2.7.4.6. Recognize the Indications for Surgical Treatment
  - 2.7.4.7. Recognize those Fractures that Require Urgent Treatment
  - 2.7.4.8. Justify the Different Fracture Approaches, Anterior or Posterior Approach or Combined Anterior and Posterior Approaches
- 2.8. Inflammatory and Infectious Pathology in Cervical Spine
  - 2.8.1. Current Treatment of Cervical Spine Infections
  - 2.8.2. Rheumatoid Arthritis of the Cervical Spine
  - 2.8.3. Cervical Instability in Down Syndrome
  - 2.8.4. Pathology of the Craniocervical Region. Anterior Surgical Treatment

### Module 3. Herniated Discs, Diagnosis and Treatment of Radicular Pain. Emerging Technologies for the Treatment of Low Back Pain

- 3.1. Epidemiology, Natural History and Imaging Findings in Radicular Pain
  - 3.1.1. Use of the Usual Epidemiological Terms to Define and Prevalence Factors of Radicular Pain
  - 3.1.2. Knowledge of the Natural History of Radicular Pain
  - 3.1.3. Identify Contributing Fractures
  - 3.1.4. Diagnosis of the Causes of Radicular Pain
  - 3.1.5. Assess Why Disc Herniations Occur
  - 3.1.6. Differentiate the Role of Diagnostic Imaging between Computerized Axial Tomography (CT) and Magnetic Resonance Imaging (MRI) for Radicular Pain
  - 3.1.7. Interpretation of Images Using the Correct Nomenclature
- 3.2. Non Surgical Action in the Treatment of Radicular Pain
  - 3.2.1. Evaluate Non Surgical Treatment Options for Radicular Pain
  - 3.2.2. Explaining These Options to Patients
  - 3.2.3. Identify Patients who are Susceptible to Non Surgical Treatment
  - 3.2.4. Differentiate Between Types of Analgesia. Analgesic Scale
  - 3.2.5. Summarize the Roles of Rehabilitation and Physiotherapy

- 3.3. Surgery of Radicular Pain in the Lumbar Spine
  - 3.3.1. Differences Between the Various Absolute and Relative Indications for Surgery
  - 3.3.2. Identify Appropriate Timing for Surgery
  - 3.3.3. Evaluate the Usual Surgical Techniques with Evidence Support
  - 3.3.4. Compare Both Surgical and Non Surgical Treatment Options
  - 3.3.5. Formulate an Adequate Surgical Plan
  - 3.3.6. Anticipate Possible Complications and Establish a Plan for Return to Work and Activity
- 3.4. Thoracic Myelopathy
  - 3.4.1. Myelopathic Imaging: Techniques and Prognostic Indicators
  - 3.4.2. Interpret MRI and CT Findings in Spondylotic Myelopathy
  - 3.4.3. Recognize the Change of Signs in Different MRI Sequences and their Significance
  - 3.4.4. Consider the Different Differential Diagnoses in Non Tumorous Pathology of the Spinal Cord
  - 3.4.5. Know the Current Role of Myelography and Mielo-TAC in Myelopathy Imaging
    - 3.4.5.1. Clinical and Surgical Decision Making in Thoracic Myelopathy
    - 3.4.5.2. Management of the Risk-Benefit Balance in the Surgery of Patients with Thoracic Myelopathy
    - 3.4.5.3. Compare the Different Approaches to Thoracic Myelopathy
- 3.5. Axial Low Back Pain
  - 3.5.1. Natural History. Obstacles to Recovery and Aspects of Non-Surgical Treatment of Axial Pain
    - 3.5.1.1. Anticipate Potential Obstacles to Recovery
    - 3.5.1.2. Explain How Mood Can Be Used
    - 3.5.1.3. How to Handle Catastrophic Ideas
    - 3.5.1.4. Differentiate Between Acute and Chronic Low Back Pain
    - 3.5.1.5. Evaluate the Different Options for the Non Surgical Treatment of Low Back Pain
    - 3.5.1.6. Summarize the Current State of the Evidence Regarding Surgical and Non Operative Management
  - 3.5.2. How to Assess a Patient with Axial Pain?
    - 3.5.2.1. Understand the Role of Natural History and Physical Examination in the Assessment of these Patients with Axial Pain
    - 3.5.2.2. Decide on the Need for Imaging Studies



- 3.5.2.3. Select Patients with Axial Pain in Need of Advanced Diagnostic Techniques
- 3.5.2.4. Review the Role of Diagnostic Blocks and Discography in Patients with Axial Pain
- 3.5.2.5. Conservative Treatment of Low Back Pain
- 3.5.2.6. Opioid Practice and Perspective: Who is at Risk of Addiction?
- 3.5.2.7. Radiofrequency Ablation in Low Back Pain
- 3.5.2.8. Stem Cells and Intradiscal Lumbar Procedures
- 3.5.2.9. Implantable Therapies for Chronic Low Back Pain
- 3.5.3. Axial Lumbar Pain Surgery
  - 3.5.3.1. Promote a Rational Alternative to Surgical Fusion
  - 3.5.3.2. Evaluate Alternative Options
  - 3.5.3.3. Select an Appropriate Approach
  - 3.5.3.4. Check Current Evidence

## Module 4. Degenerative Dorsolumbar Pathology Advances

- 4.1. Spinal Canal Stenosis and Degenerative Spondylolisthesis
  - 4.1.1. Presentation, Clinical and Non-surgical Treatment of Lumbar Canal Stenosis
    - 4.1.1.1. Knowledge of the Signs and Symptoms of Lumbar Spinal Stenosis (LSS)
    - 4.1.1.2. Know the Clinical Characteristics and Natural History of Neurogenic Claudication
    - 4.1.1.3. Classify Lumbar Spinal Stenosis
    - 4.1.1.4. Assess Surgical and Non-Surgical Treatment Options
    - 4.1.1.5. Know the Alternatives of Rehabilitation
  - 4.1.2. Imaging of Lumbar Spinal Stenosis and Degenerative Spondylolisthesis
    - 4.1.2.1. Describe the Different Imaging Techniques to Identify Lumbar Spinal Stenosis and Degenerative Spondylolisthesis
    - 4.1.2.2. Classification and Degree of Lumbar Spinal Stenosis
    - 4.1.2.3. Appreciate the Role of Complete and Functional Spine Radiographs in the Management of Patients with Lumbar Spinal Stenosis and Degenerative Spondylolisthesis
  - 4.1.3. Surgical Treatment of Lumbar Spinal Stenosis
    - 4.1.3.1. Formulate the Principles of Stenosis Surgery
    - 4.1.3.2. Individualize the Surgical Technique for Each Patient
    - 4.1.3.3. Recognize the Indications for Fusion in Patients with Lumbar Spinal Stenosis
- 4.1.4. Surgical Treatment of Degenerative Spondylolisthesis
  - 4.1.4.1. Assess Surgical and Non-Surgical Treatment Options in Degenerative Spondylolisthesis
  - 4.1.4.2. Summarize the Controversies in the Choice of Treatment in Degenerative Spondylolisthesis
- 4.2. Spondylolysis and Low-Grade Isthmic Spondylolisthesis
  - 4.2.1. Spondylolysis and Low-Grade Spondylolisthesis
    - 4.2.1.1. Epidemiological Aspects and Natural History
    - 4.2.1.2. Describe the Signs and Symptoms of Spondylolysis and Low-Grade Spondylolisthesis
    - 4.2.1.3. Formulate the Principles of its Therapeutic Management
    - 4.2.1.4. Assess the Different Therapeutic Options
    - 4.2.1.5. Anticipate Possible Complications of the Instrumentation and its Positioning
    - 4.2.1.6. Analyze the Alternatives of Rehabilitation
- 4.3. Degenerative Deformity
  - 4.3.1. Lumbar Degenerative Deformity
    - 4.3.1.1. Describe the Pathogenesis and Natural History of Lumbar Degenerative Deformity
    - 4.3.1.2. Explain the Concept of Spinal Balance and the Different Spinopelvic Parameters
    - 4.3.1.3. Assess the Risk-Benefit Balance for Surgery and Potential Complications
    - 4.3.1.4. Formulate a Surgical Plan for Degenerative Kyphoscoliosis
    - 4.3.1.5. Pelvis Fixations
- 4.4. Advances in the Design of New Implants
  - 4.4.1. Posterior or Posterolateral Instrumentations
  - 4.4.2. Anterior Instrumentation
  - 4.4.3. Intersomatic Implants
  - 4.4.4. Disc Prosthesis

## Module 5. Advances in Vertebral Deformities Treatment

- 5.1. Neuromuscular Scoliosis. Management and Advances
  - 5.1.1. Classification, Generalities and Preoperative Planning of Neuromuscular Scoliosis
  - 5.1.2. Assessment of Respiratory Function in Neuromuscular Scoliosis. Indications for the use of BiPAP Before or After Surgery
  - 5.1.3. Anesthesia in Neuromuscular Patients
  - 5.1.4. Intraoperative Monitoring
  - 5.1.5. Use of Evoked Potentials in Patients with Non-Ambulatory Neuromuscular Scoliosis
  - 5.1.6. Indication and Contraindication of the Anterior Approach in Neuromuscular Scoliosis
  - 5.1.7. Surgical Treatment by Posterior Approach, Pedicle Screws and Instrumentation with Sublaminar Wires
  - 5.1.8. Techniques and Indications for Lumbosacral Fixation
  - 5.1.9. Indications for Growth Systems in Severe Neuromuscular Infantile Scoliosis
  - 5.1.10. Evolution and Treatment of Neuromuscular Scoliosis in Adulthood
- 5.2. Congenital Scoliosis. Overview and Diagnosis
  - 5.2.1. Classification of Congenital Scoliosis. Surgical Action Protocol
  - 5.2.2. Alterations Associated with Vertebral Deformities. Pre-operative Evaluation
  - 5.2.3. Neurosurgical Performance of Spinal Cord Disorders in Congenital Deformities
  - 5.2.4. Surgical Strategy in Congenital Kyphosis. Classification and Types
  - 5.2.5. Complex Congenital Scoliosis. Indications for Pedicular Subtraction Osteotomies
  - 5.2.6. Hemivertebra Resection by Double Anterior Posterior Approach versus Posterior Approach
  - 5.2.7. Treatment of Rib Malformations Associated with Congenital Malformations, VERTR Indications
  - 5.2.8. Treatment and Evolution of Klippel-Feil Syndrome in Adulthood
- 5.3. Idiopathic Juvenile Scoliosis. Advances
  - 5.3.1. Current State of Knowledge on the Etiology of Idiopathic Scoliosis
  - 5.3.2. Natural History of Idiopathic Scoliosis after Maturation
  - 5.3.3. Clinical Assessment of the Patient with Idiopathic Scoliosis
  - 5.3.4. Cardiopulmonary Assessment
  - 5.3.5. Review of Non-Fusion Techniques in Early Onset Scoliosis. What We Have Done and What's Next
  - 5.3.6. Factors Predicting Progression During Growth
  - 5.3.7. Conservative Treatment
    - 5.3.7.1. Orthotic Treatment of Idiopathic Scoliosis
    - 5.3.7.2. Observation as a Treatment
  - 5.3.8. Surgical Management
    - 5.3.8.1. Posterior Arthrodesis and Hybrid Instrumentation: Standard Technique
    - 5.3.8.2. Posterior Arthrodesis with Thoracic Pedicle Screws
  - 5.3.9. Treatment of Thoracolumbar Curves
    - 5.3.9.1. Instrumented Anterior Arthrodesis
    - 5.3.9.2. Instrumented Posterior Arthrodesis
  - 5.3.10. Systematic Work in the Choice of Fusion Levels
  - 5.3.11. Growth Bar Gradation. When and Which Options?
  - 5.3.12. Are the Current Results of Instrumented Fusion in Adolescent Idiopathic Scoliosis Acceptable?
  - 5.3.13. "Tethering" in Adolescent Idiopathic Scoliosis
  - 5.3.14. Tricks and Errors to Limit Arthrodesis and Avoid Trunk Imbalance in Adolescent Idiopathic Scoliosis
  - 5.3.15. Severe Untreated Deformities
  - 5.3.16. Pediatric Reconstructive Surgery
  - 5.3.17. Building Multidisciplinary Teams in the Care of Patients with Spinal Deformity
  - 5.3.18. Clinical and Functional Results
    - 5.3.18.1. Results of Idiopathic Scoliosis Surgery
    - 5.3.18.2. Radiological Results of the Different Fusion Techniques
- 5.4. Adult Deformities
  - 5.4.1. What is the Evidence for Conservative Treatment of Adult Scoliosis?
  - 5.4.2. Toward a Classification Scheme in Adult Scoliosis that Predicts Quality Outcomes
  - 5.4.3. How Does the Degenerative Process Affect Surgical Decisions/Approach?
  - 5.4.4. Reconstruction of Sagittal Alignment. Lessons Learned over the last 10 Years
  - 5.4.5. Surgical Management of Spinal Deformity in Frail Patients
  - 5.4.6. Value of Databases and Predictive Models for Improving Results in Adult Scoliosis. Risk Calculators
  - 5.4.7. Care of Patients with Adult Scoliosis
  - 5.4.8. Failed Adult Scoliosis Surgery. Reconstruction
  - 5.4.9. Cost-Effectiveness of Surgical Treatment of Adult Scoliosis Deformity
- 5.5. Reconstructive Surgery and Vertebral Osteotomies
  - 5.5.1. Vertebral Osteotomies: Types and Historical Evolution

- 5.5.2. Reconstructive Surgery in Pediatric Spine: Causes and Prevention
- 5.5.3. Reconstructive Surgery in Adult Spine: Causes and Prevention
- 5.5.4. Reconstructive Surgical Strategy. Choice of Osteotomy
- 5.5.5. Cervical Spine and Cervical/Thoracic Hinge. Surgical Strategy
- 5.5.6. Reconstructive Surgery of Coronal Imbalance
- 5.5.7. Reconstructive Surgery of Sagittal Imbalance. Thoracic and Lumbar Osteotomies
  - 5.5.7.1. Tri-Columnar Osteotomies. Pedicular Subtraction
  - 5.5.7.2. Ponte Osteotomies. Smith-Petersen
  - 5.5.7.3. Other Osteotomies
- 5.5.8. Lumbosacral Reconstructive Surgery. Spondylolisthesis Sacral/Pelvis Osteotomies
- 5.5.9. Optimize Safety in Reconstructive Spine Surgery
- 5.5.10. Outcome of Thoracolumbar Osteotomies in the Adult

## Module 6. Spinal Tumors

- 6.1. General Information of Vertebral Tumors
  - 6.1.1. Pathophysiology of Vertebral Tumors
  - 6.1.2. Prevalence and Incidence
  - 6.1.3. Form of Presentation and Common Symptoms of Spinal Tumors
  - 6.1.4. Physical Examination and Laboratory Studies
  - 6.1.5. Why are Spinal Tumors a Big Problem?
  - 6.1.6. Common Radiotherapy Techniques for Spinal Tumors, their Indications and Special Technical Considerations
  - 6.1.7. Effects of Chemotherapy on the Malignant Cells of These Tumors
- 6.2. Management of the Patient with Suspected Vertebral Tumor
  - 6.2.1. Diagnostic Imaging and Percutaneous Biopsy
  - 6.2.2. Principles and Approaches to Perform Biopsies
  - 6.2.3. Histological Management of the Sample
- 6.3. Benign Primary Tumors
  - 6.3.1. Main Benign Tumors of the Spine
  - 6.3.2. Description and Indications for Percutaneous Surgery
  - 6.3.3. Surgical Management
- 6.4. Primary Malignant Tumors of the Spine
  - 6.4.1. Main Primary Malignant Tumors of the Spine
    - 6.4.1.1. Multiple Myeloma and Plasmacytoma
    - 6.4.1.2. Lymphoma

- 6.4.2. Oncologic and Surgical Staging
- 6.4.3. Low-grade and High-grade Malignant Tumors
- 6.4.4. Posterior Surgical Treatment. Technique of Resection in Bloc of Thoracolumbar and Cervical Tumors. Sacral Tumor Resections
- 6.4.5. Radiotherapy in Malignant Tumors. Indications and Results
- 6.4.6. Results and Complications of Surgery
- 6.5. Vertebral Metastases
  - 6.5.1. Pathophysiology of Vertebral Metastases and Oncologic Management of the Patients
  - 6.5.2. Main Metastatic Tumors in the Spine
    - 6.5.2.1. Lung, Breast, Genitourinary, Gastrointestinal, among others
    - 6.5.2.2. Scales of Assessment and Prognosis
    - 6.5.2.3. Oncologic Management. Radiotherapy Indications and Results
    - 6.5.2.4. Pain Management in Patients with Vertebral Metastases
- 6.6. Surgical Management of Metastases
  - 6.6.1. Application of the Treatment Protocol. Indications for Surgery of Vertebral Metastases
  - 6.6.2. Percutaneous Treatment Vertebroplasty and Kyphoplasty
  - 6.6.3. Palliative Versus Radical Treatment in Vertebral Metastases
  - 6.6.4. Complications of Surgery and Medical Care. How to Anticipate and Manage Them

## Module 7. Advances in Vertebral Fractures Treatment

- 7.1. Trauma of the Thoracolumbar Spine and Sacrum
  - 7.1.1. Imaging in Thoracolumbar and Sacral Fractures
    - 7.1.1.1. Use of the AO Classification
    - 7.1.1.2. Selection of the Most Appropriate Images to Identify Major or Minor Trauma
    - 7.1.1.3. Management and Use of Radiological Images
    - 7.1.1.4. Define the Indications for Appropriate Use of CT or MRI
    - 7.1.1.5. Recognize Special Circumstances that Compromise Spinal Cord Function
  - 7.1.2. Thoracolumbar Spine Trauma; Classification and Management
    - 7.1.2.1. Recognize the Signs and Symptoms of Thoracolumbar Fractures
    - 7.1.2.2. Differentiate Between Denis, AO and TLICS Classifications
    - 7.1.2.3. Explain the Role of Ligaments in Burst Fractures
    - 7.1.2.4. Assess the Different Surgical Techniques: Anterior Approach including MIS Techniques or Posterior Approach including MIS Technique or Both Approaches



- 7.1.3. Sacral Fractures: Classification and Treatment
  - 7.1.3.1. Description of Important Anatomical Aspects
  - 7.1.3.2. Differentiate the Different Types of Sacral Fractures
  - 7.1.3.3. Use of the AO Classification
  - 7.1.3.4. Recognize the Signs and Symptoms of Sacral Fractures
  - 7.1.3.5. Compare Surgical or Conservative Treatment
  - 7.1.3.6. Assess the Correct Surgical Options
- 7.2. Cementation Techniques via MIS
  - 7.2.1. Explanation of the Steps to Perform a Cementoplasty Technique, Including Correct Patient Positioning
  - 7.2.2. Correct Positioning of the Fluoroscope
  - 7.2.3. Placement of the Jamshidi Needles and their Exchange for the Working Cannula
  - 7.2.4. Fixation with Cemented Screws via MIS. Indications
  - 7.2.5. Explanation of the Steps to Performing a Pedicle Screw Fixation Technique and Performing a Cementoplasty, Including Correct Patient Positioning
  - 7.2.6. Placement of Jamshidi Needles and Subsequent Tapping and Screw Placement
  - 7.2.7. How the Cement is Injected into the Vertebrae and its Particularities
  - 7.2.8. Placement of Percutaneous Bars
- 7.3. Fractures in Metabolic Spine Disorders and Pediatric Spine Fractures
  - 7.3.1. Fractures in Ankylosing Spondylitis (AS): Characteristics and Treatment
    - 7.3.1.1. Etiology of Ankylosing Spondylitis
    - 7.3.1.2. Determine the Role of the Spine Surgeon in AS
    - 7.3.1.3. Identify what Type of Imaging is Needed for its Diagnosis and Why
    - 7.3.1.4. Formulating an Appropriate Treatment Plan for AS Fractures
    - 7.3.1.5. Anticipate Difficulties in this Patient Population
  - 7.3.2. Vertebral Osteoporotic Fractures. Diagnosis and Treatment
    - 7.3.2.1. Define Osteoporosis
    - 7.3.2.2. Description of the Medical Therapeutic Treatment of Osteoporosis
    - 7.3.2.3. Know the Diagnosis of Osteoporotic Vertebral Fractures
    - 7.3.2.4. Use of the AO Classification for Osteoporotic Vertebral Fractures
    - 7.3.2.5. Assess the Different Surgical Alternatives
    - 7.3.2.6. Recognize the Indications for Cementoplasty Procedures for Osteoporotic Vertebral Fractures
    - 7.3.2.7. Recognize the Indications for Instrumentation of the Spine with or without Cementoplasty
  - 7.3.3. Pediatric Spine Fractures. Characteristics and Treatment
    - 7.3.3.1. Characteristics of Immature Cervical and Thoracolumbar Spine Fractures
    - 7.3.3.2. Define SCIWORA/SCIWORET
    - 7.3.3.3. Explain the Mechanism of Cervical Spine and Lumbar Apophysis Injuries
    - 7.3.3.4. Determine the Appropriate Plan for Diagnosis and Treatment of Injuries
- 7.4. Posttraumatic Kyphosis
  - 7.4.1. Prevention and Treatment of Post-traumatic Kyphosis
    - 7.4.1.1. Discussion of the Reasons for Post-traumatic Kyphosis
    - 7.4.1.2. Formulate Treatment Objectives
    - 7.4.1.3. Explain How to Restore Sagittal Balance
    - 7.4.1.4. Evaluate the Surgical Options
    - 7.4.1.5. Justify the Approach by a Multidisciplinary Team
- 7.5. Diagnosis of Vertebro-medullary Trauma
  - 7.5.1. General Aspects
    - 7.5.1.1. Vertebral Fractures with Neurological Compromise. Biomechanics. Stability Criteria. Diagnostic Tools
    - 7.5.1.2. Differential Imaging Diagnosis of Vertebral Injury with Neurological Involvement
    - 7.5.1.3. Clinical Assessment of Traumatic Spinal Cord Injury. Spinal Syndromes, ASIA Scale
    - 7.5.1.4. Differentiation with other Spinal Cord Injuries. Determination of the Severity of the Spinal Cord Injury. Current Diagnostic Options in the Acute Phase
  - 7.5.2. Spinal Shock and Incomplete Spinal Cord Injury Syndrome (SCI)
    - 7.5.2.1. Pathophysiology of Traumatic Spinal Cord Injury. Differentiation from other Spinal Cord Injuries
    - 7.5.2.2. Define the Different Types of Incomplete Spinal Cord Injury (SCI)
    - 7.5.2.3. Classify SCI Using the ASIA Scale and Justify its Clinical and Surgical Relevance. Describe the Clinical Symptoms and Pathophysiology of Central Cord Syndrome
    - 7.5.2.4. Initial Surgical Management of Traumatic Spinal Cord Injury: Early vs. Delayed Surgery
    - 7.5.2.5. Define why Methylprednisolone Should Not Be Used in IBS (NACIS I-III)
    - 7.5.2.6. Treatment of Neuropathic Pain and Spasticity
    - 7.5.2.7. Treatment of Post-traumatic Syringomyelia and Late Deformity
    - 7.5.2.8. Rehabilitation of the Spinal Cord Injured

- 7.5.2.9. Initial Adaptation to Spinal Cord Injury and Return and Social Participation
- 7.5.2.10. Current Clinical Application of Tissue Regeneration Therapies
- 7.5.3. Initial Management of Traumatic Spinal Cord Injury
  - 7.5.3.1. Immobilization and Transport of the Critically Ill Patient with Traumatic Spinal Cord Injury
  - 7.5.3.2. Timing and Initial Medical Management of Traumatic Spinal Cord Injury. Validity of the NASCIS Protocol. Importance of Specific Units
  - 7.5.3.3. Variability of Surgical Treatment of Spinal Cord Injury in Spain
- 7.5.4. Surgical Management of Vertebro-Medullary Trauma
  - 7.5.4.1. Surgical Treatment of Unstable C1-C2 Fractures
  - 7.5.4.2. Treatment of Thoracolumbar Fractures with Neurological Compromise
  - 7.5.4.3. Advantages of the Previous Route
  - 7.5.4.4. Advantages of the Posterior Route
- 7.5.5. Surgical Management in Special Situations
  - 7.5.5.1. Pediatric Spinal Cord Injury. SCIWORA. Diagnosis and Treatment
  - 7.5.5.2. Traumatic Neurological Injury in Patients with Cervical Myelopathy
  - 7.5.5.3. Unstable Fractures in Patients with Ankylopoietic Spondylitis
  - 7.5.5.4. Fractures with Neurological Injury in the Patient with Osteoporosis
  - 7.5.5.5. Natural History of the Spinal Cord Injured. Complications Prognostic factors
  - 7.5.5.6. Management of Heterotopic Ossification. Management of Pressure Ulcers

## Module 8. Advances in Minimally Invasive Surgery

- 8.1. Cervical Spine
  - 8.1.1. Minimally Invasive Surgical Techniques for the Treatment of Cervical Disc Herniation
  - 8.1.2. Posterior Cervical Foraminotomy
  - 8.1.3. Intervertebral Disc Replacement by Minimally Invasive Surgery
  - 8.1.4. Posterior Cervical Fixation by Minimally Invasive Surgery
  - 8.1.5. Fixation of Odontoid Fractures by Minimally Invasive Surgery
  - 8.1.6. D-TRAX
- 8.2. Thoracic and Lumbar Spine
  - 8.2.1. Minimally Invasive Surgical Techniques for the Treatment of Thoracic Disc Herniation
  - 8.2.2. Endoscopic Techniques in the Management of Lumbar Disc Herniation
  - 8.2.3. Lateral Extraforaminal Approach
  - 8.2.4. Translaminar Approach
  - 8.2.5. Transforaminal Approach
  - 8.2.6. Nucleus Pulposus Replacement Technology
  - 8.2.7. Translaminar Articular Facet Fusion Techniques with Screw and Other Devices
  - 8.2.8. Microsurgical Decompression of Central and Lateral Canal Stenosis
  - 8.2.9. Pedicle Screw Placement by Minimally Invasive Surgery
  - 8.2.10. Posterior Approach Fusion Techniques. Minimally Invasive TLIF. Advantages and Disadvantages
  - 8.2.11. Laparoscopic ALIF
  - 8.2.12. Lateral Approaches for XLIF Intersomatic Arthrodesis. Technical Anatomy and Results
  - 8.2.13. Sacroiliac Joint Fusion Percutaneous Access
- 8.3. Minimally Invasive Surgery in the Deformities
  - 8.3.1. What are the Limits of Minimally Invasive Surgery in Deformity Correction? Indications
  - 8.3.2. Realignment of the Anterior Spine
  - 8.3.3. Posterior Correction Techniques
  - 8.3.4. Posterior Percutaneous Fixation. Reduction Techniques
  - 8.3.5. Temporary Fixation Technique
  - 8.3.6. Indications for Minimally Invasive Techniques in Revision Surgery
  - 8.3.7. Advantages and Disadvantages for Minimally Invasive Techniques in Revision Surgery
  - 8.3.8. Complications in Previous Approaches and How to Avoid Them
  - 8.3.9. Complications in Posterior Approaches and How to Avoid Them
- 8.4. Interspinous and Interlaminar Devices
  - 8.4.1. Percutaneous Dynamic Stabilization Techniques with Interspinous Implants
  - 8.4.2. Technical and Anatomical Considerations of Interspinous Implant Placement
  - 8.4.3. Advances in Devices
- 8.5. Pain Treatment Techniques for Minimally Invasive Surgery
  - 8.5.1. Radiofrequency Neurotomy of the Lumbar Articular Facets
  - 8.5.2. Spinal Cord Electrostimulation for Chronic Pain
  - 8.5.3. Epiduroscopy
- 8.6. Treatment of Fractures by Minimally Invasive Techniques
  - 8.6.1. Role of Vertebroplasty and its Complications
  - 8.6.2. Role of Kyphoplasty and its Complications
  - 8.6.3. Other Percutaneous Treatment Techniques for Osteoporotic Vertebral Compression Fractures

## Module 9. Spinal Surgery in the Elderly

- 9.1. General Aspects of the Elderly Spine
  - 9.1.1. Medical Aspects to be Taken into Consideration in the Elderly Patient Undergoing Spine Surgery
  - 9.1.2. Anesthetic Aspects to be Taken into Consideration in the Elderly Patient who is Undergoing Spine Surgery
- 9.2. Management of Vertebral Fractures in Elderly Patients
  - 9.2.1. Conservative Treatment of Fractures in the Elderly
  - 9.2.2. Odontoid Fractures in Elderly Patients: Functional and Quality of Life Outcomes of Patients With and Without Surgery
  - 9.2.3. Fractures in Elderly Patients with Ankylopoietic Spondylitis
  - 9.2.4. Quality of Life in Elderly Patients with Fractures
  - 9.2.5. Surgical Treatment of Osteoporotic Compression Fractures in the Elderly
    - 9.2.5.1. Role of Vertebroplasty
    - 9.2.5.2. Kyphoplasty Role
    - 9.2.5.3. Structural Osteoplasty Role
    - 9.2.5.4. Vesselplasty
    - 9.2.5.5. Use of Biologicals
- 9.3. Conservative Treatment of Spinal Pain in the Elderly
  - 9.3.1. Rehabilitation in the Elderly Patient
  - 9.3.2. Alternative Therapies. Yoga, Acupuncture. Aquagym, Pilates
  - 9.3.3. Use of Spinal Injections in Spinal Pain
  - 9.3.4. Use of Oral Medication. Aines, Morphics. In Low Back Pain in the Elderly
- 9.4. Treatment of Tumors in Elderly Patients
  - 9.4.1. Treatment of Bone Metastases in the Spine of the Elderly Patient
  - 9.4.2. Minimally Invasive Approaches
- 9.5. Surgical Aspects of Scoliosis in Elderly Patients
  - 9.5.1. The Sagittal Profile People Over 65 Years of Age: Characteristics and Radiographic Analysis
  - 9.5.2. Clinical Evaluation of the Sagittal Plane: How to Integrate Sagittal Balance into Clinical Practice?

- 9.5.3. Scoliosis in Elderly Patients: Prevalence. Pathophysiology. Classification. Indications and Objective of the Surgery
  - 9.5.4. Levels of Fusion in Scoliosis of Elderly Patients. Spinal Instrumentation
  - 9.5.5. Dual Approach Versus All Posterior Approach in Scoliosis in the Elderly
  - 9.5.6. Vertebral Osteotomies. How to Choose the Correct Surgical Approach
- 9.6. Specific Surgical Complications in the Elderly Patient
    - 9.6.1. Coronal and Sagittal Imbalance. Flat-back. Prevention. Treatment
    - 9.6.2. Pseudarthrosis and Infection After Deformity Surgery in the Elderly Patient
    - 9.6.3. Adjacent Disc/Segment Syndrome (Proximal and Distal)
    - 9.6.4. Surgical Complications. How to Minimize Postoperative Complications. Who is at Risk and What is the Risk?
    - 9.6.5. Proximal Junctional Kyphosis and Progressive Deformity. How to Minimize and Manage it
  - 9.7. Other Degenerative Pathologies
    - 9.7.1. Cervical Myelopathy in the Elderly
    - 9.7.2. Degenerative Kyphosis: Influence of Osteoporotic Fractures
    - 9.7.3. Lumbar Degenerative Stenosis and Spondylolisthesis
    - 9.7.4. Thoracolumbar Spinal Cord Compression in the Elderly
    - 9.7.5. Minimally Invasive Surgery in Patients Over 65 Years of Age

## Module 10. Complications in Spine Surgery Miscellaneous

- 10.1. Neurological Complications in Spinal Surgery
  - 10.1.1. Dura Mater Tears
    - 10.1.1.1. Conservative Management of Dural Tears
    - 10.1.1.2. Primary Repair
    - 10.1.1.3. Secondary Actions
  - 10.1.2. Nerve Root Injuries
    - 10.1.2.1. Direct Injury to Nerves During Surgery
    - 10.1.2.2. Peripheral Neuropathies due to Patient Positioning
  - 10.1.3. Neurological Complications related to Bone Grafts

- 10.2. Vascular Complications
  - 10.2.1. Vascular Injuries in Spinal Surgery
  - 10.2.2. Anterior Cervical Vascular Injuries
  - 10.2.3. Thoracic Vascular Complications
    - 10.2.3.1. Anterior Approach
    - 10.2.3.2. Posterior Approach
  - 10.2.4. Lumbar Vascular Complications
    - 10.2.4.1. Anterior Approach
    - 10.2.4.2. Posterior Approach
  - 10.2.5. Other Vascular Complications
- 10.3. Spine Infections
  - 10.3.1. Main Pathogens in Spinal Surgery
  - 10.3.2. Causes of the Infections. Risk Factors
  - 10.3.3. Diagnostic and Imaging Tests
  - 10.3.4. Spondylodiscitis
  - 10.3.5. Post Surgical Infections
  - 10.3.6. Treatment Planning
    - 10.3.6.1. Antibiotic Medical Treatment
    - 10.3.6.2. Treatment of Surgical Wounds Vacuum Systems
- 10.4. Complications Derived from the Surgical Procedure
  - 10.4.1. Failed Back Syndrome. Classification
    - 10.4.1.1. Reasons for Failure of Surgical Instrumentation
    - 10.4.1.2. Postoperative Vertebral Instability
    - 10.4.1.3. Postoperative Deformities
    - 10.4.1.4. Pseudarthrosis
  - 10.4.2. Adjacent Level Diseases. Therapeutic Approach
  - 10.4.3. Revision Surgery. Strategies
- 10.5. Evaluation and Treatment of Sacroiliac Pathology
- 10.6. Navigation and Robotics in Thoracolumbar Spine Surgery
- 10.7. Use of Bone Grafts in Spinal Surgery
  - 10.7.1. Autograft and Allograft
  - 10.7.2. Demineralized Bone Matrix and Osteoconductive Ceramics
  - 10.7.3. Biological Substitutes
  - 10.7.4. Grafts in Revision Surgeries
  - 10.7.5. Stem Cells and Cellular Bone Matrix
- 10.8. Evaluation and Follow-up Tools in Spinal Surgery
  - 10.8.1. Neurological Assessment Scales
  - 10.8.2. SF-36, VAS, Oswestry



*Update yourself with the most dynamic and avant-garde study methodology that only TECH can offer you"*



07

# Clinical Internship

After passing the online training period, the program includes a period of Internship Program in a reference clinical center. The student will have at their disposal the support of a tutor who will accompany them during the whole process, both in the preparation and in the development of the clinical internship.





“

*Do your clinical internship in one of  
the best hospitals in Spain”*



The Internship Program's practical training consists of a 3-week practical stay from Monday to Friday, with 8 consecutive hours of practical training with an assistant specialist. This stay will allow you to see real patients alongside a team of professionals of reference in the area of spine surgery, applying the most innovative diagnostic procedures for each case.

In this training proposal, of a completely practical nature, the activities are aimed at developing and perfecting the competencies necessary for the provision of health care in areas and conditions that require a high level of qualification, and which are oriented towards specific training for the exercise of the activity, in a safe environment for the patient and with high professional performance.

It is, without a doubt, an opportunity to learn by working in the innovative hospital of the future, where real-time health monitoring of patients is at the heart of the digital culture of its professionals. This is a new way of understanding and integrating health processes, in the ideal teaching scenario for this innovative experience in the improvement of professional health competencies for the 21st century.

The practical part will be performed with the active participation of the student, performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other training partners to facilitate teamwork and multidisciplinary integration as transversal competencies for clinical medicine praxis (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the training, and their completion is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:



Module	Practical Activity
<b>Diagnostic Methods in Spine Surgery</b>	Perform the appropriate anamnesis of the patient and their environment
	Indicate the imaging study usually through RX, Computerized Axial Tomography, Magnetic Resonance, Fluorography, Densitometry
	Indicate Epidurography, study of the spine and spinal canal with the introduction of contrast substances in the epidural space
	Use of Venospondylography (WASH), examination of the spinal column with epidural and paravertebral venous lines in contrast
<b>Surgical approaches to the Spine</b>	Perform cervical spine approaches
	Perform thoracic spine approaches
	Perform lumbar spine approaches
	Perform lateral approaches
	Perform subsequent approaches
	Performing surgery for cervical radicular pain
<b>Advances in the treatment of vertebral deformities</b>	Apply advances in the design of new implants
	Apply advances in the management of neuromuscular scoliosis
	Apply advances in the management of congenital scoliosis Overview and Diagnosis
	Apply advances in the management of juvenile idiopathic scoliosis
	Apply advances in the management of adult deformities
Perform reconstructive surgery and vertebral osteotomies	

Module	Practical Activity
<b>Advances in the treatment of vertebral fractures</b>	Apply advances in the management of thoracolumbar spine and sacral trauma
	Perform cementation techniques via MIS
	Diagnose and treat fractures in metabolic diseases of the spine and pediatric spine fractures
	Apply advances in the management of post-traumatic kyphosis
<b>Advances in minimally invasive surgery</b>	To practice minimally invasive surgical techniques for the treatment of cervical disc herniation
	Practice minimally invasive surgical techniques for the treatment of thoracic disc herniation
	Apply advances in the management of minimally invasive surgery in deformities
	Placing interspinous and interlaminar devices
	Practice pain management techniques for minimally invasive surgery
	Treatment of fractures by minimally invasive techniques
<b>Emerging technologies for the treatment of low back pain</b>	Employ complementary therapies, such as Yoga, Chiropractic, Acupuncture, Dry Needling and Massage Therapy on the patient through multidisciplinary management
	Use of electrode and ultrasound therapy
	Indicate physiotherapy and orthopedic appliances depending on each patient's situation
	Practice surgery for radicular pain in the lumbar spine

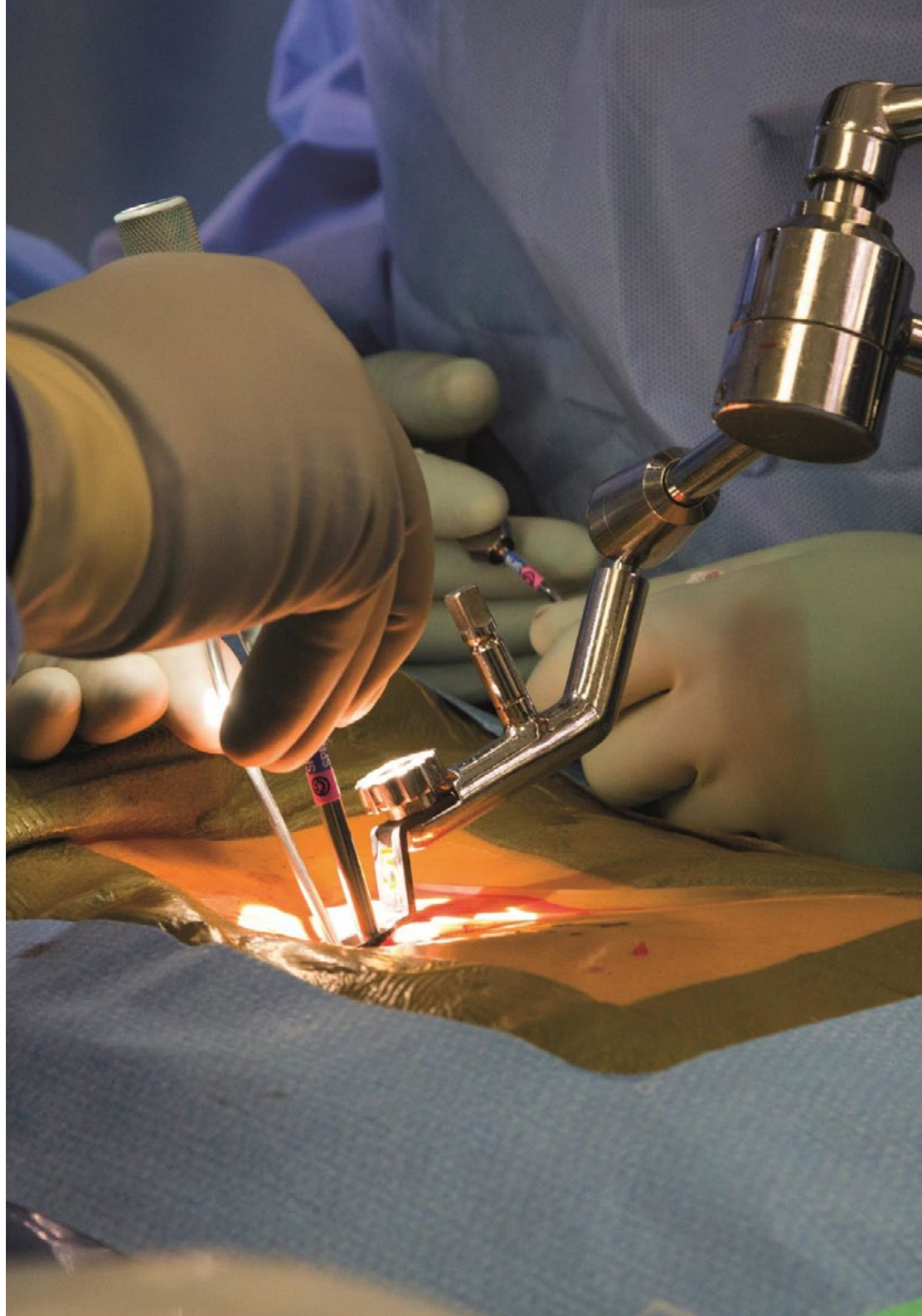


## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this educational entity undertakes to take out civil liability insurance to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. In this way, the professional will not have to worry in case he/she has to face an unexpected situation and will be covered until the end of the practical program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

**1. TUTOR:** During the Hybrid Professional Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.



08

# Where Can I Do the Clinical Internship?

To ensure that the updating process is the best possible, TECH proposes the realization of this on-site stay in a prestigious center that can provide the doctor with the latest advances in the field of Hepatology. This is a very complex and broad field, so it requires updating by the specialist, and the role of the hospital institutions proposed here is vital in this process, since they will offer the most advanced knowledge in the specialty.







“

*You will be able to choose the hospital center of your preference and develop the Internship Program with the most experienced experts”.*





The student will be able to take the practical part of this Hybrid Professional Master's Degree in the following centers:



Medicine

### Hospital HM Modelo

Country	City
Spain	La Coruña

Address: Rúa Virrey Osorio, 30, 15011, A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine

### Hospital HM Rosaleda

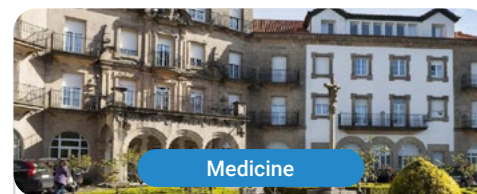
Country	City
Spain	La Coruña

Address: Rúa de Santiago León de Caracas, 1, 15701, Santiago de Compostela, A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Hair Transplantation
- Orthodontics and Dentofacial Orthopedics



Medicine

### Hospital HM La Esperanza

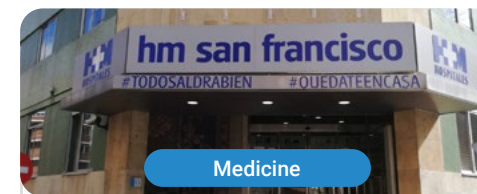
Country	City
Spain	La Coruña

Address: Av. das Burgas, 2, 15705, Santiago de Compostela, A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Oncology Nursing
- Clinical Ophthalmology



Medicine

### Hospital HM San Francisco

Country	City
Spain	León

Address: C. Marqueses de San Isidro, 11, 24004, León

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Update in Anesthesiology and Resuscitation
- Trauma Nursing



Medicine

### Hospital HM Regla

Country	City
Spain	León

Address: Calle Cardenal Landázuri, 2, 24003, León

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Update on Psychiatric Treatment in Minor Patients



Medicine

### Hospital HM Nou Delfos

Country	City
Spain	Barcelona

Address: Avinguda de Vallcarca, 151, 08023 Barcelona

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Aesthetic Medicine
- Clinical Nutrition in Medicine



Medicine

### Hospital HM Madrid

Country	City
Spain	Madrid

Address: Pl. del Conde del Valle de Súchil, 16, 28015, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Palliative Care
- Anaesthesiology and Resuscitation



Medicine

### Hospital HM Montepíncipe

Country	City
Spain	Madrid

Address: Av. de Montepíncipe, 25, 28660, Boadilla del Monte, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Palliative Care
- Aesthetic Medicine



Medicine

### Hospital HM Torreldones

Country: Spain City: Madrid

Address: Av. Castillo Olivares, s/n, 28250, Torreldones, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Anaesthesiology and Resuscitation
  - Palliative Care



Medicine

### Hospital HM Sanchinarro

Country: Spain City: Madrid

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Anaesthesiology and Resuscitation
  - Palliative Care



Medicine

### Hospital HM Nuevo Belén

Country: Spain City: Madrid

Address: Calle José Silva, 7, 28043, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- General and Digestive System Surgery
  - Clinical Nutrition in Medicine



Medicine

### Hospital HM Puerta del Sur

Country: Spain City: Madrid

Address: Av. Carlos V, 70, 28938, Móstoles, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Palliative Care
  - Clinical Ophthalmology



Medicine

### Hospital HM Vallés

Country: Spain City: Madrid

Address: Calle Santiago, 14, 28801, Alcalá de Henares, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Gynecologic Oncology
  - Clinical Ophthalmology



Medicine

### Policlínico HM Arapiles

Country: Spain City: Madrid

Address: C. de Arapiles, 8, 28015, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Anaesthesiology and Resuscitation
  - Pediatric Dentistry



Medicine

### Policlínico HM Distrito Telefónica

Country: Spain City: Madrid

Address: Ronda de la Comunicación, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Optical Technologies and Clinical Optometry
  - General and Digestive System Surgery



Medicine

### Policlínico HM Gabinete Velázquez

Country: Spain City: Madrid

Address: C. de Jorge Juan, 19, 1° 28001, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

- Related internship programs:**
- Clinical Nutrition in Medicine
  - Aesthetic Plastic Surgery





### Policlínico HM La Paloma

Country: Spain  
City: Madrid

Address: Calle Hilados, 9, 28850, Torrejón de Ardoz, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Advanced Operating Room Nursing
- Orthodontics and Dentofacial Orthopedics



### Policlínico HM Las Tablas

Country: Spain  
City: Madrid

Address: C. de la Sierra de Atapuerca, 5, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Trauma Nursing
- Diagnosis in Physiotherapy



### Policlínico HM Moraleja

Country: Spain  
City: Madrid

Address: P.º de Alcobendas, 10, 28109, Alcobendas, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Rehabilitation Medicine in Acquired Brain Injury Management







Medicine

### Policlínico HM Rosaleda Lalín

Country	City
Spain	Pontevedra

Address: Av. Buenos Aires, 102, 36500, Lalín, Pontevedra

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Advances in Hematology and Hemotherapy
- Neurological Physiotherapy



Medicine

### Policlínico HM Imi Toledo

Country	City
Spain	Toledo

Address: Av. de Irlanda, 21, 45005, Toledo

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Electrotherapy in Rehabilitation Medicine
- Hair Transplantation



09

# 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.



# 10 Certificate

The Hybrid Professional Master's Degree in Spine Surgery guarantees, in addition to the most rigorous and updated training, access to a Hybrid Professional Master's Degree issued by TECH Technological University.





*Successfully complete this program  
and receive your university qualification  
without having to travel or fill out  
laborious paperwork"*



This **Hybrid Professional Master's Degree in Spine Surgery** contains the most complete and up-to-date program on the professional and educational field.

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

In addition to the diploma, students will be able to obtain an academic transcript, as well as a certificate outlining the contents of the program. In order to do so, students should contact their academic advisor, who will provide them with all the necessary information.

Title: **Hybrid Professional Master's Degree in Spine Surgery**

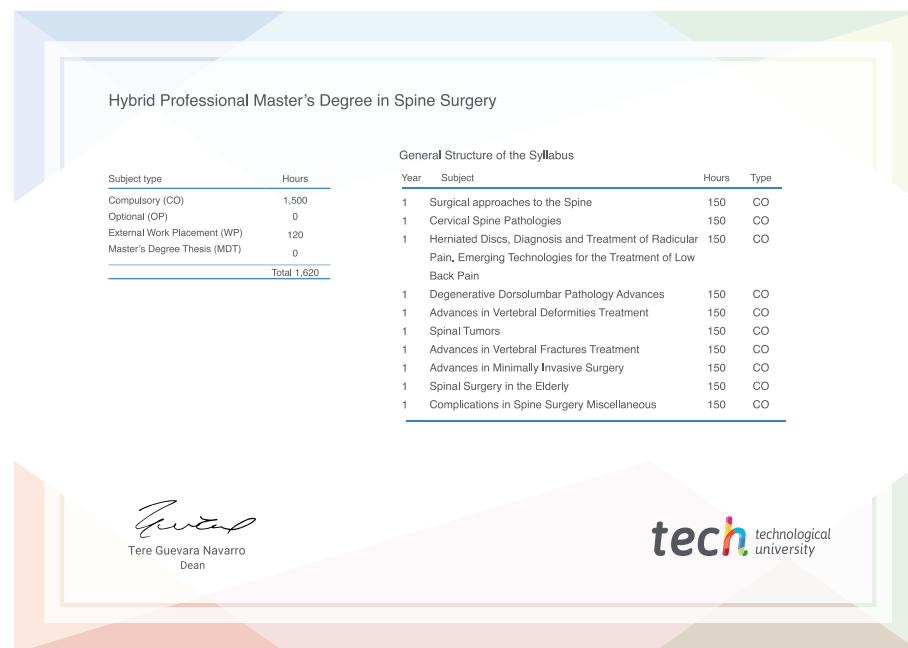
Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**

Endorsed by: **Society for the Study of Spine Diseases**



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

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development languages  
virtual classroom



## Hybrid Professional Master's Degree

Spine Surgery

Course Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

# Hybrid Professional Master's Degree Spine Surgery

Endorsed by:

