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Spine Surgery Education Programme

Lecture List

Module 1: Basic Science of the Spine

Module Editors: Prof Norbert Boos and Prof Mazda Farshad

Estimated Study Time: 7 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. There is no Tutorial for this Module.

Learning Objectives:

- Know the main steps in the history of spinal disorders
- Understand principles of spinal biomechanics and biomechanics of spinal instrumentation
- Know the concepts of cell biology in spine, and the biology of spinal fusion
- Understand spinal balance and dys-balance
- Have an overview about the epidemiology of spinal disorders, predictors of treatment outcomes and the function of spine registries
- Know the principles of pre-operative assessment of a patient, including spinal imaging and neurological investigations
- Understand the concepts of anaesthesiological management of a spine patient before, during and after surgery

Lecture	Title
1.1	History of spinal disorders
1.2	Spinal biomechanics
1.3	Cell biology of the spine
1.4	Age-related changes of the spine
1.5	Pathways to spinal pain
1.6	Genetics in spinal disorders
1.7	Development of spinal deformity
1.8	Spinal balance
1.9	Biomechanics of spinal instrumentation
1.10	Biologics in spine
1.11	Epidemiology of spinal disorders
1.12	Predictors of treatment outcome
1.13	History & physical assessment
1.14	Imaging studies
1.15	Neurological assessment
1.16	Neurophysiological investigations
1.17	Pre-operative assessment
1.18	Intraoperative anaesthesia management
1.19	Postoperative management & pain control
1.20	From clinical signs and symptoms to diagnosis in spinal disorders
1.21	Spine registries

Find out more about these Lectures at: courses.eccelearning.com/lectures

Find out more about this Module at: courses.eccelearning.com/lp/basic-science

Module 2: Degenerative Disorders of the Cervical Spine

Module Editor: Prof Richard Assaker

Estimated Study Time: 6 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Acquire the knowledge to assess, evaluate and make the diagnosis of degenerative cervical spine disorders
- Learn the decision making for different treatment modalities
- Know the evidence of the different treatment modalities
- Become familiar with the surgical principles and indications in the treatment of cervical spine degenerative disorders

Lecture	Title
2.1	Applied surgical anatomy of the spinal column, spinal cord, nerve roots and vertebral arteries
2.2	Biomechanical considerations of degenerative cervical spine
2.3	Kinematics of normal, degenerative, fused and disc-replaced cervical spines
2.4	Degenerative disorders of the cervical spine
2.5	Neurophysiological assessment
2.6	Diagnostic injection studies (interventional radiology)
2.7	Axial neck pain
2.8	Axial neck pain – non-operative management
2.9	Axial neck pain - operative management
2.10	Clinical Findings, pathophysiology and natural history of cervical radiculopathy
2.11	Cervical radiculopathy – non-operative management
2.12	Cervical radiculopathy – surgical management
2.13	Adjacent disc disease and management cervical TDR
2.14	Pathology, clinical findings & imaging of clinical myelopathy
2.15	Cervical myelopathy: medical myelopathies
2.16	Natural history and non-operative management of cervical myelopathy
2.17	Cervical myelopathy: surgical management
2.18	Cervical myelopathy: OPLL

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Find out more about this Module at: courses.eccelearning.com/lp/degenerative-disorders-cervical-spine/

Module 3: Degenerative Disorders of the Thoracolumbar Spine

Module Editor: Dr Pedro Berjano

Estimated Study Time: 8 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- To acquire the knowledge to assess, evaluate and diagnose degenerative disorders of the thoracolumbar spine
- To learn the decision-making process to select different treatment modalities
- To know the evidence for the different treatment modalities
- To understand the surgical principles of, and the indications for, the treatment of degenerative disorders of the thoracolumbar spine

Lecture	Title
3.1	Epidemiology, pathogenesis, natural history and risk factors
3.2	Clinical presentation and diagnostic workup of disc herniation, radiculopathy and thoracic myelopathy
3.3	Non-operative treatment, rehab, medication in lumbar disc herniation
3.4	Surgical treatment of lumbar disc herniation
3.5	Imaging in lumbar and thoracic disc herniation and lumbar stenosis
3.6	Thoracic disc herniations
3.7	Epidemiology, pathogenesis and natural history in lumbar spinal stenosis
3.8	Spinal stenosis: non-operative treatment, rehab, medication
3.9	Surgical treatment of lumbar stenosis
3.10	Lumbar spondylosis: epidemiology, pathogenesis, natural history
3.11	Clinical presentation, diagnostic workup, classification of degenerative lumbar spondylosis
3.12	Lumbar spondylosis: non-operative treatment
3.13	Imaging in degenerative lumbar and sacroiliac conditions
3.14	Degenerative lumbar spondylosis: surgical treatment
3.15	Degenerative Spondylolisthesis: epidemiology, diagnosis, classification
3.16	Surgical treatment of degenerative spondylolisthesis
3.17	The continuum from degenerative conditions to new onset deformity
3.18	Sacroiliac joint pain: evaluation and treatment
3.19	Management of non-specific low back pain
3.20	Psychosocial factors in low back related conditions
3.21	Multidisciplinary approaches to treatment of low back pain

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Find out more about this Module at: courses.eccelearning.com/lp/degenerative-disorders-thoracolumbar-spine/

Module 4: Adult Spinal Deformities

Module Editor: Prof Daniel Chopin

Estimated Study Time: 9 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Understand ethiopathogenesis and natural history of adult spinal deformities of any origin
- Be aware of and understand the different classification systems in adult deformities
- Be updated on adult spinal deformity in terms of new understanding of the natural history and new treatment options
- Become familiar with the imaging modalities used to make treatment-oriented decisions
- Understand the biomechanics of the instrumented fixation of complex adult deformity correction and stabilisation
- Recognise the importance of balance in the adult spine, particularly sagittal balance
- Define precisely surgical indications based on objective evaluation and diagnostic algorithms
- Recognise the limitations of conservative treatment modalities

Lecture	Title
4.1	Adult scoliosis - epidemiology, natural history, classification, clinical assessment, HRQOL
4.2	Adult scoliosis and kyphosis: radiological assessment
4.3	Idiopathic scoliosis in adults: are there specificities between 20 and 50 years?
4.4	Degenerative scoliosis: clinical presentation and diagnostic workup
4.5	Degenerative scoliosis: preoperative assessment & prevention of perioperative complications
4.6	Degenerative scoliosis and stenosis
4.7	Planning deformity correction: sagittal plane deformity correction techniques
4.8	Minimally invasive treatment indications for adult deformity
4.9	Degenerative scoliosis: complications of surgical treatment
4.10	Osteotomies of the spine for adult deformity correction
4.11	Pelvic Fixation Options
4.12	Interbody Fusion for Scoliosis TLIF, ALIF, LLIF
4.13	Scheuermann's and Idiopathic Kyphosis - Natural History, Radiology
4.14	Scheuermann's and Idiopathic Kyphosis - Treatment Options
4.15	Ankylosing Spondylitis (AS)
4.16	Adult Angular Kyphosis - classification, natural history, risk factors
4.17	Adult Angular Kyphosis - surgical experience
4.18	Sagittal balance in L5-S1 spondylolisthesis
4.19	Imaging in spondylolisthesis
4.20	Low grade adult spondylolisthesis – evidence based 'best surgical practice'
4.21	High Grade Spondylolisthesis - in situ Fusion Options
4.22	High Grade Spondylolisthesis (SPL) analysis and surgical techniques indications

Find out more about these Lectures at: courses.eccelearning.com/lectures

Find out more about this Module at: courses.eccelearning.com/lp/adult-deformity-of-the-spine/

Module 5: Paediatric Spinal Deformities

Module Editor: Prof Marco Brayda-Bruno

Estimated Study Time: 9 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Understand etiopathogenesis and natural history of paediatric and adolescent deformities of any etiology.
- Be updated on spinal cord anomalies and congenital deformities in paediatric patients.
- Learn about specific imaging and biomechanics of spinal deformities.
- Understand indications and principles of conservative treatment in paediatric spinal deformities.
- Learn principles for surgical treatment and describe the different surgical approaches and strategy to correct paediatric deformities

Lecture	Title
5.1	Evolution of the 3D understanding for spinal deformities & scoliosis & their treatment
5.2	Etiopathogenesis of Spinal Deformities in growing spine: Scoliosis & Sagittal Deformities
5.3	Growth of the spine and thorax
5.4	Idiopathic scoliosis and its natural history
5.5	Early Onset Scoliosis specificity of treatment
5.6	Secondary Scoliosis Specific Treatment
5.7	Congenital deformities
5.8	Spinal cord anomalies: spinal dysraphism
5.9	Hyperkyphosis and Scheuermann disease
5.10	Paediatric deformities: Imaging
5.11	Biomechanics of the deformed spine
5.12	Specific clinical assessment of deformities
5.13	Role of cast treatment and HALO traction
5.14	Indication for brace treatment
5.15	Pre-op assessment – how to prepare complex cases
5.16	Patient positioning in spinal surgery and blood saving
5.17	Importance of alignment and consequences in adulthood
5.18	Intraoperative neuromonitoring
5.19	Bone fusion in spinal deformity
5.20	Technique, strategy and indication in anterior approaches
5.21	Technique, strategy and indication in posterior approaches: hybrid construct
5.22	Technique, strategy and indication in posterior approaches: all-screw construct
5.23	Iliac-sacral fixation options

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Find out more about this Module at: courses.eccelearning.com/lp/paediatric-deformity-of-the-spine/

Module 6: Spine Fractures & Trauma

Module Editor: Prof Max Aebi

Estimated Study Time: 6 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Understand the epidemiology presentation and basic spine anatomy
- Request appropriate imaging investigation
- Correctly identify and classify the injury
- Suggest an appropriate management strategy

Lecture	Title
6.1	Cervical Spine Trauma: epidemiology, pathomechanics and neurology
6.2	Clinical presentation and diagnostic work up of spinal trauma
6.3	Imaging of the sub-axial cervical spine injuries
6.4	Classification of sub-axial cervical spine injuries
6.5	General treatment principles and indications conservative treatment
6.6	Specific Surgical Treatment of sub-axial Cervical Spine Fractures C3-C7
6.7	Upper CS: Instability and specific anatomical structures
6.8	Imaging of the occipito-cervical junction post-trauma
6.9	Classification of upper cervical spine trauma
6.10	The treatment of upper cervical spine injuries
6.11	Epidemiology, pathomechanics and neurodeficit in spine injuries
6.12	Thoracic and lumbar spine trauma: clinical presentation and diagnosis
6.13	Imaging of thoracolumbar injuries
6.14	Classification of thoracolumbar fractures
6.15	General principles and indication for conservative treatment of thoracolumbar spine fractures
6.16	Specific surgical treatment of thoracolumbar spine injuries
6.17	Osteoporotic Spine Fractures
6.18	Sacral fractures
6.19	Spinal injuries in children and young adults

Find out more about these Lectures at: courses.eccelearning.com/lectures

Find out more about this Module at: courses.eccelearning.com/lp/spine-trauma-and-fractures

Module 7: Spinal Tumours

Module Editor: Dr Marcin Czyz

Estimated Study Time: 6 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Understand biology and pathophysiology of neoplastic conditions affecting the spinal column and associated neural structures.
- Enable case-based selection of appropriate imaging and laboratory diagnostic work up for patients presenting with primary and secondary neoplastic conditions of the spinal column and associated neural structures
- Formulate evidence-based treatment strategies for primary and secondary neoplastic conditions of the spine in accordance with principles of stability, curative or palliative intent and neoplastic aggression.

Lecture	Title
7.1	Epidemiology, diagnosis and management of ependymoma of the spine
7.2	Diagnosis and management of osteoid osteoma of the spine
7.3	Diagnosis and management of eosinophilic granuloma of the spine
7.4	Spinal tumours in early life
7.5	Diagnosis and management of intradural extramedullary tumours
7.6	Specific surgical management of primary tumours of the sacrum
7.7	Chordoma of the spine
7.8	Epidemiology, diagnosis and management of aneurysmal bone cysts of the spine
7.9	Chondrosarcoma of the mobile spine
7.10	Primary spinal tumours: differential diagnosis, epidemiology & diagnostic work up
7.11	Giant cell tumours of the spine: treatment options and strategies.
7.12	Specific technical aspects in multisegmental resection and reconstruction for tumours of the spine
7.13	Multiple myeloma diagnosis and treatment
7.14	Classification and differential diagnosis of spinal vascular malformations
7.15	Pedicle screw placement and augmentation
7.16	Spinal metastasis: diagnosis and staging
7.17	Metastatic disease: surgical treatment options and results
7.18	Epidemiology, diagnosis and management of intramedullary spinal cord tumours
7.19	Management of residual spinal tumours

Find out more about these Lectures at: courses.eccelearning.com/lectures

Find out more about this Module at: courses.eccelearning.com/lp/spine-trauma-and-fractures

Module 8: Infections and Complications

Module Editor: Dr Bronek Boszczyk

Estimated Study Time: 5 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Understand biology and pathophysiology of inflammatory and infectious conditions of the spinal column.
- Enable appropriate etiology based imagining and laboratory work- up to establish case based differential diagnosis.
- Formulate appropriate evidence based medical and surgical management strategies for inflammatory and infectious disorders of the spinal column, including indication and techniques for urgent surgical intervention.

Lecture	Title
8.1	Spinal tuberculosis - epidemiology, pathophysiology and clinical features
8.2	Spinal tuberculosis - diagnostic tests and medical management
8.3	Spinal tuberculosis - surgical management
8.4	Spinal Infections: differential diagnostics, treatment decisions, principles
8.5	Aetiology, pathogenic mechanisms and treatment of infections in spinal instrumentation
8.6	Antibiotic treatment of spinal wound infections
8.7	Antibiotic treatment of vertebral osteomyelitis, discitis and epidural abscess of the spine
8.8	Epidemiology, pathophysiology and symptoms of ankylosing spondylitis of the spine
8.9	Natural history and treatment principles of ankylosing spondylitis of the spine
8.10	Stabilising and corrective surgery of the thoracolumbar spine in ankylosing spondylitis
8.11	Diagnosis and treatment of instability of the occipito-atlantoaxial spine in rheumatoid arthritis
8.12	Surgical Management for the subaxial cervical spine in rheumatoid arthritis
8.13	Overview of osteopathies relevant to the spine

Find out more about these Lectures at: courses.eccelearning.com/lectures

Find out more about this Module at: courses.eccelearning.com/lp/infections-inflammation

Module 9: Revisions and Complications

Module Editor: Prof Claudio Lamartina

Estimated Study Time: 8 Weeks at 7-9 hours per week to complete all online lectures, assessments, and the Module Examination. The Module Tutorial is scheduled separately after you have completed the online components.

Learning Objectives:

- Know the main complications related to different anatomical segments, from cervical spine to sacrum
- Be aware of the most frequent complications specific for different approaches, from anterior to lateral and posterior, classic open or minimally invasive
- Recognise situations of increased risk, for osteoporotic patients, neuromuscular patients, multi-operated patients
- Correctly use imaging & diagnostic tests to identify & manage postoperative complications
- Build knowledge to minimise postoperative complications in daily surgical practice

Lecture	Title
9.1	Complications & revisions in upper cervical spine
9.2	Complications & revision surgery in sub-axial cervical procedures
9.3	Complications & revision surgery in sub-axial cervical trauma
9.4	Complications & revision surgery in anterior thoracic & thoracolumbar junction approaches
9.5	Complications & revision surgery in anterior lumbar approaches
9.6	Complications & revision surgery in lateral lumbar approaches
9.7	Complications & revisions in adolescent idiopathic scoliosis
9.8	Complications & revision in early-onset scoliosis (EOS)
9.9	Complications & revision in neuromuscular, congenital and syndromic scoliosis
9.10	Scheuermann kyphosis: surgical complications
9.11	Complications & revision in adult deformity: inadequate correction and implant failure
9.12	Complications & revision in adult deformity: junctional complications and secondary progression
9.13	Complications & revision in lumbar disc herniation, stenosis, and lumbar degenerative conditions
9.14	Complications & revision in thoracolumbar trauma
9.15	Revision surgery in the osteoporotic spine
9.16	Neurological complications
9.17	Dural repair techniques and management of CSF fistulae
9.18	Cage failures in lumbar interbody fusion
9.19	Postoperative wound problems
9.20	Post-operative infection in the spine: prevention and treatment strategy
9.21	Patient positioning and complication avoidance
9.22	Imaging of early complications
9.23	Imaging of late complications

Find out more about these Lectures at: courses.eccelearning.com/lectures

Find out more about this Module at: courses.eccelearning.com/lp/complications-revisions/