



ADVANCED KNEE OSTEOARTHRITIS INTERVENTIONS: GAE and GNN

Title: ADVANCED KNEE OSTEOARTHRITIS INTERVENTIONS:

Genicular Artery Embolization (GAE) & Genicular Nerve Neurolysis (GNN)

Format: Online Course _Zoom Webinar

Date: October 31, 2026

Time: 9:00 PM (DUBAI, UAE/ GMT +4)

Duration: 60–75 minutes

Program Chair & Moderator: Dr. Salem Bauones

Introduction

This webinar focuses on advanced image-guided interventions for symptomatic knee osteoarthritis, highlighting the complementary roles of Genicular Artery Embolization (GAE) and Genicular Nerve Neurolysis (GNN). The course will provide practical insights into patient selection, procedural techniques, treatment algorithms, and management of challenging cases. Participants will gain an evidence-based understanding of vascular and neural targets for knee pain management.

Objectives

- Review mechanisms of pain generation in knee osteoarthritis
- Understand the role of inflammation and neovascularization in OA pain
- Define patient selection criteria for GAE and GNN
- Present procedural techniques and advanced technical considerations
- Compare outcomes, limitations, and complications of both treatments
- Explore future directions including combined vascular and neural interventions

Key Learning Points

- Pain in knee OA may arise from both inflammatory and neural mechanisms
- MRI and clinical phenotyping are critical for treatment selection
- GAE targets synovial inflammation and abnormal neovascularity
- GNN targets peripheral pain transmission pathways
- Careful patient selection improves treatment outcomes
- Combined treatment strategies may represent the next frontier in knee OA management

Faculty:

- **Dr. Salem Bauones_Course Chair:** Consultant of Musculoskeletal Imaging and Non-Vascular Interventional Radiology, King Fahad Medical City in Riyadh, Saudi Arabia.
- **Dr. Osman Ahmed:** Professor, Vascular and Interventional Radiology University of Utah Salt Lake City, United States of America.
- **Dr. Danoob Dalili:** Consultant Musculoskeletal Interventional Radiologist, Epsom Hospital, Surrey, United Kingdom.
- **Dr. Douglas Beall:** Chief of Radiology Services at Clinical Radiology of Oklahoma, United States of America.

Agenda:

Lecture 1 (10 min): Understanding Knee OA Pain: Patient Selection and Precision Treatment _Dr. Dalili

Learning Objectives:

- Understand inflammatory and neuropathic pain pathways
- Identify ideal candidates for GAE and GNN
- Review imaging biomarkers and clinical predictors

Key Content:

- Pain generators in knee OA
- Synovitis, bone marrow lesions, and neovascularity
- Neural sensitization and chronic pain
- MRI and ultrasound findings
- Selection criteria for GAE
- Selection criteria for GNN

Speaker Notes:

Emphasize that accurate phenotyping of pain mechanisms is the foundation of successful intervention.

Lecture 2 (20 min): Genicular Artery Embolization: Advanced Techniques and Challenging Cases _Dr. Osman Ahmed

Learning Objectives:

- Understand angiographic assessment of knee OA
- Review embolization endpoints and technical nuances

Key Content:

Topic	Clinical Relevance
Synovial hypervascularity	Predictor of response
Embolitic selection	Safety and efficacy
Target vessel identification	Technical success
Post-TKA pain	Emerging indication
Repeat GAE	Salvage strategy

Speaker Notes:

Focus on treatment, optimization and management of non-responders.

Lecture 3 (20 min): Genicular Nerve Neurolysis: Beyond Traditional Denervation _Dr. Douglas Beall

Learning Objectives:

- Review of advanced neurolysis techniques
- Understand expanding neural targets

Key Content:

Technique	Advantages	Limitations
Cryoneurolysis	Preserves connective tissue architecture	Temporary nerve regeneration
Radiofrequency Ablation	Established evidence base	Potential incomplete denervation
Chemical Neurolysis	Broad coverage	Less predictable
Combined Approaches	Enhanced pain control	Limited evidence

Advanced Topics:

- Recurrent fibular nerve
- Infrapatellar branch of saphenous nerve
- Motor-sparing approaches
- Post-TKA pain management
- Management of recurrent pain

Speaker Notes:

Highlight the evolution from three-nerve denervation toward comprehensive neural targeting.

Lecture 4 (15 min): GAE vs GNN: Competition, Complementarity, or Convergence? **Dr. Beall _ Dr. Dalili _ Dr. Ahmed**

Panel Discussion_Cases:

Case 1: Moderate OA with severe synovitis

Case 2: Advanced OA awaiting arthroplasty

Case 3: Failed GAE with persistent pain

Case 4: Persistent pain following total knee replacement

Discussion Points:

- Which treatment first?
- Can imaging guide treatment choice?
- Should both procedures be combined?
- Future research priorities

Speaker Notes:

Promote audience interaction and practical treatment algorithms.

Target Audience

- Interventional radiologists
- IR fellows and trainees
- Spine and pain management specialists
- Allied musculoskeletal specialists interested in IR techniques

Expected Outcomes

- Enhanced ability to diagnose and select patients appropriately
- Improved understanding of techniques and procedural strategies
- Greater awareness of clinical outcomes and risk management
- Support for adoption of evidence-based minimally invasive therapies