

# The Alphenix Sky - Zooming in on Genicular Artery Embolization

Genicular artery embolization (GAE) is still a relatively new, minimally invasive, interventional procedure that is used to treat knee osteoarthritis without surgery. The exceptional flexibility of Canon's Alphenix Sky Interventional suite is enabling interventional radiologists to implement this effective procedure with ease and enhanced safety.

Dr. Turki Dhahi, Vascular and Interventional Radiology and Interventional Oncology Consultant at King Fahad General Hospital in Medina, Saudi Arabia, explained the advantage of using the system for GAE.

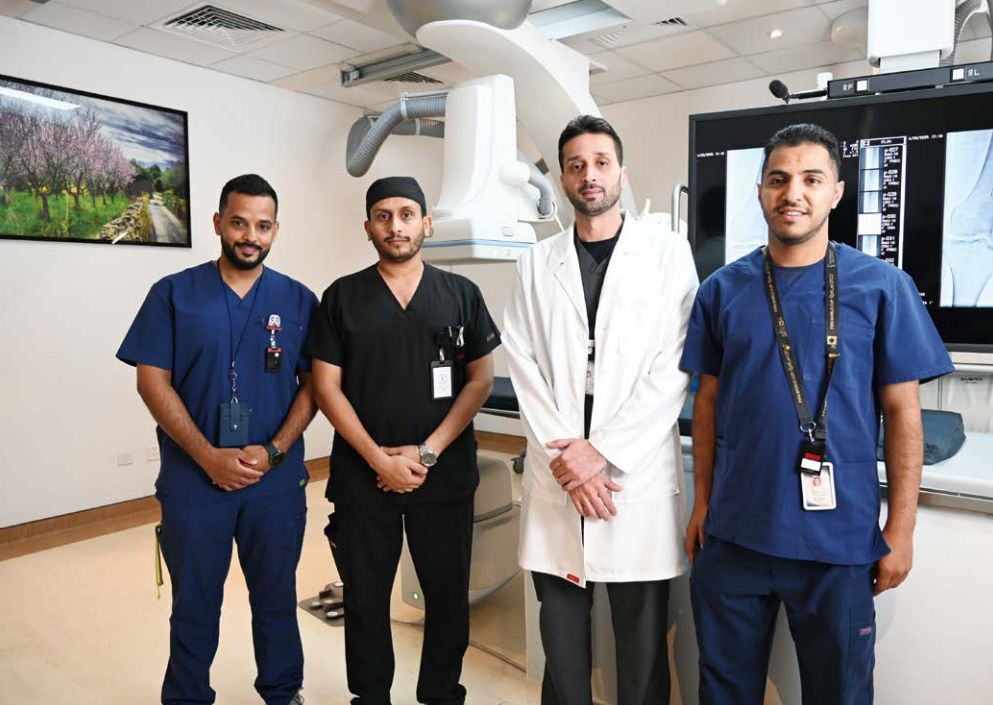
Osteoarthritis (OA) is a degenerative joint condition that affects more than 500 million people worldwide<sup>1</sup>.

In this debilitating condition, the cartilage which normally protects the ends of bones within a joint, wears down. This causes pain, swelling and stiffness

and can limit the movements of those affected by it, as cartilage is the body's normal 'shock absorber'. Once cartilage breaks down, it cannot grow back again.



Dr. Turki Dhahi, Vascular and Interventional Radiology and Interventional Oncology Consultant, King Fahad General Hospital, Saudi Arabia



including: neurology, general surgery, gastrointestinal and endoscopy, nephrology, orthopedic surgery, physical therapy, and radiology department is supporting all the facilities with the diagnostic clinical imaging. Radiology department is powered with different modalities from Canon high-end CT system (Aquilion Prime SP) and the premium interventional system Alphenix Sky installed in 2020.

Dr. Turki Dhahi is a Vascular and Interventional Radiologist and Interventional Oncology Consultant at the Hospital. To illustrate how useful the system is supporting non-surgical treatment of knee OA, he explained a case from May 2025.

“We had a 56-year-old female patient suffering from chronic right medial knee pain due to moderate osteoarthritis. She was highly dependent on analgesics and had significant difficulty walking,” he said. “The patient refused surgical intervention, so we offered her an advanced, minimally invasive solution - genicular artery embolization.”

“This procedure was performed using the Canon Alphenix system, and the results were outstanding,” he continued. “The patient is now pain-free and off medications.”

Dr. Dhahi explained how several features of the Canon played a critical role in this success.

“Color-Coded Circulation (CCC): helped us assess the flow patterns within the

### A common problem

OA most commonly affects the knee joint. Of the 528 million people living with OA globally, an estimated 365 million (69.13%) have OA situated in the knee joint<sup>1</sup>. While it is not exclusively associated with aging, the prevalence of OA is expected to continue to increase globally, with aging populations and increasing rates of obesity and injury.

Depending upon the severity of the OA in the knee, traditional treatments include non-surgical approaches such as exercise, physiotherapy, braces and other assistive technologies; medicines, such as non-steroidal anti-inflammatory drugs (NSAIDs) for pain relief, or steroid injections. Surgical options include joint replacement surgery for people with severe symptoms. However, surgical solutions involve risk and long recovery. They are not a preferable option for many patients and surgery is not even possible for patients with a very high BMI.

### An advanced, non-surgical solution

Interventional Radiologists are increasingly performing knee embolization, also known as genicular artery embolization (GAE) - a minimally invasive procedure that targets the inflammatory process in the synovium – the lining of the knee. Successfully implemented, it blocks the blood flow to specific tiny blood vessels that feed into the synovium in the areas of inflamma-

tion. The inflammation subsides rapidly when the blood vessels are blocked or the blood flow to that specific area is slowed.

Knee embolization for treatment of osteoarthritis was pioneered in Japan<sup>2</sup> and has been subsequently studied significantly in the USA, Europe and the UK. Research is showing good results in the treatment of knee OA with lasting and significant pain relief within one to two weeks.

### A significant healthcare burden in Saudi Arabia

Recent studies have shown a high prevalence of knee OA in Saudi Arabia and identified a need to decrease the burden of the problem and the cost of treatment<sup>3</sup>.

The King Fahad General Hospital in Medina, Saudi Arabia, is an 500 bed capacity. The hospital offers health services in various specializations

#### Canon's Alphenix Sky

*Optimize flexibility with 270° unrestricted access around the patient and 201cm full patient coverage without needing to move the individual or table. The system's innovative Dose Tracking System will also provide enhanced dose awareness, estimating skin dose in real time and displayed as a 3D color map on a patient graphic. This helps exclude regions of previous high exposure.*



King Fahad General Hospital in Medina, Saudi Arabia



*“With the features of the Alphenix Sky, both safety and efficacy are improved.”*

*Dr. Turki Dhahi,  
Vascular and Interventional Radiology and Interventional Oncology Consultant,  
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genicular branches, ensuring that we targeted the correct vessels while preserving normal tissue perfusion,” he remarked.

The Alphenix Sky system’s ceiling-mounted flexibility allowed full access around the knee without repositioning the patient, which enabled Dr. Dhahi to achieve a smoother workflow, shorter procedure time, and better comfort for the patient.

“Live Zoom was also critical,” he added. “We were able to magnify the image in real time without increasing radiation dose or losing resolution. That gave us a clear view of the small genicular branches improving the accuracy of microcatheter placement and embolic delivery.”

### **Better outcomes**

Dr. Dhahi feels that The Alphenix Sky has so much potential and could enhance outcomes across many other IR procedures.

“They can significantly enhance outcomes in large-scale procedures such as arteriovenous malformation embolization, tumor embolization, uterine fibroid embolization, and prostatic artery embolization.”//

### **References:**

- <sup>1</sup>. World Health Organization (WHO) Fact Sheet on Osteoarthritis:  
<https://www.who.int/news-room/fact-sheets/detail/osteoarthritis>
- <sup>2</sup>. Okuno Y., Korchi A.M., Shinjo T., Kato S. Transcatheter Arterial Embolization as a Treatment for Medial Knee Pain in Patients with Mild to Moderate Osteoarthritis. *Cardiovasc. Intervent. Radiol.* 2015;38:336–343. doi:10.1007/s00270-014-0944-8.  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC11943379/#sec2-jcm-14-02106>
- <sup>3</sup>. Prevalence of Symptomatic Knee Osteoarthritis in Saudi Arabia and Associated Modifiable and Non-Modifiable Risk Factors: A Population-Based Cross-Sectional Study by Omar W Althomali et al.:  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10001239/#abstract1>

Scan the code or click [HERE](#) to view Dr. Turki Dhahi’s full interview video

