American College of Chest Physicians guidelines have also expanded their recommendations and now include the use of an IPCD, with the caveat that it be portable, battery powered, and able to monitor on a daily basis whether the patient wears the device and for how long [Falck-Ytter Y et al. *Chest*. 2012].

While warfarin is commonly prescribed to prevent VTE following TKA and THA, it has a narrow therapeutic index, can cause severe bleeding, requires frequent monitoring, and is associated with food and drug interactions. Ryan M. Nunley, MD, Washington University School of Medicine, St Louis, Missouri, USA, described a prospective study designed to compare the safety and efficacy of a mobile IPCD compared with warfarin therapy for the prevention of VTE among patients undergoing TKA and THA. A second goal was to evaluate whether patients were satisfied with the treatment they received.

The study included 2722 adults undergoing elective primary or revision TKA or THA (Table 1). Patients were stratified to either a standard-risk (n = 1888) or high-risk (n = 834) VTE prophylaxis for 6 weeks postoperatively, depending on the local treatment protocol. In the standard-risk protocol, patients wore an IPCD for 10 days and took aspirin 325 mg twice daily for 6 weeks. High-risk patients received 4 weeks of dose-adjusted warfarin and wore compression stockings for 6 weeks.

Ineligibility criteria included prior surgery within 3 months, preoperative deep vein thrombosis (DVT), history of pulmonary embolism (PE), chronic anticoagulation therapy, and prolonged immobilization following surgery.

Postoperatively, patients were monitored for bleeding complications, symptomatic VTE, and hospital readmissions. At 4 to 6 weeks, there were no significant differences in the rate of DVT/PE in the standard- vs high-risk groups, TKA vs THA, or primary vs revision surgery (Table 2). Patients in the high-risk group experienced significantly more drainage postoperatively compared with the low-risk group (21% vs 14%, respectively; $P < .001$). Major bleeding events were significantly higher in the high-risk group than in the standard-risk group (2% vs 0.3%, respectively; $P < .001$); the high-risk group also experienced more wound problems (1.3% vs 0.2%, respectively; $P = .002$). Overall, patients who received the IPCDs were more satisfied with their treatment than those who received high-risk anticoagulation therapy ($P < .001$).

In conclusion, IPCDs and warfarin were similarly effective in preventing VTEs. However, patients with an IPCD experienced significantly fewer major bleeding events, wound complications, and days of drainage. In addition, patients were more satisfied with IPCD treatment than warfarin treatment.

Table 1. Stratification by Treatment Protocol and Type of Procedure

Treatment Protocol and Type of Procedure	No. (%)
Standard risk	1888 (69)
High risk	834 (31)
Total knee arthroplasty	1635 (60)
Total hip arthroplasty	1087 (40)
Primary	2393 (88)
Revision	329 (12)

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Table 2. Comparison of DVT/PE Rates at 6 Weeks

Group	Rate, %	*P* Value
Standard risk	0.4	.77
High risk	0.6	
Hip	0.7	.59
Knee	0.4	
Primary	0.6	.16
Revision	0	

DVT, deep vein thrombosis; PE, pulmonary embolism.
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Cementless Fixation in TKA Noninferior to Cemented Fixation at 2 Years

Written by Maria Vinall

In a clinical study reported by Kevin B. Fricka, MD, Anderson Orthopaedic Clinic, Alexandria, Virginia, USA, patients receiving total knee arthroplasty (TKA) using cementless fixation had similar clinical and functional scores and equivalent levels of satisfaction compared with those receiving cemented TKA after 2 years.

Cemented TKA is associated with excellent long-term survival and is the preferred approach for the majority of surgeons. Cementless TKA, while having favorable long-term results on the femoral side [Baker PN et al. *J Bone Joint Surg Br*. 2007], has been associated with failure related to the tibial or patellar components. This was a prospective single-surgeon study designed to assess clinical outcomes, patient satisfaction, and long-term

(15 years) survival in 92 TKA patients randomized to cemented (n = 45) or cementless (n = 47) fixation. The cementless implants consisted of a porous fiber-metal mesh femoral component and a trabecular metal modular tibial component; the cemented implants were precoated femoral and tibial components. All designs were fixed bearing and cruciate retaining. Knee Society Scores and Oxford Knee Scores were collected prior to surgery and at 4 weeks, 4 months, and 1 and 2 years. Pain was assessed using a visual analog scale preoperatively and at 4 weeks and 4 months. Alignment was assessed using radiographic analysis. Postoperative complications were recorded. All patients received routine antibiotic and aspirin prophylaxis, and all had identical rehabilitation protocols.

The cementless approach was associated with a shorter surgical time (74 vs 81 minutes) but no difference in blood loss. Early pain scores (at 4 months) were higher, but not significantly so, in the cementless group. Dr Fricka suggested that this was likely due to the time needed for osseointegration. Knee Society Scores showed no difference in function at 2 years, but patients in the cemented group had slightly higher clinical scores (96.3 vs 92.3; $P = .3$). Oxford Knee Scores and patient-reported satisfaction, pain levels, and improved function were similar. There were 2 revisions: 1 in the cementless group for instability and 1 in the cemented group for infection. Overall limb alignment was similar on radiographic analysis (Table 1). A nonprogressive radiolucency was identified in 11 patients in the cementless group (vs none in the cemented group). Varus subsidence of the tibia was noted in 4 knees in the cementless group; none have required revision. Of the 11 patients who had staged bilateral TKA with 1 cemented and 1 cementless fixation, 9 patients had no preference, and 2 preferred the cementless design.

This study is limited by its small sample size (although it was sufficient to perform a power analysis) and short follow-up. Additional follow-up is planned for these patients at 5, 10, and 15 years to assess whether cementless fixation provides an overall survivorship advantage.

Table 1. Radiographic Outcomes: Long Alignment Tibiofemoral Angle at 2 Years

	Cemented	Cementless
Tibiofemoral angle, degrees	6.6	6.2
6° ± 3°, % of patients	90	86

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The Impact of CLAI on Patients With Osteochondral Lesions of the Talus

Written by Maria Vinall

Patients with an osteochondral lesion of the talus (OLT) and chronic lateral ankle instability (CLAI) have an increased proportion of larger chondral lesions compared with patients without instability. They are also more likely to have an increased incidence of lateral OLTs, additional chondral lesions at the tip of the medial malleolus, and a higher likelihood of treatment failure.

OLT is a form of chondral injury in the ankle for which trauma is the dominant etiology. Although CLAI can be considered a form of ongoing microtrauma and thus may influence lesion prognosis and characteristics, the association between the duration of the instability and the severity of OLT remains controversial. Moses Lee, MD, Department of Orthopaedic Surgery, Yonsei University College of Medicine, Seoul, Korea, presented the results of a study designed to determine the effect of, and clinical outcomes associated with, long-standing ankle instability in OLT.

The study comprised 420 patients who received primary arthroscopic marrow stimulation for OLT, 74 with CLAI and 148 without CLAI, matched for age, sex, body mass index, and trauma history. All patients had a history of repetitive inversion sprain and positive findings on stress radiography. Participants were approximately 36 years old, around 60% were men, and study follow-up was approximately 53 months. Demographics and lesion characteristics were compared using preoperative magnetic resonance imaging (MRI) and arthroscopy. Clinical evaluations (the visual analog scale [VAS] for pain, American Orthopaedic Foot & Ankle Society [AOFAS] Ankle-Hindfoot score, and Foot and Ankle Outcomes Score [FAOS]) were performed at 6 weeks; 3, 6, and 12 months; then annually. Radiographic and arthroscopic analysis of the lesion was based on the preoperative MRI with an ellipse formula of coronal length by sagittal length times 0.79. Lesions ≥ 150 mm^2 were defined as large.

Most OLTs were located on the medial side; however, the incidence of lateral OLTs was significantly increased in patients with CLAI vs those without it ($P < .018$). Patients with CLAI were also significantly more likely to have a chondral lesion at the tip of the medial malleolus (42% vs 7%; $P < .018$).

The proportion of large lesions was significantly higher among patients with OLT and CLAI (20.2%) compared with those without CLAI (9.4%; $P = .024$), although the average lesion size was not significantly different