


The incidence of periprosthetic tibial fracture is comparable between cementless and cemented unicompartamental knee arthroplasty (UKA)


Burger JA, Jager T, Dooley MS, Zuiderman HA, Kerkhoffs GMMJ, Pearle AD. Comparable incidence of periprosthetic tibial fractures in cementless and cemented unicompartamental knee arthroplasty: a systematic review and meta-analysis. *Knee Surg Sports Traumatol Arthrosc.* 2022;30(3):852–874.

Available at: [Knee Surgery, Sports Traumatology, Arthroscopy](#)  


Key points



Incidence of periprosthetic tibial fracture was similar in cementless and cemented UKAs



In both fixation types, the **majority of fractures occurred during or within 3 months of surgery** (72%) and were **non-traumatic** (84%)



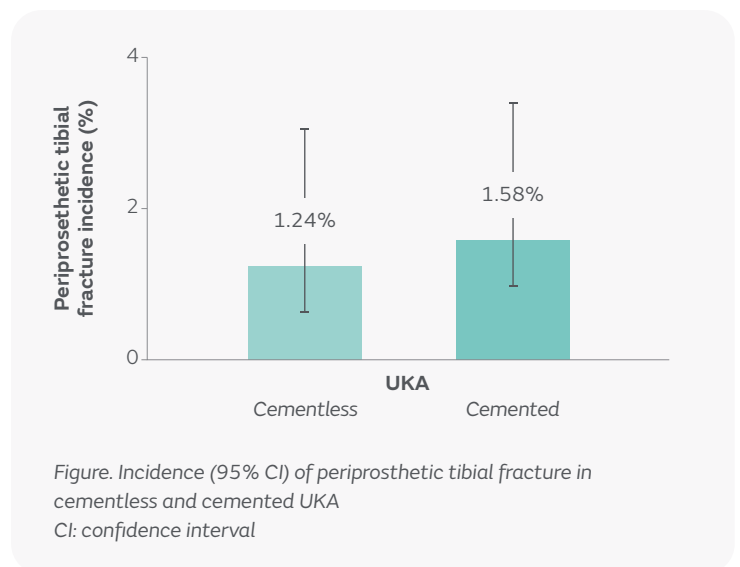
Excessive interference fit combined with **impaction techniques** – as used in cementless keel design UKA implants – may **introduce additional risk** for periprosthetic fracture

Overview

- Systematic literature review and meta-analysis to estimate the incidence of periprosthetic tibial fractures in cementless and cemented UKA, following publication of registry-based studies showing a higher rate of periprosthetic fractures in cementless compared to cemented Oxford™ Partial Knee (Zimmer Biomet, Warsaw, IN, USA) implants
- Secondarily, relevant studies were systematically reviewed to summarize characteristics (including time to fracture, mechanism and location of fracture) and risk factors of periprosthetic tibial fractures in UKA
- A total of 81 studies were included: 58 clinical studies, 10 case reports and 13 laboratory studies

Results

- Contrary to registry-based studies, the rate of periprosthetic tibial fracture was comparable between cementless and cemented UKA (studies, n=44; p=ns; Figure)
 - A subgroup analysis for the Oxford Partial Knee implants (studies, n=21) showed fracture rates of 1.22 and 0.99% for cementless and cemented UKA, respectively
- Majority of fractures occurred during surgery or presented within 3 months postoperatively (72%) and were non-traumatic (84%)
- Fractures were significantly increased in female patients and those with increased BMI, advanced age, decreased bone mineral density (BMD), increased postoperative tibia-femoral alignment and a very overhanging medial tibial condyle (p<0.03)
- Laboratory studies revealed that an excessive interference fit (press fit), excessive tibial bone resection, a sagittal cut too deep posteriorly and low BMD reduce the force required for a periprosthetic tibial fracture to occur



Conclusions

The incidence of periprosthetic tibial fracture was similar in both cementless and cemented UKA. However, an excessive interference fit, combined with impaction techniques – as used with cementless keel design implants – may increase the risk of fracture, highlighting the importance of improvements in instrumentation and implants.