UNITED ORTHOPEDIC

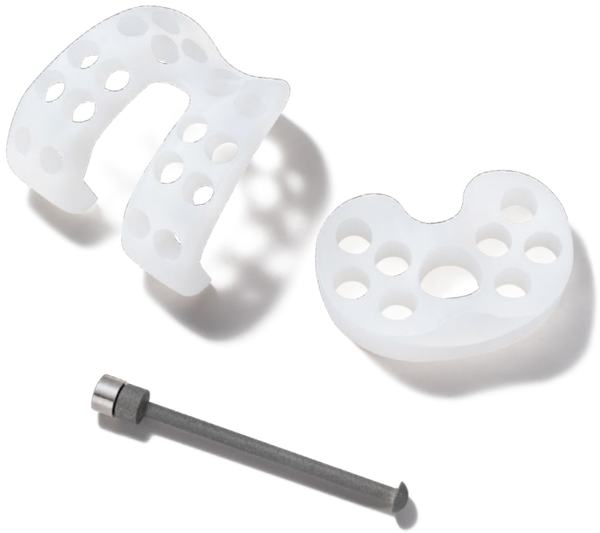
Cellbrick™ Knee

Infection Management Spacer

Cellbrick™ Knee Spacer –

The Cellbrick™ Knee Spacer is specifically designed to support infection management of periprosthetic joint infection (PJI) in two-stage revision total knee arthroplasty. This articulating design maintains the joint space, limb length, and ligament structure after implant removal, and preserves joint mobility which help to facilitate reimplantation during revision surgery.

Featuring a UHMWPE spacer core on both the femoral and tibial sides, the Cellbrick™ Knee Spacer is designed to provide enhanced biomechanical safety throughout its implantation period. The fenestrated design serves as an antibiotic cement carrier, ewithout affecting antibiotic release. An optional intramedullary canal rod is available to provide extended infection management in either the femoral or tibial canal.



Cellbrick™ Knee Spacer

The Cellbrick™ Knee Spacer is an ultra-congruent concept design that features high articulating conformity throughout the major range of knee joint motion during infection control period.

Femoral side

(optional) Canal Rod

Tibial side

Tibial Spacer

Femoral Spacer

(optional) Canal Rod

Size compatibility and congruency chart of Cellbrick™ Knee Spacer

Type		Size			
Femoral Spacer		#2	#3	#4	#5
Tibial Spacer		#2	#3	#4	#5
Congruence level	0°	82%	80%	80%	80%
	45°	50%	51%	54%	54%
	90°	50%	50%	54%	54%

Cellbrick™ Knee

Balancing Mechanical Strength & Infection Management

Universal & Biocompatible Design
- Symmetrical design for fitting left/right knees
- UHMWPE-based core material

Femoral Spacer

Prefabricated Cement Carrier
- AP:ML = 1:1 for accommodating cement

Extended Anterior Lip
- Physical stopper of femoral anterior sliding
- Designed to enhance joint stability
- Anterior chamfered soft tissue friendly design

Tibial Spacer

Ultra-Congruent (UC) Bearing Concept
- Thickness in 10 mm for structural reconstruction

Stable Mobile Spacer Design
- One-on-one articulating pairs with 4 size options
- Reduces the risk of dislocation

Easy-Extraction Design Features
- Threaded top for extractor fixation
- Mushroom end for holding wrapped cement

Canal Rod

For Deep Infection Management
- Standardized simple cemented rod preparation

Efficient Cement Utilization

Validated Antibiotic Delivery Performance

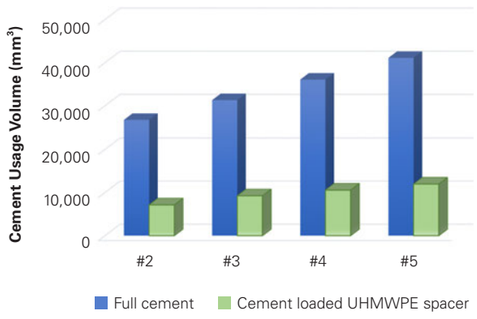
Approximately 70% of PJIs are monomicrobial and up to 25% are polymicrobial, highlighting the importance of appropriate antibiotic selection for effective local infection management in two-stage revision TKA. [1]

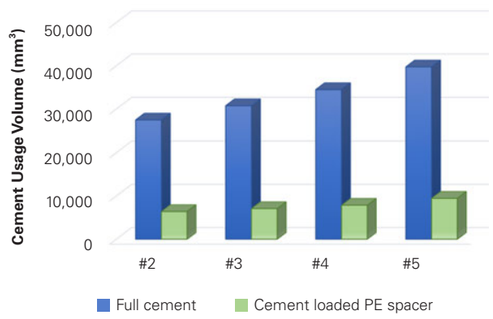
Intraoperative Advantages[2]

- The fenestrated design reduces the amount of bone cement required to form the spacer by up to 77%.
- Validated elution performance confirms clinically effective antibiotic release, improving cost efficiency and reducing reliance on commercial antibiotic-loaded bone cement.

Femoral Spacer

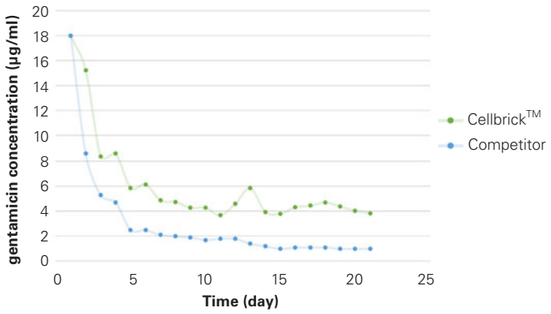
Tibial Spacer



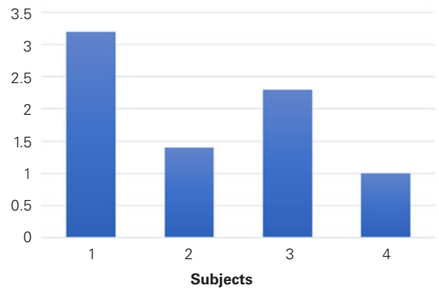


Ex-Vivo Gentamicin Elution Profile[3-5]

- Sustained gentamicin elution above clinically effective levels (>1 µg/mL) was maintained for 30 days, with an initial peak >18 µg/mL on day 1[3-5], while in vivo results confirmed local concentrations exceeding minimum inhibitory concentration levels with safe systemic exposure.[6]



In-Vitro Cumulative Gentamicin Release



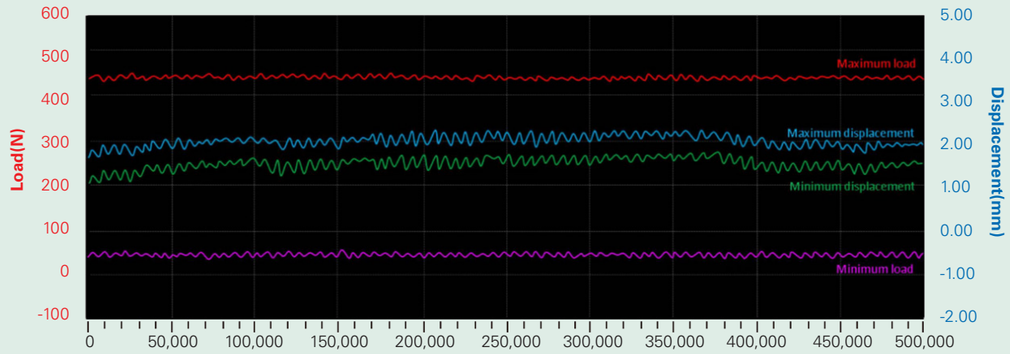
Intra-articular gentamicin concentrations from antibiotic-loaded Cellbrick™ Knee Spacers in patients undergoing revision total knee arthroplasty

Proven Mechanical Safety

Confirmed Safety Under Clinical Loading Conditions

Validated Fatigue Resistance Under Cyclic Loading[3,7]

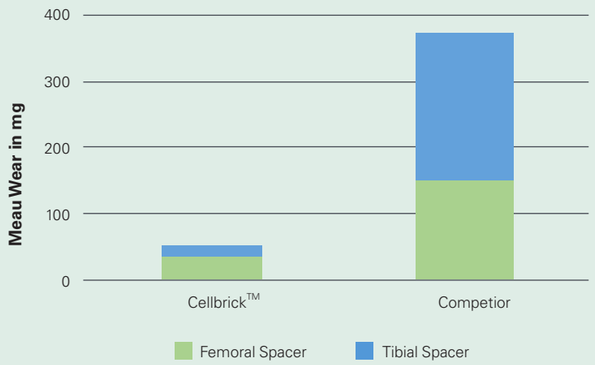
- Fatigue performance of the Cellbrick™ Knee Spacer, evaluated per ASTM F1800–12 using a cantilever-based setup, demonstrates structural safety and stability under high-cycle loading conditions representative of the implantation period.



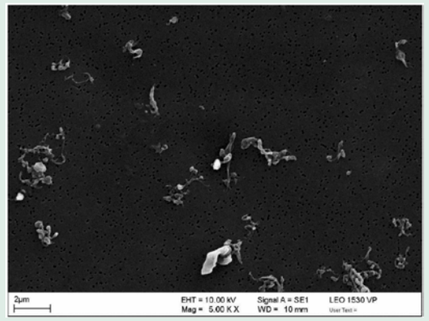
Test record for the fatigue tests on the tibial spacer

Wear Safety Characterized Under Knee Motion[3,8]

- Wear characterization per ISO 14243-1 shows that UHMWPE and cement particle generation under knee motion supports the mechanical safety of the spacer during the infection management period.



Comparison of mean wear for Cellbrick™ and competitor's knee spacer components



Morphological analysis of wear particles of the Cellbrick™ Knee Spacer

User-Friendly Instrument Offerings

Efficient and Reproducible Surgical Workflow

The Cellbrick™ Knee Spacer is supported by a thoughtfully designed set of instruments intended to enhance surgical usability and workflow efficiency.
These instrument offerings are developed to support consistent intraoperative decision-making and reliable execution throughout the spacer implantation and management process.

Reusable, Precision Molds

- Durable, medical-grade silicone allows reliable repeated sterilization.
- Consistent compression molding produces adequate surfaces and minimizes wear.
- Single universal metallic case accommodates all four spacer sizes for convenience and cost efficiency.

Accurate Spacer Sizing

- Facilitates intraoperative measurement of femoral and tibial residual bone.
- Sizing templates support confident selection of the appropriately dimensioned spacer for each patient.

Femoral Spacer Sizing Template

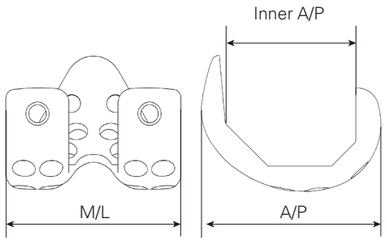
Tibial Sizing Template

Controlled Canal Rod Extraction

- A dedicated sliding hammer enables intuitive and controlled removal of the canal rod.
- Supports efficient extraction, streamlining the surgical workflow.

Canal Rod Extractor & Hammer

Order Information

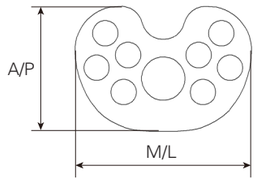


Femoral Spacer

Size		Catalog number
UHMWPE*	#2	2106-1020
	#3	2106-1030
	#4	2106-1040
	#5	2106-1050

Size	M/L	Inner A/P	A/P
#2	60	42.9	60
#3	64	46.6	64
#4	68	50.3	68
#5	72	54	72

Unit: mm



Tibial Spacer

Size		Catalog number
UHMWPE*	#2	2206-1020
	#3	2206-1030
	#4	2206-1040
	#5	2206-1050

Size	M/L	A/P
#2	66	46.5
#3	69	49
#4	72	51.5
#5	76	54.5

Unit: mm

Ø4 × 80 mm	
Ti-6Al-4V*	2706-1009

Canal Rod

*UHMWPE is an abbreviation for ultra-high molecular weight polyethylene.
*Ti-6Al-4V is an abbreviation for Titanium-6 Aluminum-4 Vanadium.

References

1. Patel, R. (2023). Periprosthetic joint infection. New England Journal of Medicine, 388(3), 251-262.
2. Data held on file. United Orthopedic Corporation.
3. Chang, Y., Lee, M. S., Liau, J. J., Liu, Y. L., Chen, W. C., & Ueng, S. W. (2020). Polyethylene-based knee spacer for infection control: design concept and pre-clinical in vitro validations. Polymers, 12(10), 2334.
4. UOC-RD-TR-22050. Data held on file. United Orthopedic Corporation.
5. UOC-RD-TR-17022. Data held on file. United Orthopedic Corporation.
6. UOC-UPD-SI-25001. Data held on file. United Orthopedic Corporation
7. UOC-RD-TR-17063. Data held on file. United Orthopedic Corporation.
8. UOC-RD-TR-17064. Data held on file. United Orthopedic Corporation.

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