MicroPort[®] PROPHECY[®] GUIDES Patient-Specific Instruments (PSI) for Total Knee Arthroplasty

SIMPLE
ACCURATE¹
EFFICIENT^{2,3}

't. IL

Surgeon

CAŠEXXXXX PNXXXXX

Size

Pt. ID

PR@PHECY[®] GUIDES AND PREOPERATIVE PLANNING

KNEE SYSTEM

EVOLUTION®

KNEE SYSTEM

Prophecy[®] Guides are patient-specific instruments to assist implant positioning and alignment in Total Knee Arthroplasty. The Prophecy[®] design is based on CT or MRI imaging that provides the anatomic landmarks necessary for 3D preoperative planning, alignment, and sizing based on the surgeon's preferences.

Prophecy[®] Guides are also fully compatible with standard instrumentation and have built-in housing for the metal cutting guides to provide precise, clean resections and allow the option for recuts if necessary.

Our Implants

Prophecy[®] Guides are available for both Evolution[®] Medial-Pivot Knee System and Advance[®] Knee System.

Personalized to the Patient and the Surgeon

Prophecy[®] Guides follow an in-house design process from planning to manufacturing the guides, and we are willing to support our customers throughout the process. Our team consists of a group of engineers that work on the preoperative plan and guide design according to each surgeon's preferences and requirements, making the plan personalized for both the patient and the surgeon.

THE PROPHECY® PROCESS

- 1. The patient receives a full leg CT or MRI scan following the Scan Protocols.
- 2. Virtual preoperative alignment is performed according to surgeon's preferences.
- 3. The Prophecy[®] Guides are designed to reference bone cuts necessary for producing either neutral mechanical axis alignment or an alignment of the surgeon's choosing.
- 4. The preoperative plan is sent to the surgeon to get their approval. The surgeon may alter the plan if they wish.
- 5. A rapid prototyping machine produces patient-specific Prophecy[®] Guides out of high-resolution nylon.
- 6. Prophecy[®] Guides are inspected and shipped.

Prophecy® Guides are Compatible with CT and MRI Scans

Available in Two Guide Options:



Prophecy[®] Guides and Evolution[®] Medial-Pivot Knee System enable a faster recovery and more physiological path pattern and significant improvement of knee functionality.⁴

INCREASED SURGICAL ACCURACY

Prophecy[®] Guides are Specifically Designed to Provide Accurate Alignment, Sizing, and Implant Placement

Alignment

Mechanical axis alignment with patient-specific instrumentation is significantly closer to neutral zero.^{5,6,7}

Bone Resection

In TKA surgery using Prophecy[®] Guides, 90% of collected resection readings showed bone resection accuracy with an error of \leq 1 mm (P<0.0001) when comparing them with the pre-op planned resections in published literature.⁸

Femoral Rotation

TKA paired with patient-specific instrumentation has demonstrated increased accuracy in femoral rotation. Published literature has evidenced fewer femoral component rotation outliers higher than 3°, as low as 2.2% in Patient-specific cases vs. 22.9% compared to standard instrumentation.^{9,10}





LOWERS OPERATING TIME^{11,12} AND INCREASES OPERATING ROOM EFFICENCY^{2,3,}

Less Surgical Steps

Utilizing Prophecy[®] Guides can eliminate up to twenty or more surgical steps that standard instrumentation requires. Coronal and sagittal alignment, rotation, and sizing of the femoral and tibial components are determined preoperatively according to the surgeon's preferences.

Less Instruments and Trays

Eliminating surgical steps reduces the number of instruments and trays required for the surgery. This can be translated to less hospital sterilization costs and logistics.

Patient-specific instrumentation in TKA saves up to 18 minutes (24.8 %) in surgical time⁵

Less Time Spent in Determining Sizes²

Preoperative planning predicts accurately up to 95.5% femur sizes and 93% tibia sizes implanted in surgery according to published reports.¹³

Reduced Length of Stay

Patient-specific instrumentation in TKA enables a shorter length of stay in the hospital with up to a half-day reduction (0.7 days).⁵



The Accuracy of Traditional Navigation Methods Without the Added Time.

MORE PROPHECY® BENEFITS

Your Solution For Trauma, Deformities, and Hardware



Minimally Invasive

Prophecy[®] Guides can reduce blood loss and the risk of fat embolism by not requiring intramedullary canal penetration.

Fewer blood units and a reduced transfusion are reduced on PSI surgeries when compared to standard instrumentation surgeries in literature. 1.1% of patients require transfusions with patient-specific instruments vs 7.7% conventional instrumentation in TKA.⁵

Faster Return to Driving

After undergoing a TKA surgery using Prophecy[®] Guides and Evolution[®] Medial-Pivot Knee System, most patients (73%) returned to driving within the first 3 weeks regardless of operative side or transmission of vehicle.⁸

REFERENCES

- 1. Ast, M. P., Nam, D., & Haas, S. B. (2012). Patient-specific instrumentation for total knee arthroplasty: a review Orthopedic Clinics, 43(5), e17-e22.
- 2. Rodrigues, A. S. T., & Gutierres, M. A. P. (2017). Instrumentação personalizada na artroplastia total do joelho Devemos adotá-la?. Revista brasileira de ortopedia, 52(3), 242-250.
- 3. Tibesku, C. O., Hofer, P., Portegies, W., Ruys, C. J. M., & Fennema, P. (2013). Benefits of using customized instrumentation in total knee arthroplasty: results from an activity-based costing model. Archives of orthopaedic and trauma surgery, 133(3), 405-411.
- 4. Rigoni, S., Dalla Libera, M., Pigatto, D., Conte, D., Ceccato, A., & Chemello, C. (2021). Comparison between patient specific instrumentation and traditional technique in patients with total knee arthroplasty: An observational perspective study. Journal of Orthopaedics, 23, 264-272.
- 5. Vide, J., Freitas, T. P., Ramos, A., Cruz, H., & Sousa, J. P. (2017). Patient-specific instrumentation in total knee arthroplasty: simpler, faster and more accurate than standard instrumentation—a randomized controlled trial. Knee Surgery, Sports Traumatology, Arthroscopy, 25(8), 2616-2621.
- 6. Daniilidis, K., & Tibesku, C. O. (2014). A comparison of conventional and patient-specific instruments in total knee arthroplasty. International orthopaedics, 38(3), 503-508.
- 7. Noble Jr, J. W., Moore, C. A., & Liu, N. (2012). The value of patient-matched instrumentation in total knee arthroplasty. The Journal of arthroplasty, 27(1), 153-155.
- 8. Nizam, I., & Batra, A. V. (2018). Accuracy of bone resection in total knee arthroplasty using CT assisted-3D printed patient specific cutting guides. Sicot-j, 4.
- 9. Mannan, A., & Smith, T. O. (2016). Favourable rotational alignment outcomes in PSI knee arthroplasty: a level 1 systematic review and metaanalysis. The Knee, 23(2), 186-190.
- 10. Heyse, T. J., & Tibesku, C. O. (2014). Improved femoral component rotation in TKA using patient-specific instrumentation. The Knee, 21(1), 268-271.
- 11. León-Muñoz, V. J., Martínez-Martínez, F., López-López, M., & Santonja-Medina, F. (2019). Patient-specific instrumentation in total knee arthroplasty. Expert review of medical devices, 16(7), 555-567.
- 12. MacDessi, S. J., Jang, B., Harris, I. A., Wheatley, E., Bryant, C., & Chen, D. B. (2014). A comparison of alignment using patient specific guides, computer navigation and conventional instrumentation in total knee arthroplasty. The Knee, 21(2), 406-409
- 13. Issa, K., Rifai, A., McGrath, M. S., Callaghan, J. J., Wright, C., Malkani, A. L., ... & McInerney, V. K. (2013). Reliability of templating with patientspecific instrumentation in total knee arthroplasty. The journal of knee surgery, 26(06), 429-434.

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