OPTETRAK LOGIC®

# Logic PS Knee System Mid-term Clinical Results

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## INTRODUCTION

Total Knee Arthroplasty (TKA), is recognized as a proven and effective treatment option to relieve pain and restore joint function in arthritic knees. Exactech introduced the Optetrak Logic® PS Knee System in 2009 as an evolution to the Optetrak PS knee launched in 1994. Optetrak demonstrates excellent 94 to 98% 10-year survivorship and is implanted in patients around the world.[1,2] The Optetrak Logic retained many of the features from the Optetrak PS knee with a few modifications to improve function and reduce additional bone loss for the patient.

The Optetrak Logic PS Knee System was designed to:

- Improve femoral rollback from 120° to 145°
- Improve femoral dislocation resistance
- Preserve 30% more natural bone during notch resection
- Optimized 0.96 congruency designed to reduce contact stresses, minimize wear and improve longevity of the device
- Proportional tibial trays to help reduce tibial bone loss

The Optetrak Logic knee system has been widely accepted in the medical community and continues the Optetrak legacy to positively impact patient pain relief, functional restoration, satisfaction, and quality of life.

This report summarizes the mid-term (average 5 year) outcomes of the Logic PS primary knee system from a single-center clinical study.

## PATIENTS AND METHODS

From 2009 to 2011, 467 Logic PS TKAs were performed by the surgeon author (Table 1). At the time of this analysis, 23 patients are deceased and 70 patients were lost to follow up, which resulted in 374 knees available for reporting an average of 5-year outcomes (average 61 months; range 12-100 months).

Clinical data were collected prospectively following Institutional Review Board (IRB) approval. The outcome instruments collected included range of motion (ROM), the Knee Society Clinical Rating Scale (KSCRS), the University of California Los Angeles Activity Scale (UCLA), Pain Visual Analogue Scale (VAS), and the Veterans Rand 12 Item Health Survey (VR-12) for self-reported global health. Incidence of revision was identified and analyzed for the reason for revision. Survivorship analysis was performed.

**Table 1.** Subject count and demographics.

| | **Patients** |
|---|---|
| Number of operated knees | 467 |
| Lost to follow-up | 70 |
| Deceased | 23 |
| Knees available for analysis | 374 |
| Male/Female | 135/239 |
| Age (years), Mean (±SD) | 67.0 (±9.0) |
| BMI, Mean (±SD) | 31.0 (±9.9) |

## CLINICAL RESULTS

Summaries of ROM, KSCRS, UCLA, and VR-12 are provided in Table 2. An analysis was performed to cross-walk UCLA to the Lower Extremity Activity Scale (LEAS)[3] which was adopted more recently and replaced the UCLA activity score in our institutional registry. Significant improvements in all clinical results were found postoperatively compared to the preoperative baseline (p values ≤ 0.001).

- High ROM was reported in the follow-up data (on average 121°, with more than 50% of the patients achieving greater than 120° and 14% beyond 130°.

**Table 2.** Summary of clinical data measured preoperatively and average 5-year follow-up.

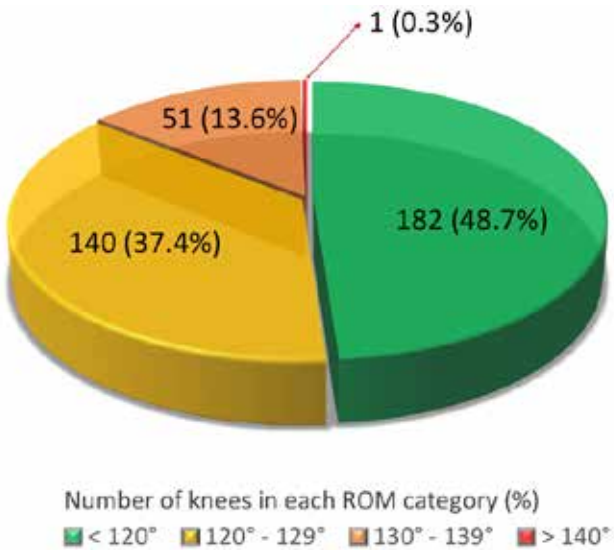
| | Pre-op Mean (± SD) | Post-op Mean (± SD) |
|---|---|---|
| ROM (º) | 114 (±13) | 121 (±9) |
| KSCRS | | |
| Function | 42.7 (±23.8) | 70.5 (±29.9) |
| Knee | 42.7 (±6.9) | 89.0 (±14.4) |
| Total | 85.3 (±32.1) | 160.3 (±39.5) |
| UCLA | 4.8 (±2.2) | 5.5 (±3.2) |
| LEAS† | 9.0 | 10.5 |
| Pain VAS | 7.2 (±2.1) | 2.6 (±1.3) |
| VR-12 | 31.5 (±8.4) | 42.6 (±10.3) |

†Average values are presented as the LEAS scores were based on the cross-walk from the average UCLA scores.

Abbreviations for instruments:

KSCRS - Knee Society Clinical Rating System
UCLA - University of California, Los Angeles Activity Scale
LEAS - Lower Extremity Activity Scale
Pain VAS - Pain Visual Analogue Scales
VR-12 - Veterans Rand 12 Item Health Survey

**Figure 1.** Distribution of ROM outcome at average 5-year follow-up.




## SURVIVORSHIP

At an average 5-year follow up, 11 knees were revised for an overall revision rate of 2.9%, including three aseptic loosening cases associated with obesity (one patient was overweight and two patients were morbidly obese). The specific causes of the revisions were summarized in Table 3.

Kaplan-Meier analysis indicated an overall survivorship of 98% when accounting for all causes of revision at 5 years (Figure 2A). Excluding revision caused by infection or periprosthetic fracture that are unrelated to the implant, a survivorship of 99% was reported at 5 years (Figure 2B).

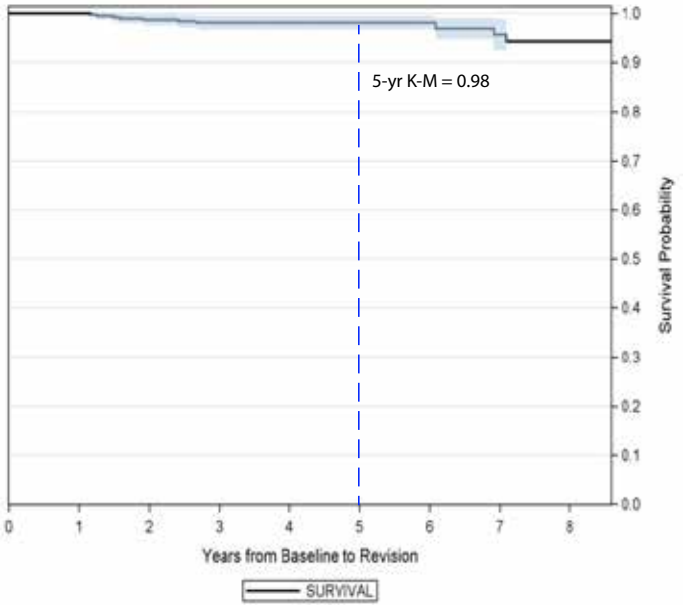
**Table 3.** Summary of revision cases and causes.

| Revisions | % follow-up group (N) |
|---|---|
| All causes | 2.9% (11) |
| Infection | 1.1% (4) |
| Aseptic loosening* | 0.8% (3) |
| Instability | 0.5% (1) |
| Osteolysis | 0.3% (1) |
| Periprosthetic fracture | 0.3% (1) |
| Causes excluding infection and periprosthetic fracture | 1.6% (6) |

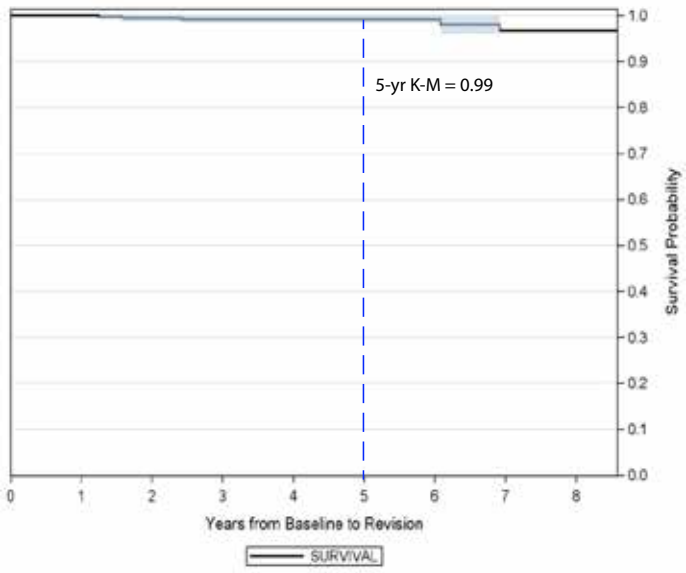
*All 3 patients were overweight and 2 suffered from morbid obesity.

**Figure 2.** Survivorship analysis marked with 95% Confidence Interval.

A. Kaplan-Meier curve showing implant survivor after TKA for all causes of revision




B. Kaplan-Meier curve showing implant survivor after TKA excluding infection and periprosthetic fracture.




## CONCLUSION

This mid-term (5-year average follow-up) study reported excellent results for the Optetrak Logic PS Knee System.

- Good clinical outcomes with significant improvement in pain and function
- Excellent ROM, with more than half of the patients attaining over 120°
- Superior results in survivorship (99% excluding revision for infection and periprosthetic fracture)

The Optetrak Logic PS Knee System clearly maintains the proven results with the Optetrak system, with minor design changes to further improve patient and surgeon satisfaction.

## REFERENCES


1. **Garcia-Crespo R, Marco F, Moro LE, Ariza G, Luque R, Lopez-Duran L.** Midterm results of Optetrak posterior-stabilized total knee system after 7 to 12 years in a university hospital. *J Arthroplasty* Dec 2011; 26(8):1326-31.

2. **Robinson RP, Green TM,** Eleven-year implant survival rates of the all-polyethylene and metal-backed modular Optetrak posterior stabilized knee in bilateral simultaneous cases. *J Arthroplasty* Dec 2011; 26(8):1165-9.

3. **Ghomrawi HM, Lee YY, Herrero C, Joseph A, Padgett D, Westrich G, Parks M, Lyman S.** A Crosswalk Between UCLA and Lower Extremity Activity Scales. *Clin Orthop Relat Res.* 2017 Feb; 475(2):542-8.



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