

World Congress on

BREAST CANCER, GYNECOLOGY AND WOMEN HEALTH

&

Annual Conference on

ORTHOPEDICS AND RHEUMATOLOGY

September 06-07, 2018 | Bangkok, Thailand

Arch Gen Intern Med 2018, Volume 2 | DOI: 10.4066/2591-7951-C3-009

IMPROVED ALIGNMENT AND OPERATING ROOM EFFICIENCY COST WITH PATIENT SPECIFIC INSTRUMENTATION FOR TKA

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Background: Patient specific instrumentation (PSI) created using preoperative 3D modelling was developed to offer surgeons a simplified, reliable, efficient and customised TKA procedure.

Methods: In this prospective study, 60 patients who underwent TKA with conventional instrumentation and 71 patients operated on using PSI were followed for one year. The primary endpoint was surgical time. Secondary endpoints included the number of instrument trays used, radiographic limb alignment and clinical outcomes.

Results: Compared with conventional instrumentation, PSI significantly reduced total surgical time (mean, 8.9 minutes; ± 3.3 minutes (standard deviation); $p=0.038$), OR time (8.6 ± 4.2 minutes; $p=0.043$), and number of instrument trays (six trays, $p<0.001$). Mechanical axis malalignment of the lower limb $>3^\circ$ was observed in 14% of PSI patients versus 29% with conventional instrumentation ($p=0.043$). PSI predicted the size of the actual femoral and tibial components used in 85.9% and 78.9% of cases, respectively. There were no differences in VAS pain, EQ-5D and oxford knee scores at one-year follow-up

Conclusion: PSI improves alignment, surgical and OR time over conventional instrumentation, reduces the number of instruments trays used and results in fewer outliers in overall mechanical alignment in the coronal plane. No advantages in terms of clinical outcome were noticed up to one year of follow-up.

