Femur-First Technique For Oxford Mobile Bearing Unicompartmental Knee Arthroplasty Decreases Implant Variability Resulting in Early Promising Improvements In Survivorship

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INTRODUCTION:
Higher failure rates of UKA have been associated with lower surgical volume. Changes in surgical technique that introduce less variability, improve implant positioning and decrease learning curves may prevent early failures. Shakespeare described the femur-first (FF) technique for mobile bearing UKA and showed less implant variability, but survivorship data compared to the traditional tibia-first (TF) technique was not reported. We report a consecutive series of mobile-bearing UKA where the FF technique was used and compared to last TF technique with emphasis on implant utilization, radiographic position, and survivorship.
METHODS: 405 UKAs performed by a single surgeon between 2007-2020 were reviewed. In December, 2012, the surgeon changed to a FF technique. 147 FF UKAs with minimum 2 year follow-up were compared to 143 UKAs prior to that date. Mean follow-up was 4.5 years. The average age was 63 years (20-92), 48% were female and an average BMI of 31.4. There were no significant demographic differences between the groups. Postoperative radiographs were reviewed, and outliers as described by Kazarian et al were described. Survivorship analysis was performed using Kaplan-Meier curves (KM).
RESULTS: The FF technique was more bone preserving, resulting in significantly thinner polyethylene (3.4mm vs 3.7mm ($p=0.002$). In the FF group, 94% of polyethylene inserts were 4 mm or less in thickness, while in the TF group 81%. There was no significant difference in component position between the two groups with no difference in tibial ($p=0.32$) or femoral position($p=0.08$) outliers between FF and TF groups. There were 3 failures in the FF group and 12 failures in the TF group. At 5 years, there was an early trend towards improved survivorship free of reoperation for any reason (97% for the FF group and 93% for the TF ($p=0.18$)) and survivorship free from component revision (98% for the FF group and 93% for the TF ($p=0.27$).
DISCUSSION AND CONCLUSION: Incorporation of the FF workflow for mobile bearing UKA has resulted in less polyethylene thickness, no change in implant position compared to TF technique and has shown promising improvement in implant survivorship at 5 years. The FF technique is reproducible and should be taught as an alternative method for mobile bearing UKA implantation.