

Fellowship-Trained Surgeons Experience a Learning Curve Performing Revision Total Joint Arthroplasty

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INTRODUCTION: While revision total joint arthroplasty (TJA) typically requires considerable surgical experience, these procedures are frequently delegated to the youngest and least experienced arthroplasty surgeons. This common practice affects healthcare resources and patient outcomes, yet is frequently overlooked. This study examined outcomes and complications after revision TJA based on surgeon experience.

METHODS: A total of 366 confirmed aseptic revision TJAs (hip=149; knee=217) performed by multiple fellowship-trained arthroplasty surgeons in the same academic tertiary care practice were retrospectively reviewed. All perioperative protocols, hip surgical approaches, and revision knee techniques were standardized. Surgeons were classified as inexperienced (I, first two years in practice), early experience (EE, 4-6 years in practice), and senior experience (SE, 15-17 years in practice). Procedure duration, Hahn-Klimroth estimated blood loss, readmissions, and reoperations were compared based on surgeon experience. Multivariable analyses controlled for potential covariates, with $P < .05$ deemed significant.

RESULTS: Distributions of patient age and BMI were similar for I, EE, and SE surgeons. Procedure duration was longest for hip revisions performed for adverse local tissue reaction or instability further compounded by surgeon inexperience (I=178, EE=109, SE=95 minutes, $P = .004$). Revision knee procedure duration was longest for inexperienced surgeons with increasing BMI compounding for surgeons with least experience, an influence not seen in the senior surgeon (I=196, EE=123, SE=102 minutes, $P = .004$). Surgical duration was the strongest predictor of estimated blood loss for hips ($P = .036$) and knees ($P = .006$). There was a trending main effect for surgeon experience to influence 1-year hip reoperation rates (I=18%, EE=7%, SE=3%, $P = .075$).

DISCUSSION AND CONCLUSION: Study data indicate that more complex cases completed by inexperienced surgeons may result in longer procedure duration, blood loss, and potential patient harm. Our findings indicate a learning curve exists for complex revision arthroplasty from a surgeon's career start that continues for many years and warrant revisiting existing patient allocation and referral patterns.