# Direct anterior approach in primary total hip arthroplasty increases the risk of reoperation for superficial infection but not deep prosthetic joint infection compared to posterolateral approach

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INTRODUCTION:
The direct anterior approach (DAA) has been associated with higher rates of superficial infection and wound healing difficulties compared to other approaches to primary total hip arthroplasty (THA). However, there remains inconsistent data about the association of surgical approach and periprosthetic joint infection (PJI). As such, we sought to evaluate the risk of reoperation for superficial infection and PJI after primary THA in a multivariate model.

METHODS:
We reviewed 16,500 primary THAs, collecting data on surgical approach and any reoperations for superficial infection (n=36) or PJI (n=70). With reoperation for superficial infection and PJI as separate endpoints, we used Kaplan Meier (KM) survivorship analysis to assess survivorship free from reoperation and built Cox Proportional Hazards multivariate models to assess risk factors for reoperation.
RESULTS:
Between DAA (N=3,351) and PLA (N= 13,149) cohorts, rates of superficial infection (0.4% vs 0.2%, respectively) and PJI (0.3% vs 0.5%, respectively) were low and 2-year survivorship free from reoperation for superficial infection (99.6% vs 99.8%) and PJI (99.4% vs 99.7%) were excellent. The risk of developing superficial infection increased with high body mass index (BMI) (hazard ratio (HR)=1.08 per unit increase, p=0.003), direct anterior approach (HR=2.67, p=0.007), and smoking status (HR=2.899, p=0.031) (Table 1). The risk of developing PJI increased with the high BMI (HR=0.043, p=0.03), but not surgical approach (HR= -0.391, p=0.28) (Table 1).
DISCUSSION AND CONCLUSION: In this study of more than 16,000 patients undergoing primary THA, the DAA was independently associated with an elevated risk of superficial infection compared to the PLA, but there was no association between surgical approach and PJI. As elevated patient BMI was the strongest risk factor for superficial infection and PJI in our cohort, patients should be counseled of this risk and efforts for weight loss undertaken preoperatively.

| Endpoints | Variables | Coefficient | Hazard Ratio | Standard Error | p value |
|---|---|---|---|---|---|
| Reoperation for Superficial infection | Age | 0.007 | 1.007 | 0.016 | 0.657 |
| | Male (ref=female) | -0.984 | 0.373 | 0.391 | 0.0118* |
| | BMI | 0.077 | 1.080 | 0.026 | 0.003* |
| | ASA Classification | 0.448 | 1.566 | 0.388 | 0.248 |
| | Anterior Approach (ref=Posterior) | 0.985 | 2.677 | 0.367 | 0.007* |
| | Smoker (ref=no) | 1.064 | 2.898 | 0.495 | 0.0314* |
| Reoperation for PJI | Age | 0.003 | 1.003 | 0.011 | 0.791 |
| | Male (ref=female) | 0.252 | 1.287 | 0.241 | 0.295 |
| | BMI | 0.043 | 1.044 | 0.020 | 0.030* |
| | ASA Classification | 0.239 | 1.270 | 0.270 | 0.376 |
| | Anterior Approach (ref=Posterior) | -0.390 | 0.676 | 0.362 | 0.280 |
| | Smoker (ref=no) | 0.271 | 1.311 | 0.433 | 0.531 |