

**Immediate Perioperative Complication Rates of ORIF versus Arthroplasty for Displaced Femoral Neck Fractures in Middle-Aged (40-64 Years) Patients**

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**Purpose:** No study has investigated the differences in short-term 30-day perioperative complications between open reduction and internal fixation (ORIF) and arthroplasty in the treatment of displaced femoral neck fractures in a middle-aged population. The objective of this study was to compare preoperative baseline characteristics, postoperative adverse complications, length of stay, and discharge destination between ORIF and arthroplasty treatment of displaced femoral neck fractures in order to better counsel middle-aged patients about treatment options and expected perioperative outcomes.

**Methods:** All displaced femoral neck fracture patients aged 40-64 years treated by ORIF, hemiarthroplasty (HA), and total hip arthroplasty (THA) from 2011-2016 were queried from the American College of Surgeons National Surgical Quality Improvement Program database. Age, body mass index, diabetes, smoking, steroid use, American Society of Anesthesiologists class, functional health status, serum albumin levels, and medical comorbidities were compared between surgical groups to assess baseline characteristics. Short-term postoperative adverse complications, mortality, readmission, blood transfusion, and discharge destination were compared between groups using multivariate binary logistic regression. Postoperative time to discharge between surgical groups was analyzed using univariate analysis of variance with Tukey's comparison. Statistical significance was defined as  $P < 0.05$ .

**Results:** From 2011-2016, a total of 392 patients aged 40-64 years with displaced femoral neck fractures were included in the study, of which 21% of patients ( $n = 79$ ) were treated with ORIF, 69% ( $n = 272$ ) with HA, and 10% ( $n = 41$ ) with THA. Compared to ORIF, arthroplasty patients were more likely to have a functional health status categorized as dependent on assistance for activities of daily living (odds ratio [OR] 10.14,  $P = 0.02$ ). Preoperative baseline characteristics also revealed arthroplasty patients were more likely to be hypertensive and have serum albumin levels  $< 3.5$  (OR 1.94,  $P = 0.02$ ; OR 2.01,  $P = 0.03$ , respectively). Univariate analysis demonstrated that compared to ORIF patients, arthroplasty patients were at an increased risk of postoperative surgical site infection (OR 0.04, 95% confidence interval [CI], 0.05-0.92). However, in multivariate regression analysis, there was no significant difference in readmission, mortality, non-routine discharge disposition, and other postoperative complications (all  $P > 0.05$ ). Postoperative time to discharge was 4.5 days for ORIF and 5.7 days for arthroplasty ( $P = 0.16$ ).

**Conclusion:** While previous studies have suggested ORIF to be more appropriate in malnourished elderly patients due to less blood loss, shorter operative times, and less pulmonary complications from reduced anesthetic use, this study suggests arthroplasty is not an independent risk factor for adverse complications or discharge time.

**Table 1. Bivariate and Multivariate Analysis of Postoperative Complications between Arthroplasty and ORIF**

	Arthroplasty	ORIF	Bivariate Analysis		Multivariate Analysis	
	n= 313	n=79	OR (Confidence Interval)	P value	OR (Confidence Interval)	P value
Readmission	7.67%	5.06%	1.56 (0.52-4.63)	0.43	2.29 (0.55-9.13)	0.26
Postoperative Dislocation	1.59%	0.00%	2.62E7 (0)	0.99	3.46E17 (0)	0.99
Non-routine Discharge	42.49%	41.77%	1.03 (0.63-1.70)	0.91	0.86 (0.45-1.65)	0.66
Mortality	2.23%	0.00%	3.69E7 (0)	0.99	1.74E8 (0)	0.99
Return to OR	1.92%	2.51%	0.75 (0.15-3.80)	0.73	0.58 (0.05-6.07)	0.66
Postoperative SSI	0.95%	3.96%	0.22 (0.05-0.92)	0.04	8.75E4 (0)	0.99
Postoperative PE	1.91%	0.00%	3.13E7 (0)	0.99	1.72E7 (0)	0.99
Postoperative DVT	0.95%	1.27%	0.76 (0.08-7.36)	0.81	0.00 (0)	0.97
Postoperative Bleeding requiring Transfusion	13.42%	15.19%	0.87 (0.43-1.73)	0.68	0.66 (0.29-1.50)	0.33
Postoperative Pneumonia	2.24%	2.53%	0.88 (0.18-4.32)	0.88	1.40 (0.21-9.40)	0.73
Postoperative Renal Insufficiency	0.64%	0.00%	1.03E7 (0)	0.99	1.36E6 (0)	0.99
Postoperative Cardiac Arrest	0.64%	0.00%	1.03E7 (0)	0.99	1.57E12 (0)	0.99
Postoperative Myocardial Infarction	0.64%	0.00%	1.03E7 (0)	0.99	1.23E26 (0)	0.99
Postoperative Urinary Tract Infection	1.28%	2.53%	0.49 (0.09-2.78)	0.43	0.42 (0.06-3.19)	0.40
Postoperative Sepsis	0.95%	0.00%	1.56E7 (0)	0.99	2.34E7 (0)	0.99
In Hospital >30 days	1.28%	1.27%	1.01 (0.11-9.16)	0.99	1.23E7 (0)	0.99