Sequelae of Girdlestone resection arthroplasty for treatment of periprosthetic joint infections of the hip – Who gets reimplanted?

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INTRODUCTION:

For patients unsuitable for prosthesis reimplantation or temporary spacer placement, Girdlestone resection arthroplasty (GRA) is a suitable option to eliminate infection and preserve limb function. Using a large-scale database, this study aims to determine factors associated with reimplantation.

METHODS: This study included patients who underwent GRA and subsequent total hip arthroplasty (2012-2015 Medicare Limited Data Set with ≥5-year follow-up). A mixed-effects model measured associations between patient characteristics and reimplantation. Odds ratios (OR) with 95% confidence intervals (CI) were reported.

RESULTS: Among 2,772 GRA cases, 2,025 (73.1%) were reimplanted (median time to reimplantation 3.0 months). In multivariable analysis patient factors associated with reduced odds of reimplantation were: increased age (OR 0.96, CI 0.94-0.97, p<0.0001), Black race (OR 0.58, CI 0.37-0.90, p=0.0149), obesity (OR 0.74, CI 0.58-0.94, p=0.0150), and increased Deyo-Charlson comorbidities (1 comorbidity: OR 0.78, CI 0.61-0.99, p=0.0453; 2 comorbidities: OR 0.53, CI 0.39-0.71, p<0.0001; ≥3 comorbidities: OR 0.69, CI 0.49-0.95, p=0.0244). Male (versus female) patients, however, had increased odds of reimplantation (OR 1.64, CI 1.32-2.02, p<0.0001).

DISCUSSION AND CONCLUSION: Age, race, and comorbidities influence the likelihood of reimplantation after GRA. Due to variability in patients that undergo further surgery, further studies should be conducted to determine the rationale of patient selection.

Table 1. Demographics of patients undergoing Girdlestone Resection Arthroplasty (GRA) from 2012-2015 by 5-year reimplantation status.

	Reimplant (N = 2,025) (%)	No reimplant (N = 747) (%)	P-Value
Female Sex	1084 (53.5%)	481 (64.4%)	**<0.001**
Median Age (IQR)	72 (68-76)	73 (69-80)	**<0.001**
Race			**<0.001**
White	1878 (92.7%)	658 (88.1%)	
Black	85 (4.2%)	54 (7.2%)	
Other	62 (3.1%)	35 (4.7%)	
Deyo-Charlson Comorbidity Index			**<0.001**
0	916 (45.2%)	255 (34.1%)	
1	588 (29.0%)	235 (31.5%)	
2	277 (13.6%)	138 (18.5%)	
3+	244 (12.0%)	119 (15.9%)	
Obesity	425 (21.0%)	185 (24.8%)	**0.033**
Smoking	520 (25.7%)	156 (20.9%)	**0.009**
Year			**0.003**
2012	585 (28.9%)	189 (25.3%)	
2013	446 (22.0%)	214 (28.6%)	
2014	581 (28.7%)	205 (27.4%)	
2015	413 (20.4%)	139 (18.6%)	
Hospital Location			0.891
Urban	1881 (92.9%)	695 (93.0%)	
Rural	144 (7.1%)	52 (7.0%)	
Hospital Region			0.133
North Central	548 (27.1%)	183 (24.5%)	
Northeast	377 (18.6%)	145 (19.4%)	
South	731 (36.1%)	300 (40.2%)	
West	369 (18.2%)	119 (15.9%)	

IQR = interquartile range

Table 2. Multivariable analysis, modeling for 5-year reimplantation status

	Odds Ratio	95% Confidence Interval	P-value
Age	0.95	0.94-0.96	**<0.001**
Male (Reference = Female)	1.51	1.25-1.81	**<0.001**
Race (Reference = White)			
Black	0.60	0.41-0.88	**0.008**
Other	0.59	0.37-0.94	**0.025**
Deyo Comorbidity Index (Reference = 0)			
1	0.70	0.57-0.87	**0.001**
2	0.57	0.44-0.73	**<0.001**
3+	0.58	0.44-0.77	**<0.001**
Obesity	0.77	0.62-0.96	**0.020**
Smoking	1.19	0.96-1.47	0.121
Year (reference = 2012)			
2013	0.64	0.50-0.82	**<0.001**
2014	0.87	0.69-1.11	0.272
2015	0.96	0.73-1.25	0.741
Region (Reference = South)			
North Central	1.22	0.95-1.56	0.113
Northeast	1.04	0.79-1.36	0.779
West	1.23	0.93-1.63	0.153
Urban Region (Reference = Rural)	1.01	0.71-1.45	0.947