

Distal Femoral Replacement vs. Fracture Fixation for Geriatric Distal Femur Fracture: A Retrospective Cohort Study

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I (and/or my co-authors) have something to disclose. Disclosure information is available via: AAOS Orthopaedic Disclosure Program on the AAOS website.

INTRODUCTION

- Low-energy geriatric distal femur fractures occur in a similar population to hip fractures^{1,2}
 - 42% aged 75+ years³
 - 1-year mortality 13-25%⁴⁻⁷
- Ideal treatment not clear
 - Internal fixation with lateral locking plate (LLP) or IM nail (IMN)
 - Nonunion rates 18-25%^{1,2,5,7,8}
 - Often requires delayed weight bearing
 - Distal Femoral Replacement (DFR)
 - Immediate weight bearing/ROM
 - Specific indications: loose adjacent implant, nonunion, etc.⁹

PURPOSE

To compare clinical outcomes and survivorship of patients with low-energy geriatric distal femur fractures treated with internal fixation or distal femoral replacement

MATERIALS & METHODS

- Retrospective Age-Matched Cohort Study
 - DFR (N=59), internal fixation (N=118: 96LLP, 22IMN)
- Included:
 - unilateral native/periprosthetic distal femur fractures (AO/OTA 33C)
 - patients >60 years old, low energy mechanism
 - underwent DFR or internal fixation with either LLP or IMN at our institution from 2004-2019
- Medical record and radiographic review
- Attempted phone/secure email follow-up (low response rate- excluded)
- Outcomes:
 - Complications
 - Operative
 - Nonoperative
 - Risk Factor Analysis
 - Survival:
 - First Reoperation
 - Construct Survival
 - Mortality

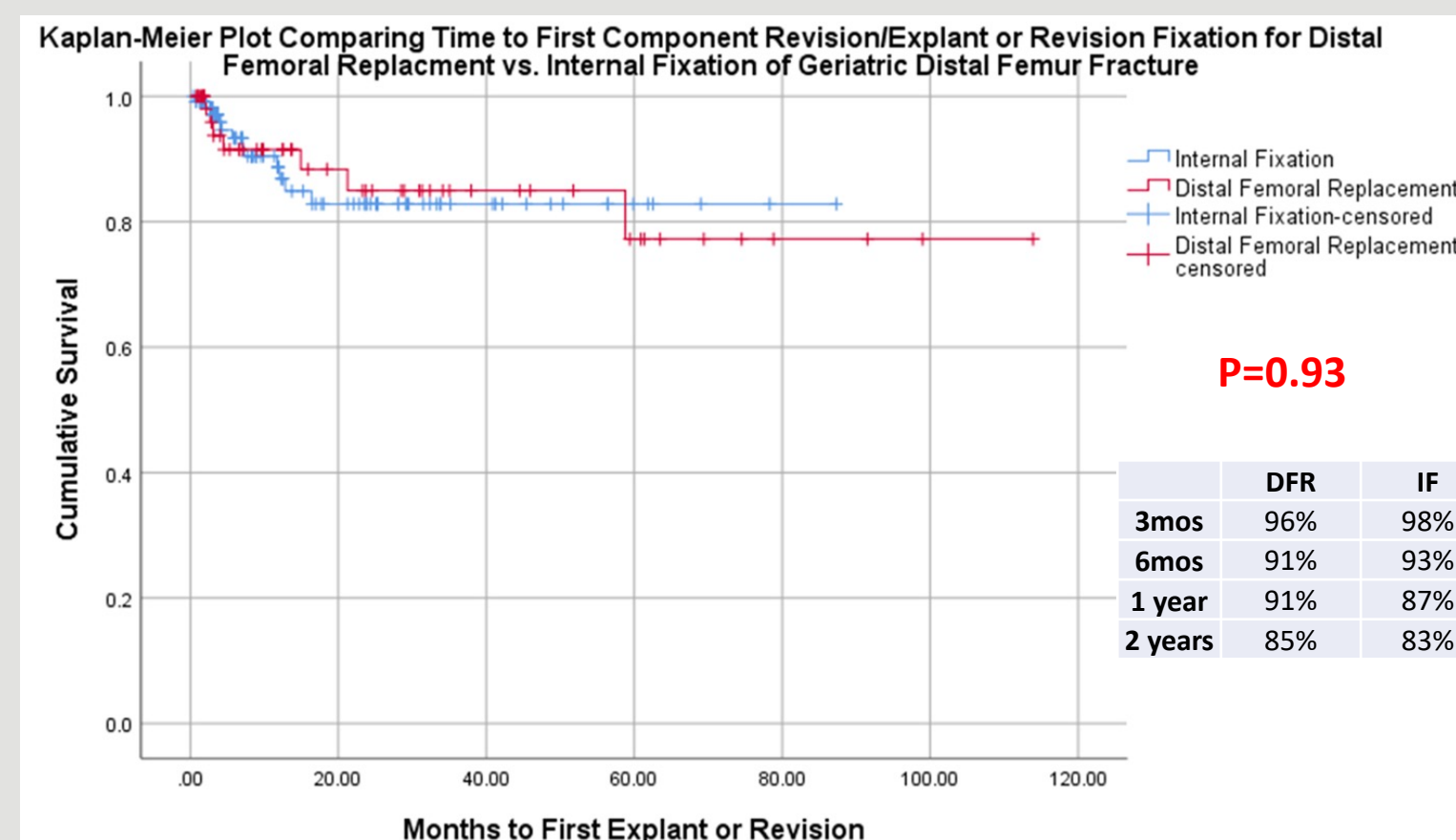
RESULTS

Patient Demographics by Cohort				Fracture Classifications by Cohort			
	DFR	Internal Fixation	P	AO/OTA	DFR	Internal Fixation	P
Age	75.45 ± 9.83	76.59 ± 9.23	0.45	33A2	7	38	<0.0001
Sex	48 female (81%)	103 female (87%)	0.29	33A3	7	47	
BMI	32.55 ± 10.18	29.80 ± 9.73	0.092	33B1	4	3	
CCI	0.85 ± 1.27	0.99 ± 1.12	0.51	33B2	3	4	
ASA	2.92 ± 0.43	2.78 ± 0.53	0.19	33B3	2	0	
Diabetic	9 (15%)	25 (21%)	0.34	33C1	10	4	
Smoker	20 (34%)	22 (19%)	0.0245	33C2	7	11	
Periprosthetic	48 (81%)	57 (48%)	<0.0001	33C3	10	4	
# Previous Surgeries	1.34 ± 0.83	0.67 ± 0.75	<0.0001	Rorabeck	DFR	ORIF/IMN	P
Follow-up (mos)	29.4 ± 30.2	19.0 ± 20.4	0.007	I	0	7	<0.0001
				II	19	50	
				III	22	0	

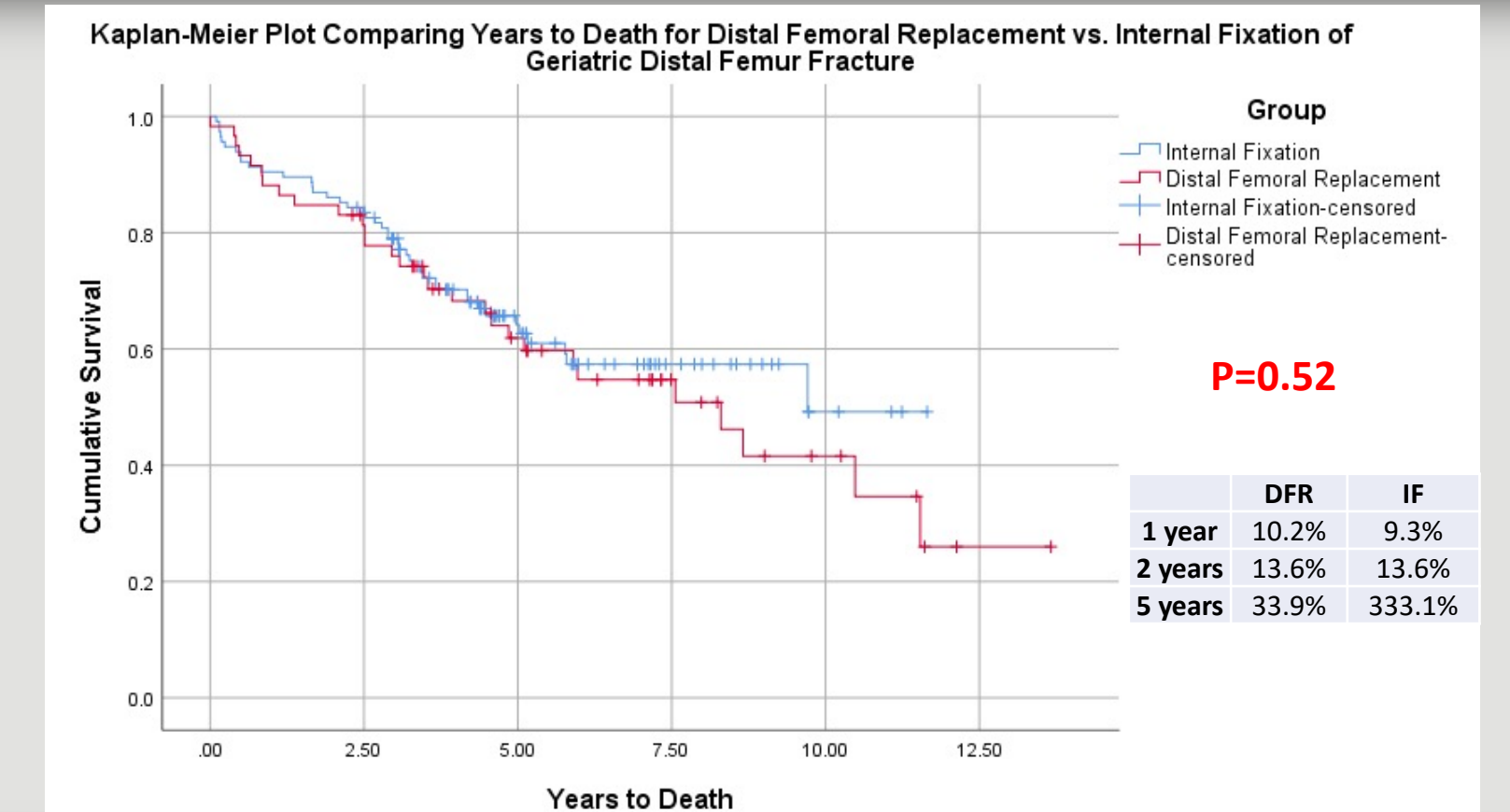
CCI= Charlson Comorbidity Index, not age adj; ASA= Am. Society of Anesthesiologists Score

Nonoperative and Operative Complications by Cohort			
	DFR	Internal Fixation	P
Patients with Complication	17 (28.8%)	27 (22.9%)	0.46
Total # Complications	23	35	
Complication Rate/Patient	0.39 ± 0.70	0.30 ± 0.53	0.34
Patients with Reoperation	15 (25.4%)	21 (17.8%)	0.24
Total # Reoperations	31 (range 0-7)	33 (range 0-3)	
Reoperation Rate/Patient	0.53 ± 1.37	0.28 ± 0.69	0.11
Most Common Complications	DFR	Internal Fixation	P
Wound Complication	6 (10.2%)	4 (3.4%)	0.086
Deep Infection (PJI vs. PJI/FRI)	8 (13.6%)	3 (2.5%)	0.007*
Aseptic Loosening/Mechanical Failure	3 (5.1%)	--	--
Nonunion/Fixation Failure	--	13 (11.0%)	--
Most Common Reoperations	# Patients/# Procedures	# Patients/# Procedures	P
I+D for infection (poly exchange or explant/spacer)	8 (13.6%)/17	3 (2.5%)/4	0.02*
Revision arthroplasty (aseptic)	3 (5.1%)/3	6/57 (8.8%)/7	0.32
I+D for wound complication w/o infection	3 (5.1%)/3	3 (2.5%)/4	0.40
Above Knee Amputation	2 (3.4%)/2	0	0.11
Revision internal fixation	--	6 (5.1%)/6	--

PJI= Periprosthetic Joint Infection; FRI= Fracture Related Infection



RESULTS



DISCUSSION

- In patients with a geriatric distal femur fracture treated with DFR or internal fixation, we found no significant difference in:
 - complication rate
 - reoperation rate
 - construct survival
 - Mortality
- DFR group more likely to have Rorabeck III injury (loose prosthesis)
- Native vs. periprosthetic fracture, LLP vs. IMN, BMI, CCI, ASA, smoking status, diabetes status, # prior surgeries, had no association with complication rate
- Complications not equivalent: Amputation > PJI > Nonunion
- More study needed on ideal treatment for a given patient and injury type

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