Single-Stage Exchange Arthroplasty has Comparable Results to Two-Stage Exchange Revision in Select Patients with Periprosthetic Hip and Knee Infection

Ryan Sutton, Juan David Lizcano¹, Andrew Fraval, Bright Mensah Wiafe, Paul Maxwell Courtney, Scot Brown²
¹Rothman Orthopaedic Institute, ²Rothman Institute
INTRODUCTION:

Although two-stage exchange has been the standard of care for periprosthetic joint infection (PJI) in the United States, single-stage exchange is emerging as an option in select patients. The purpose of this study is to compare outcomes of patients undergoing single-stage versus conventional two-stage exchange using strict surgical indications.

METHODS:

We reviewed a consecutive series of 196 patients with diagnosed PJI undergoing revision total knee (TKA) and total hip arthroplasty (THA) from 2017 to 2021. Patients were excluded if they had a prior history of PJI, plastic surgery coverage, or extensive bone loss requiring endoprosthesis. We compared the number of patients PJI-free at one-year follow up based upon MSIS criteria and patients requiring rerevision surgery between the two-stage and single-stage groups. RESULTS:

A total of 126 patients met the inclusion criteria (64.3%), comprised of 60 single-stage (47.6%) and 66 two-stage patients (52.4%). There were no differences in patient demographics, comorbidities, or follow up between the two cohorts. At a mean follow up of 1.75 ± 1.02 months, we found that more patients had surgical success based on MSIS PJI-free criteria in the single-stage group (90% versus 74.2%; p=0.022), and more patients required rerevision in the two-stage group due to PJI (16.7% versus 3.3%; p=0.006), however there were no significant differences in PJI-free success when comparing knee and hip revisions separately. There were no differences in microorganism profile or complications between the two cohorts, but more single-stage patients received long-term antibiotic suppression (83.3% versus 60.6%; p=0.009). DISCUSSION AND CONCLUSION:

In patients with PJI with no prior history of infection and no bone or soft tissue compromise, single-stage arthroplasty is a viable alternative to conventional two-stage exchange. Further studies with longer term follow up are needed to evaluate its

Table J. Paties Description Table 5. Microsymbia profile						Table 2 Clinical variable	Table 2. Clinical variables					Table 48, MSS elsesification table				Table J. Clinical Culcomes					Table 44, MSE secomo rable							
		All publicate	Single stage	Twestages				Sängle stage	Two stages			All persons	Single stage	Twe stages								All patients	Singlestage	Teastages				
		(N=116) (6 Tu 1 62	(5-60)	\$1249.M	p-refer		08-139	OS- 90	01190	g-rates		O+130	(5-60)	0440	p.ratur			Sincle stary	Two staces			(%-134)	(%-10)	(w-66)	produr		Single singe	Two-stage (North)
	Age (years)	66.718.62	67.7 x 19.2	65.7 ± 9.84	8.255	MINA	23 (16.2%)	11 (18.2%)		8.978	1.05	936±4.54	\$29 x 4.57	9251443	6.953			O- 60	(8-66)		Mess followup	1.79 + 1.82	1.71 = 1.00	179 + 130	8.421	Tier I: Infaction control without publishing	05-903	150,000
	Solet.				5.657	9854	5100	2 (0.5%)	314,55%	8.725	White bised cell count				6.785					p-value	Failure (Earlierinism)				6994			
		65 (51.6)	26 (83.5)	27 (40.9)		Gram positive	55 (42,7%)	25141.259		8,771	2501 %		10.4 ± 20.4	54.8 ± 27.0	0.063		Failure due to infection*	5 (8.3%)	12 (18.2%)	0.166	PE	12 (36.2)	2 (3.3)	HUKD		Tier 3: Reoperation or spacer retention.		
		60 (S1.6)	22 (26.7)	21 (403)		Gram negative	7 (5.9%)	23350		8.553	Distring since beat				0.943		Talker day to other				Expresor mechanism	1 (6.9)	9.69	1(1.9)				
	Knee					Distributed	X19,754	4.95750	4.96.09552				48 (78,7%)	52,(78,8%)			109000**	1 (1.2%)	5 (T.6%)	0.128	disription					St. Supric revision >1 y after P.E bustness		
					1.149	Fungal	1 (0.0%)	1 (1.7%)		8.291		28 (22.7%)	14 (25.3%)	14 (21.2%)							Loosening	2 (1.6)	9.03	2.00		C: Ausptic revision (3) y after PEI treatment		
	Female	60 (67.6)	24 (40)	36 (34.7)			25 (18.2%)	11 (18.2%)	12 (15.2%)		Type of spacer						Secreta	54 (90%)	49 (14.2%)	0.022	Periposabetic Exchery	1 (0.8)	9 (0)	10.9		D: Septic ravision 51 y after P.R treatment		
	Male	66 (12.4)	36 (60)	30 (41.7)							566	18 (14.25)		19 (27%)			*Ties 3C3D3E3F4A				Transactive disdocation	1 (0.0)	1 (1.7)	F(0)		E: amputation, excision, arthrodosis E: Relational remove		
	Lace				8.827						Dynasia	46 (25 (26)		46 (00.7%)			**Tiers 3A.3B. 4B.											
	White	108 (88.7)	21 (85)	57 (56.4)							Days between surprise		NA.	65.6 ± 26.5							Salvage procedures	10.0	9.89	7(43)	0.005	A: Dorth 11 v after PX treatment		
	Block	18 (14.7)	5 (15)	9113.61							18/2 hetwore										Decreed				0.073			
	Ethnicity				8.292						procedures		NA									129 (95.2)	55 (91.7)	65 (96.4)				
	Non-Hispanic	125 (99.2)	29 (98.5)	68 (180)								66(5)(9)		64-97.050								6(60)	5 (8.5)	10.5)		Table Marcalodokal defector Society Periprosthetic		
											You	2(1.6%		2,0%							1-year PSI free				6857	(Pillingham 2079). That 1: The I reduce to industries conti-		
	EMI (kg/w ²)	31.8 +7.36	32.8 ±7.43	50.9 47.24	6.086						Anthrotic superserion				0.399							14 (03.1)	7.00	11000		Tier 2 roles to inforcine control with the potient on supplement of the properties became analysis associated to the properties of the pro		
	CCI				8.617							28 (28,6%)	18 (16.7%)									112 (00.0)	27 (97)	32 (83.7)		to need for teoperation/tevision and/or spacer retention to select in assettic revision at 21 year from initiation of FS		
		2 (1.6)	0.89	2(0.0)							No.	38 (28.8%) 98 (71.4%)	51 (03 75)	26 (79 (74)												select to susptice sevicion at >1 year from initiation of FR at >1 year from initiation of FE treatment M: select to a		
		1 (6.79)	1 (1.7)	0.09																						of PX treatment, 3D refers to certic revision <1 year few		
		13 (10.3)	6-(30)	703.0																						provide in a supplier or beginning to the same of the		
		100 (86.1)	50 (80.7)	51 (77.1)																								
					5.344																					from initiation of PSI treatment.		
		30 (23.8)	17 (28.7)	12 (187)																								
	Smoking status				1.107																							
	Brooker	20 (15.5)	8 (13.3)	12 (18.1)																								
	Value given as mean	1.50 or N (%)																										
	JAK body man in	Arc. CCC, Charleon	conwhidity in	loc. 454, Ameri	an Society of																							