

REVISION THR Survivorship for Ceramic Failures- Is Survival Different ?

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Introduction

We present a series of 10 ceramic THR bearing fractures in 9 patients, with retrospective analysis of components and their position looking for underlying cause, and further followed clinically and radiologically for 9-13 years and analysed for survivorship.

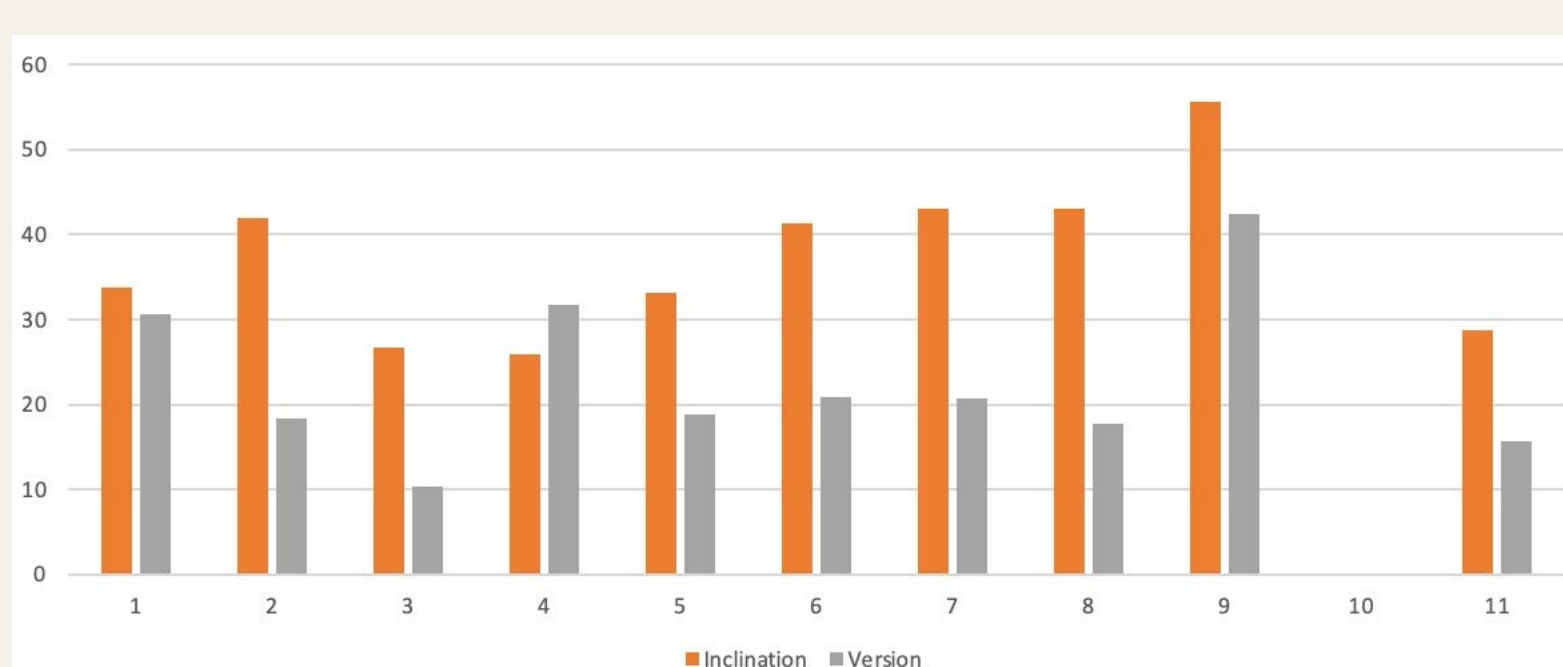
Material and Methods

We reviewed patients revised by Senior Surgeon (NNS) for a fractured ceramic bearing components. Primary components were all cementless, hydroxyapatite-coated femoral stems and uncemented acetabular shells. There were 7 head and 3 liner breakage from different manufacturers. Nine ceramic components were 3rd generation Alumina ceramic, though, one was 4th generation delta ceramic. The Index procedures were done between 2000-2007 and revised between 2008-2012. Of the bearings, there were two ceramic-on-poly couplings, and 8 ceramic-on-ceramic.

All Sockets were revised to uncemented JRI CSF cup with 4th Generation Ceramic on ceramic Bearings with Titanium sleeve Heads after through debridement. As all stems were well fixed, thus no stem revisions done.

The revision surgery operation note was inspected for perioperative findings, including evidence of component mispositioning, loose components, abnormal wear or infection

Eight hips(7 patients) were followed up period 9-13 years (1 lost to follow up, 1 Deceased)



Cup Inclination /Anteversion

Patient	Femoral Stem	Stem Neck Length	Head Type	Head Size	Head Length	Acetabular Cup	Acetabular Liner	Failure
1	ANCA 11	Long	Alumina	28mm	Short	CSF	CSF Ceramic	Head
2	Corail	Neutral	Alumina	28mm	Short	CSF 50	CSF TriFix 28 Ceramic	Head
3	ANCA 15	Short	Alumina	28mm	Short	CSF 50	CSF TriFix 28 Ceramic	Head
5	Furlong	n/a	Alumina	28mm	Short	CSF 52	CSF 48/52 Ceramic	Head
6	ANCA 12	Long	Wright Cremascoli	28mm	Short	CSF 48	CSF 48/52 Ceramic	Head
7	ANCA 14	Short	Alumina	28mm	Long	CSF 50	CSF 50/28 UHMWPE	Head
8	JRI Furlong 11mm	n/a	Alumina	28mm	Neutral	CSF 52	CSF 52/28 Ceramic	Liner
9	Corail	High offset	Biolo Delta Ceramax	36mm	Long	Pinnacl e 52	Biolo delta ceramax 52/36	Liner
10	JRI Furlong 10mm	5mm Offset	Biolo Delta Ceramax	28mm	Short	CSF 56	CSF 54-56/28 Ceramic	Liner
11	JRI Furlong 9mm	n/a	JRI Ceramic	28mm	Neutral	JRI CSF 48	CSF 47-52/28 UHMWPE	Head

Table 1 Components retrieved

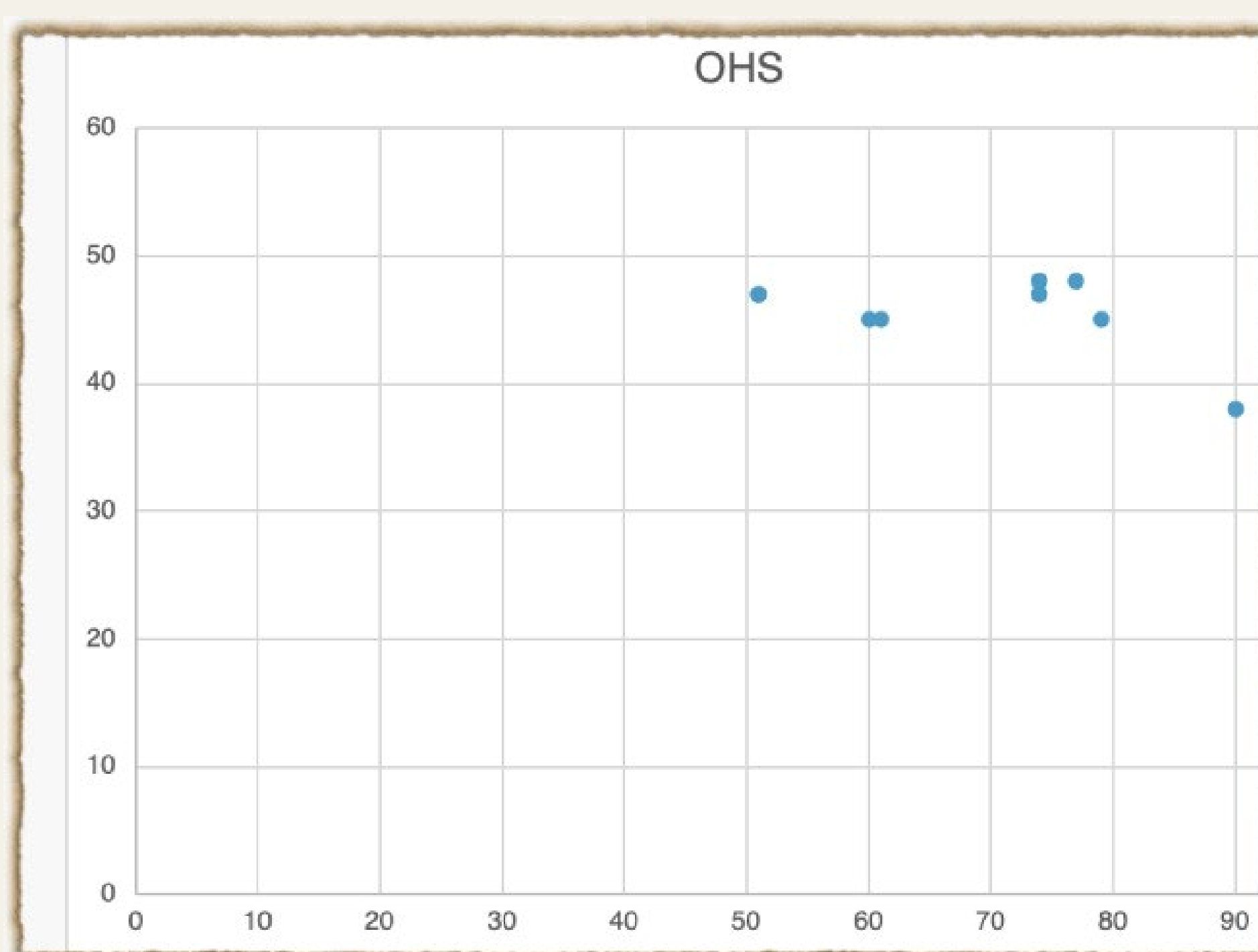
RESULTS

Clinical Assessment-Oxford Hip Score: Good to Excellent (38-48).

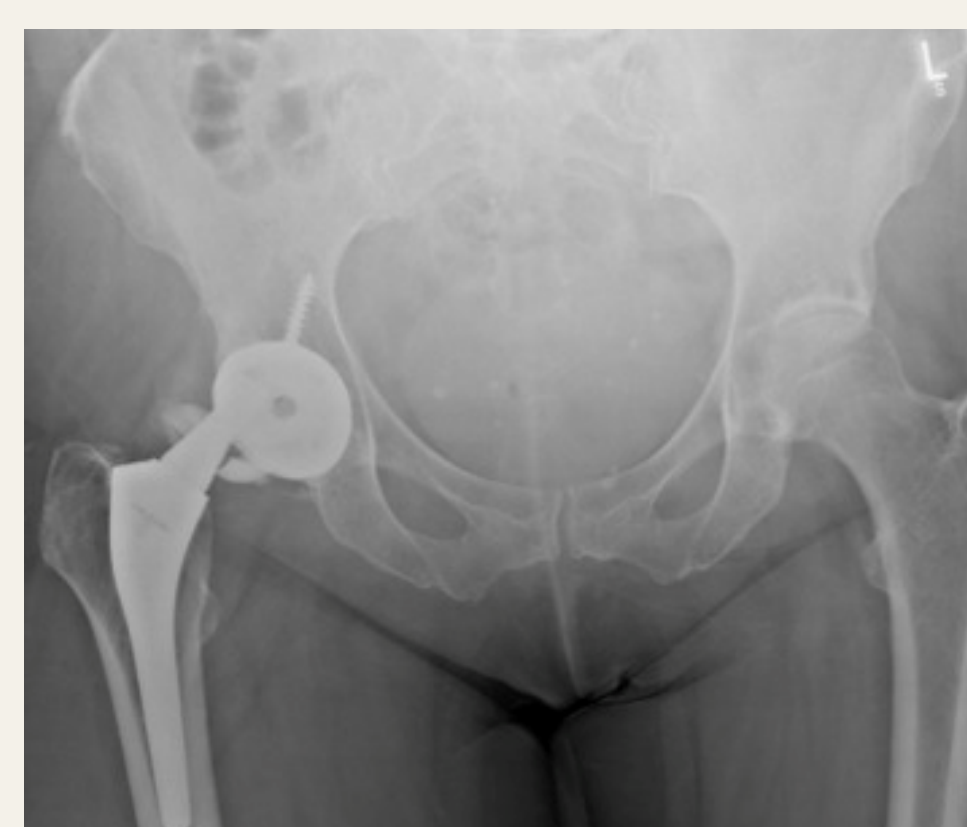
One Patient had periprosthetic fracture but regained the function after fracture healing.

Radiological Assessment : There were no osteolysis, loosening, no change of component position nor evidence of wear, on the final follow up with good osteo-integration of the socket.

Survival Analysis : 100% @ 9-13 years



AGE



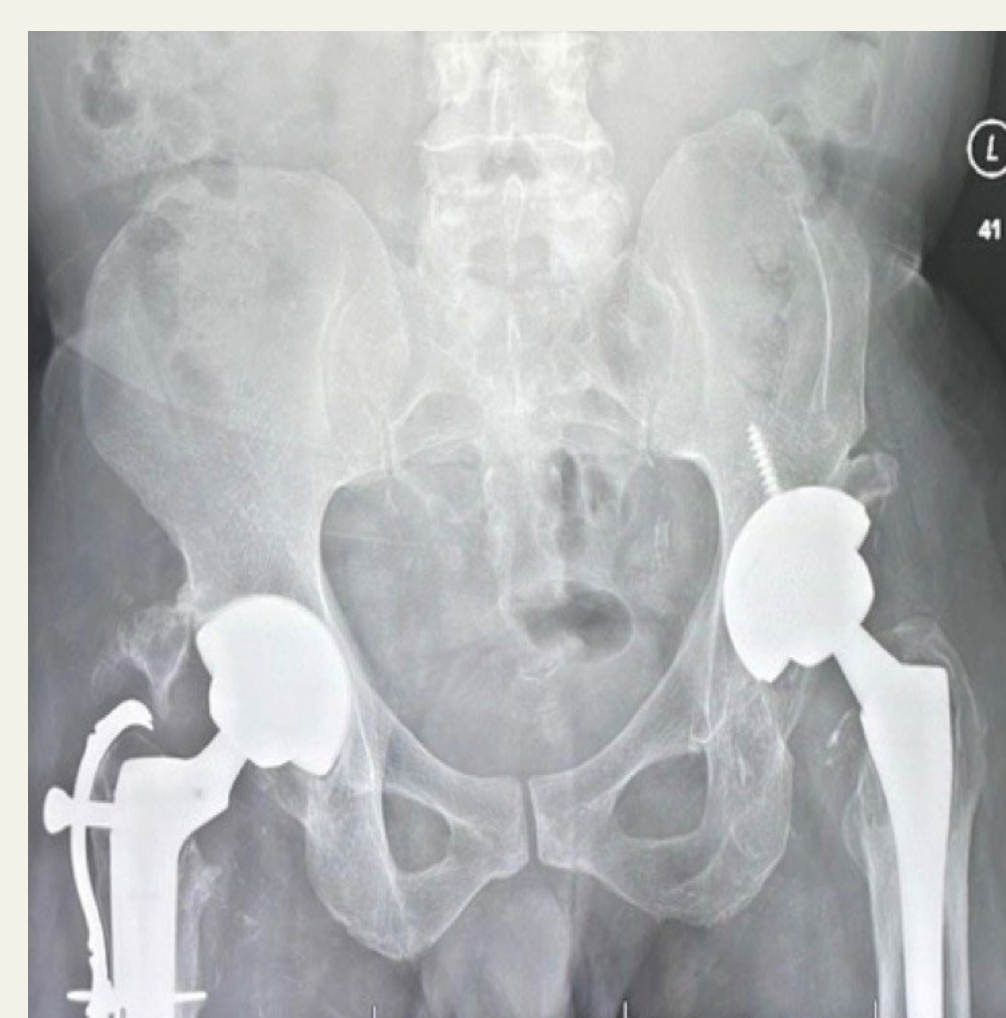
2010



2021



2011



2021

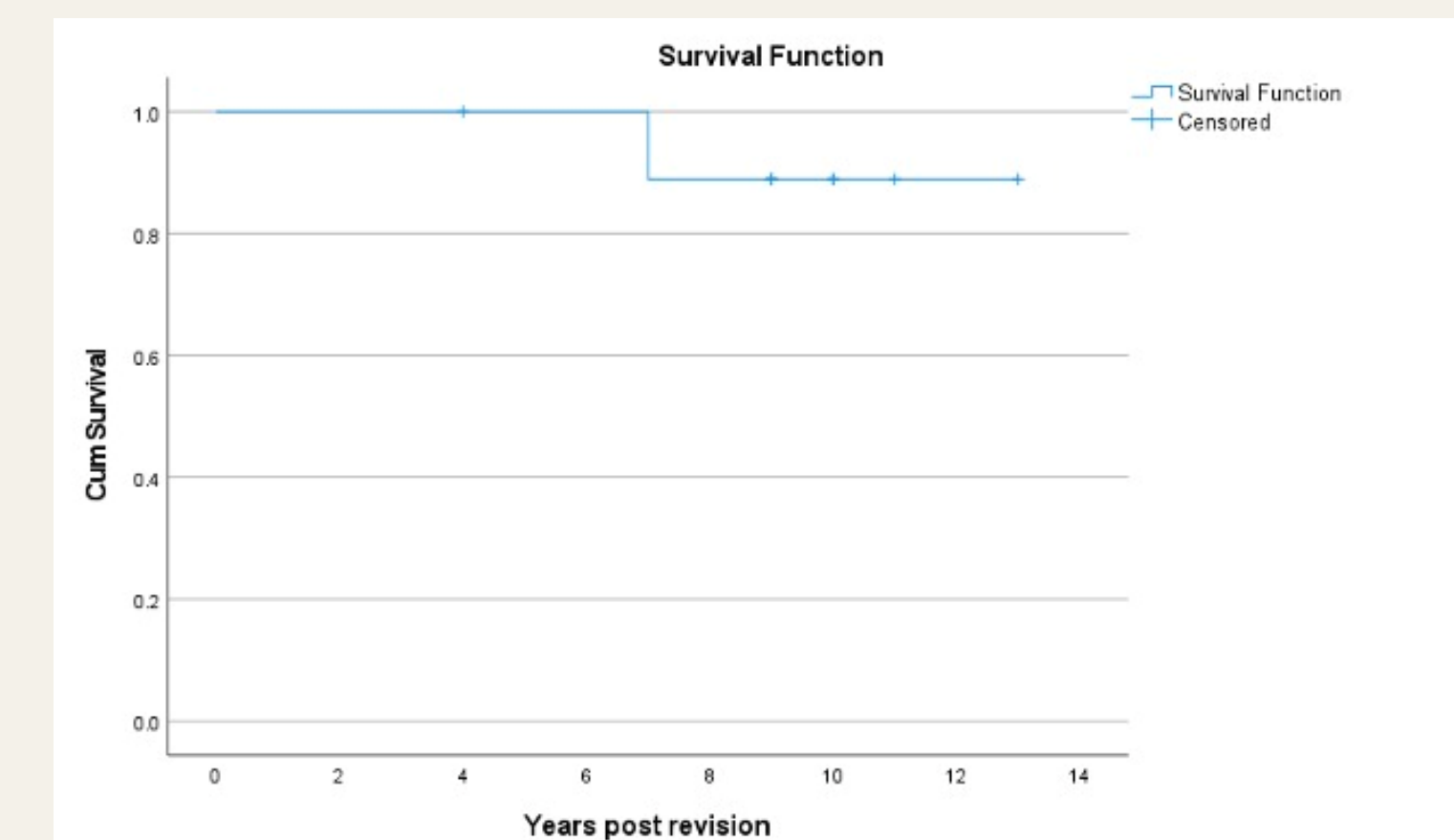


2012



2021

Survival Analysis



Time	Status	Cumulative Proportion Surviving at the Time		N of Cumulative Events	N of Remaining Cases
		Estimate	Std. Error		
4.000	no	-	-	0	9
7.000	yes	.889	.105	1	8
9.000	no	-	-	1	7
9.000	no	-	-	1	6
9.000	no	-	-	1	5
9.000	no	-	-	1	4
10.000	no	-	-	1	3
10.000	no	-	-	1	2
11.000	no	-	-	1	1
13.000	no	-	-	1	0

Conclusion

Complex revision hip surgery is required for ceramic bearing fractures.

Small Ceramic heads (28mm), with short-neck have tendency towards fracturing, despite accounting for a minority (21%) of implants in our study.

Adapter sleeves allow an even distribution of contact stresses between stem taper and head, compensating local taper damage and stopping further wear propagation from initial ceramic wear particles and avoids the need for revising a well fixed stem.

Optimum component Positioning of Uncemented JRI CSF cup with 4th Generation Delta ceramic with Sleeved Titanium head have given excellent Mid-Term Results and prevented any further wear or need of revision.

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Declaration

The authors declares that the research for and communication of this independent body of work does not constitute any financial or other conflict of interest