Flinders UNIVERSITY

Effect of stem size on late revision of the Exeter Femoral hip stem

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ISAKOS 2025

Declaration of Interest / Disclosure

I declare that in the past three years I have:

- held shares in: Nil
- received royalties from: Nil
- done consulting work for: Nil
- given paid presentations for: DePuy
- received institutional support from: Nil
- Signed: Chris Wilson / June 2025

AOA
AUSTRALIAN ORTHOPAEDIC ASSOCIATION

Introduction

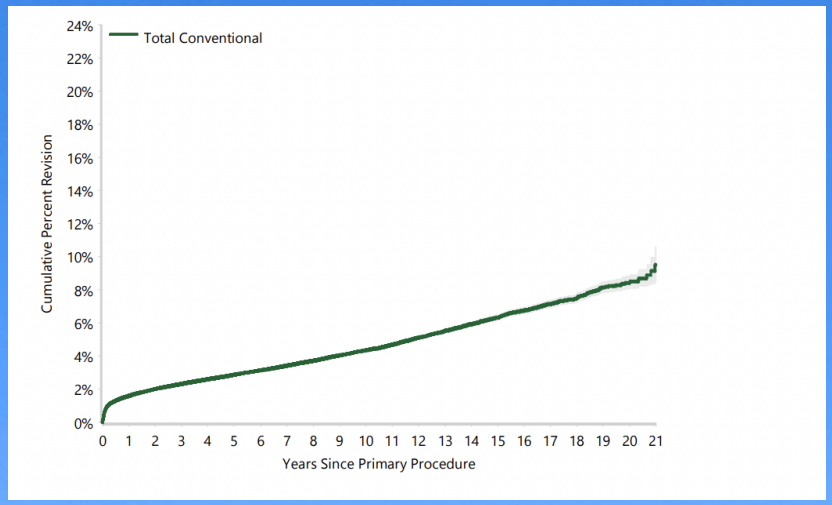
Widely used in Australia and globally since 1970

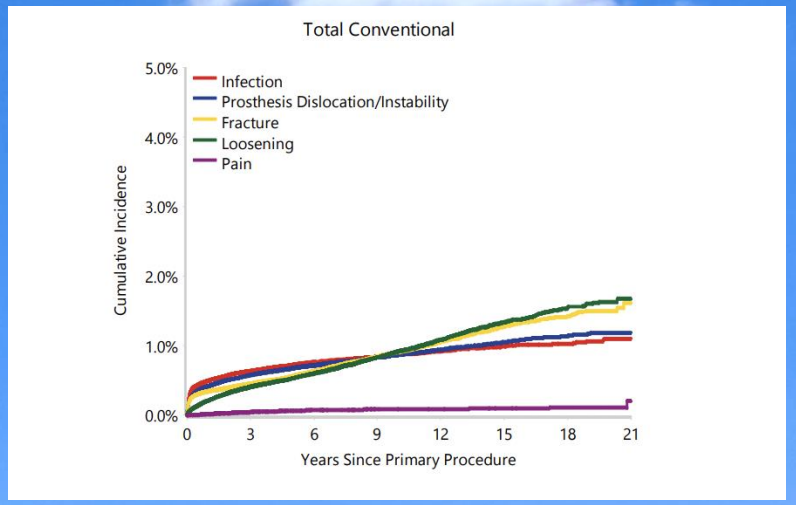
Most common cemented femoral implant on the AOANJRR with great outcomes with regards to rates of revision

Studies so far have mainly been focused on stem failures for smaller Exeter stem sizes (Size 0-3) requiring revision

Within the department, surgical observations noted trend towards increase rates of late revision in Exeter implants with larger stem sizes (Size 4-6)

Background / THR



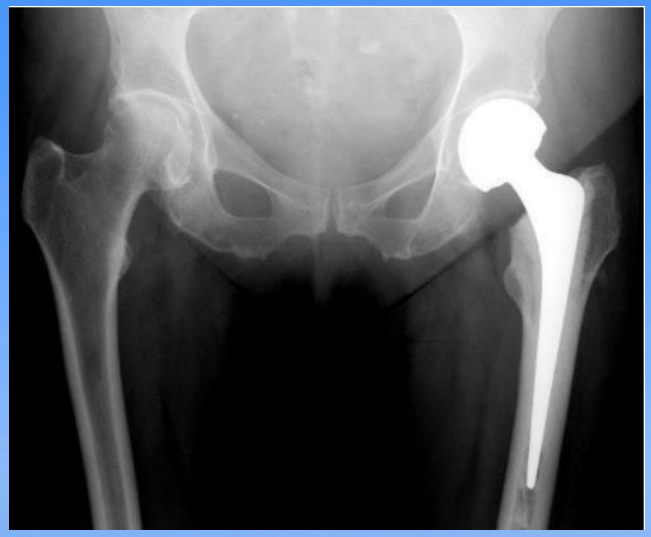


Good long term results / Fracture & Loosening still an issue

Aims

To compare the relative outcomes and revision rates of Exeter stem sizes with a focus on larger stem sizes (Size 4-6)

To evaluate whether there exists an increased risk of late revision for fracture in larger stem sizes



Methodology

De-identified data requested from Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) as an Ad-Hoc report

Data for all-cause revisions of Exeter hip stems implanted in Australia from September 1999 – December 2019

Trends reviewed and statistics analysed

AOANJRR Australian Orthopaedic Association National Joint Replacement Registry

Outcome measures

Revision rates – in terms of Cumulative Percentage Revision (CPR)

Reasons for revision – statistics

Effect of Stem size

Grouped into 0-3 *(Regular)* and 4-6 *(Large)*

Demographics

Summary of Exeter V40 Primary Total Conventional Hip Replacement by Group (Primary Diagnosis OA)

Note: Data summarised from Table 4 of the AOANJRR AD HOC REPORT

Variable		Size 0-3	Size 4-6	Total
Age				
	Mean ± SD	71 ± 10.1	71.8 ± 10.1	71 ± 10.1
	Median (IQR)	72 (65, 78)	73 (65, 79)	72 (65, 78)
Gender				
	Male	34,929 (42.6%)	1,646 (79.9%)	36,575 (43.5%)
	Female	47,047 (57.4%)	415 (20.1%)	47,462 (56.5%)
ASA Score[1]				
	1	2,430 (6.6%)	54 (7.3%)	2,484 (6.6%)
	2	19,681 (53.5%)	364 (49%)	20,045 (53.4%)
	3	13,984 (38%)	302 (40.6%)	14,286 (38.1%)
	4	694 (1.9%)	23 (3.1%)	717 (1.9%)
	5	1 (0%)		1 (0%)
BMI[2]				
	Underweight (<18.50)	221 (0.8%)	2 (0.4%)	223 (0.8%)
	Normal (18.50-24.99)	5,598 (21.2%)	100 (18.1%)	5,698 (21.2%)
	Pre Obese (25.00-29.99)	9,768 (37.1%)	218 (39.5%)	9,986 (37.1%)
	Obese Class 1 (30.00-34.99)	6,618 (25.1%)	132 (23.9%)	6,750 (25.1%)
	Obese Class 2 (35.00-39.99)	2,737 (10.4%)	69 (12.5%)	2,806 (10.4%)
	Obese Class 3 (≥40.00)	1,410 (5.4%)	31 (5.6%)	1,441 (5.4%)

[1]Excludes 46,504 procedures with unknown ASA Score
[2]Excludes 57,133 procedures with unknown BMI

Results / All revisions

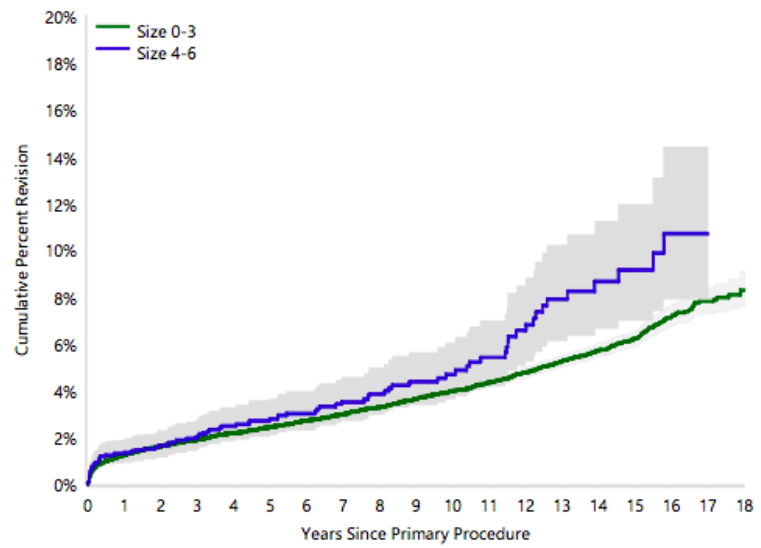
Generally higher trend of CPR for Sizes 4-6 vs Sizes 0-3

Noted larger 95% confidence intervals as well for larger stems

Not significant

p=0.169

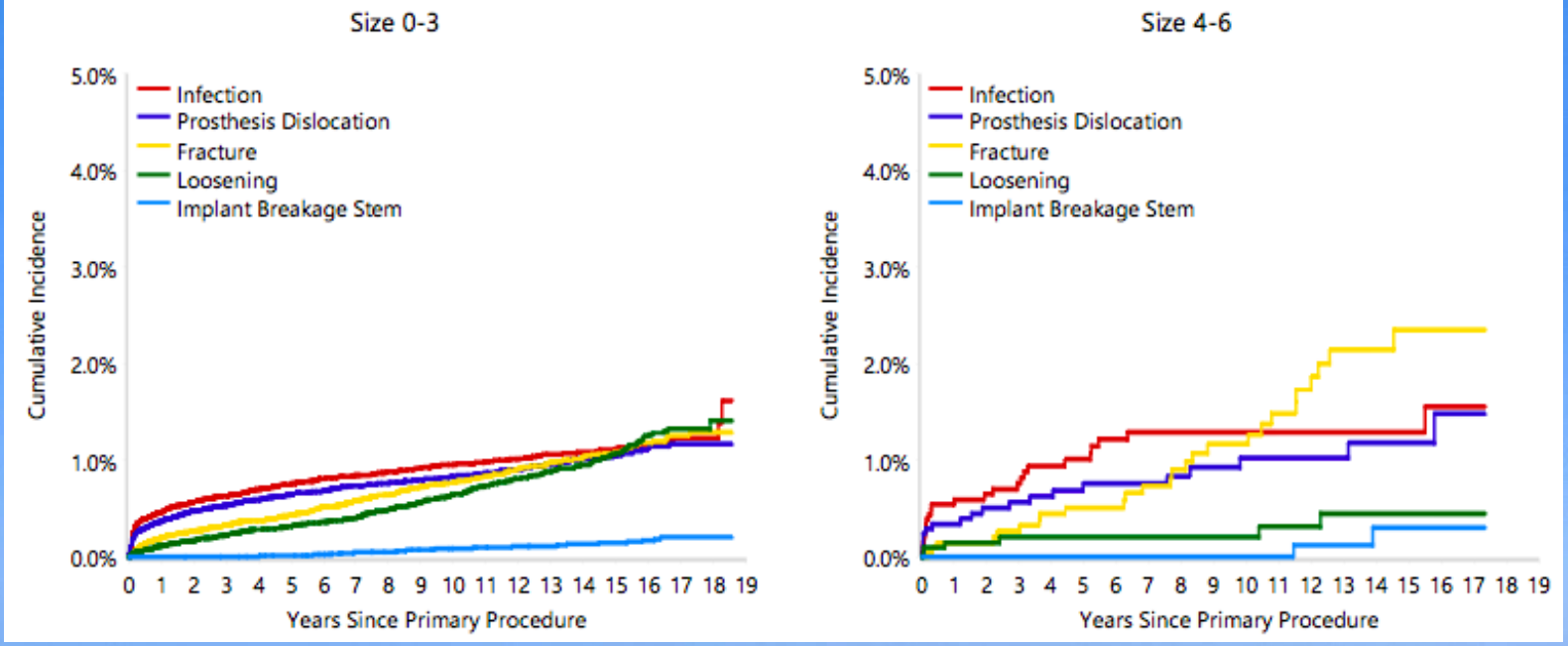
Figure 1: Cumulative Percent Revision of Exeter V40 Primary Total Conventional Hip Replacement by Stem Size (Primary Diagnosis OA)



Results / Fracture

Fractures become a primary cause for late stage revision in larger Exeter stem sizes after 10-years post primary procedure

Figure 2: Cumulative Incidence Revision Diagnosis of Exeter V40 Primary Total Conventional Hip Replacement by Stem Size (Primary Diagnosis OA)

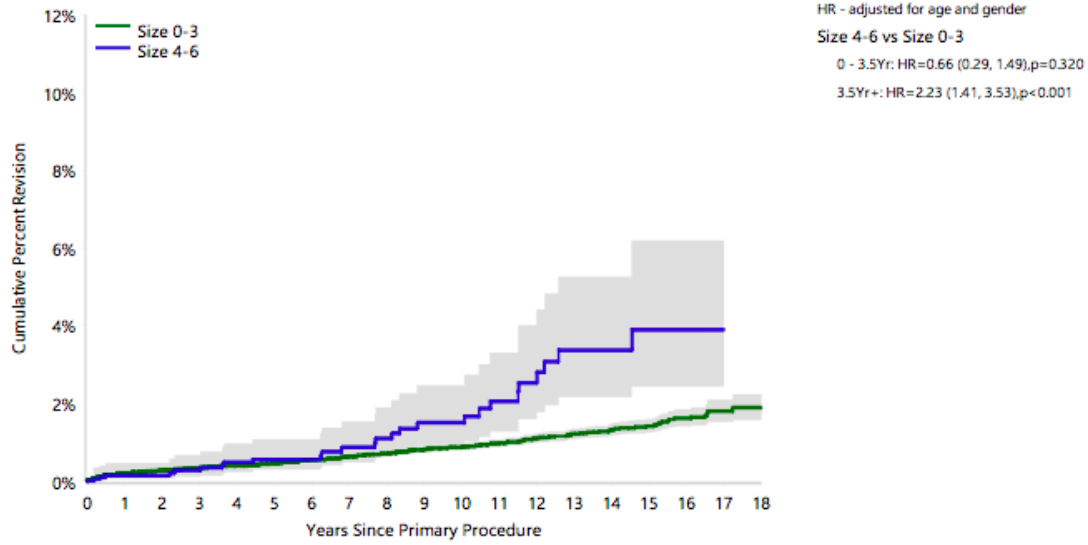


Results /Fracture

Statistically higher CPR for stem sizes 4-6 (p<0.001)

Revision rates start to increase in later-stage (post 10-years)

Figure 3: Cumulative Percent Revision of Exeter V40 Primary Total Conventional Hip Replacement by Stem Size (Primary Diagnosis OA, Revision for Fracture)



Conclusions

- **Increasing ‘trend’ for all cause revisions in large sizes**
- **There is a statistically significant increased risk in late revision for larger stem sizes as compared to smaller sizes for fracture**
- **Fractures is the main increased cause for late-stage revision**
- **Fractures tend to occur later (post 10-years)**
- ***Data does not include fractures that did not require revision surgery.***

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Thank You

Thanks Jonah, Anthony, Emma Jackman and the Flinders University team