

Australian Orthopaedic Association National Joint Replacement Registry

2023 SUPPLEMENTARY REPORT

Patient Reported Outcome Measures: Hip, Knee and Shoulder Arthroplasty



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Joint
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Registry

**Patient Reported Outcome Measures
Hip, Knee and Shoulder Arthroplasty**

2023 Supplementary Report

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The Registry greatly appreciates the participation of all joint replacement patients throughout Australia. Their contribution allows ongoing improvements in arthroplasty outcomes to be achieved.

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Introduction

Patient reported outcome measures (PROMs) are surveys that assess dimensions of health from the perspective of the patient. These are additional joint replacement outcomes that are reported directly by patients through a bespoke electronic data capture system. The system is currently being implemented nationally in all hospitals undertaking joint replacement surgery.

Several different instruments are used to collect data on patients' quality of life and joint-specific pain, function, and recovery. This year, PROMs data are reported for primary total hip, primary total knee, primary stemmed anatomic shoulder and primary total stemmed reverse shoulder replacement undertaken for osteoarthritis (OA), and primary reverse total shoulder replacement undertaken for rotator cuff arthropathy.

The data are presented overall for each category of joint replacement as well as for the two shoulder diagnoses assessed, and their variations by age and gender. Individual surgeon and individual hospital (both de-identified) pre-operative quality of life and joint-specific scores are also reported for primary total hip, primary total knee, and primary total stemmed reverse shoulder replacement only.

The AOANJRR first reported PROMs outcomes in the 2021 Annual Report. This year, PROMs information is provided in this dedicated supplementary report.

The 2023 Patient Reported Outcome Measures Hip, Knee and Shoulder Arthroplasty Supplementary Report is based on the analysis of procedures using prostheses that have been

available and used in 2022 (described as modern prostheses) with a procedure date up to and including 31 December 2022. These include 22,448 pre-operative and 14,677 post-operative PROMs for primary total hip procedures performed for osteoarthritis, 34,827 pre-operative and 22,363 post-operative PROMs for primary total knee procedures for osteoarthritis and 2,204 pre-operative and 1,271 post-operative PROMs for primary total stemmed anatomic and primary total stemmed reverse shoulder procedures performed for osteoarthritis and rotator cuff arthropathy.

The Patient Reported Outcome Measures Hip, Knee and Shoulder Arthroplasty Supplementary Report is one of 16 supplementary reports to complete the AOANJRR Annual Report for 2023.

The 2023 Annual Report, Supplementary Reports, and investigations of prostheses with higher than anticipated rates of revision are available on the AOANJRR website.

Information on the background, purpose, aims, benefits and governance of the Registry can be found in the Introduction of the 2023 Hip, Knee and Shoulder Arthroplasty Annual Report.

The Registry data quality processes including data collection, validation and outcomes assessment, are provided in detail in the data quality section of the 2023 Hip, Knee and Shoulder Arthroplasty Annual Report:

<https://aoanjrr.sahmri.com/annual-reports-2023>.

PROMS INSTRUMENTS

The list of instruments used for AOANJRR PROMs collection are provided in Table SPR1 and includes measures of quality of life and joint-specific pain, function and recovery.

In reporting the EQ-5D health-related quality of life in this report, the EQ-5D Utility Index is also used; this is a summary score generated from the 5 domains listed in Table SPR1.

The Oxford Hip Score, Oxford Knee Score and Oxford Shoulder Score are standardised and validated PROM instruments developed to assess function and pain in patients undergoing total joint replacement surgery.

HOOS and KOOS results are not presented in this report.

Table SPR1 Data Captured in the Minimum Dataset for PROMs Collection

Measurement Tool	Scoring	Applied to Hip (H), Knee (K) or Shoulder (S)
EQ-5D (Quality of Life)		
Usual activities	5 categories	H, K, S
Mobility	5 categories	H, K, S
Pain	5 categories	H, K, S
Depression / Anxiety	5 categories	H, K, S
Quality of life	5 categories	H, K, S
EQ-VAS (general health rating)	0-100	H, K, S
Oxford Hip Score	0-48	H
Oxford Knee Score	0-48	K
Oxford Shoulder Score	0-48	S
HOOS-12		H (optional)
KOOS-12		K (optional)
Joint-specific pain (last 7 days)	0-10	H, K, S
Low back pain (last 7 days)	0-10	H, K
Neck pain (last 7 days)	0-10	S
Expectation for pain, 6 months post-surgery	0-10	H, K, S
Expectation for mobility, 6 months post-surgery	5 categories	H, K, S
Expectation for health, 6 months post-surgery	0-100	H, K, S
Pre-operative patient-reported coincidental issues walking	Yes/No	H, K
Pre-operative patient-reported problems with the corresponding side	Yes/No	H, K, S
Satisfaction with the procedure	5 categories	H, K, S
Improvement (in problems with joint compared to before surgery)	5 categories	H, K, S

Hip Summary

PATIENT CHARACTERISTICS

EQ-VAS and EQ-5D-5L

The EQ-VAS and EQ-5D-5L are measures of quality of life. EQ-VAS is a measure of patient reported health, and ranges from 0 (worst health imaginable) to 100 (best health imaginable). Pre-operative and 6 months post-operative scores after total hip replacement are shown in Figure SPR1. The mean EQ-VAS score increased by 14 points following hip replacement (Table SPR2). The change in the distribution of EQ-VAS responses following surgery is shown in Figure SPR1 and the change in each domain of the EQ-5D-5L is shown in Figure SPR2.

Females aged <65 years have a slightly lower mean pre-operative EQ-VAS, but all groups have similar mean post-operative scores at 6 months after surgery (Table SPR3 and Figure SPR3).

The pre-operative mean EQ-VAS decreases with increasing ASA score, but the improvement in each group is similar (Table SPR4 and Figure SPR4).

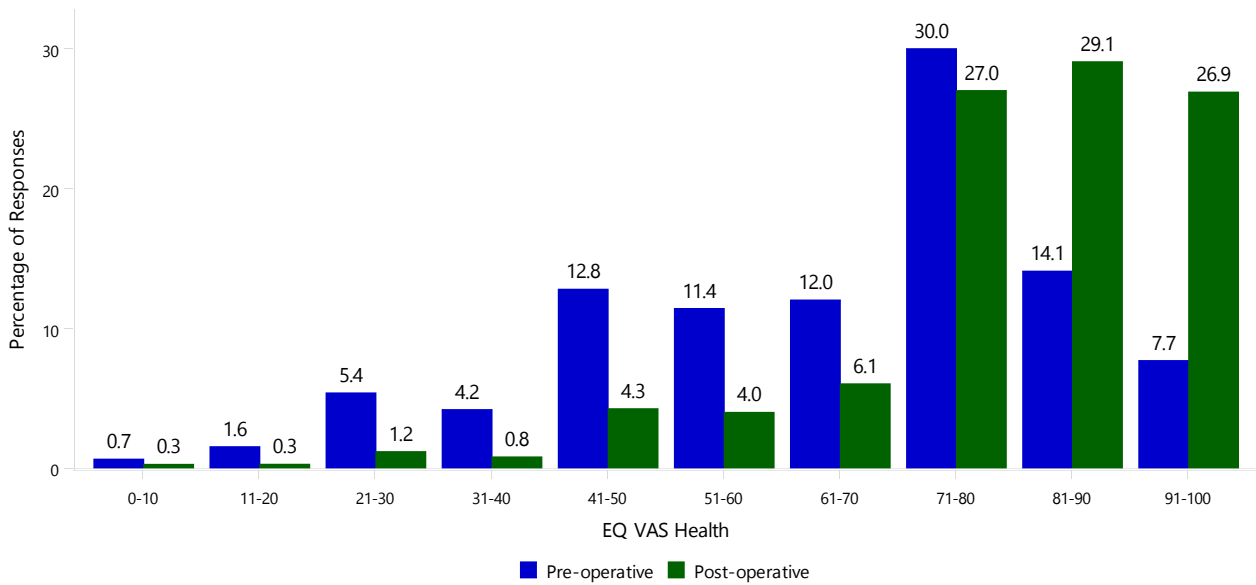
The mean pre-operative EQ-VAS assessment decreases with each increase in BMI category, apart from the underweight group where the number for assessment is small but post-operative improvements are similar (Table SPR5 and Figure SPR5).

Table SPR2 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Conventional	22130	66.20±20.01	72.00 (51.00, 80.00)	14502	80.86±15.83	85.00 (75.00, 91.00)

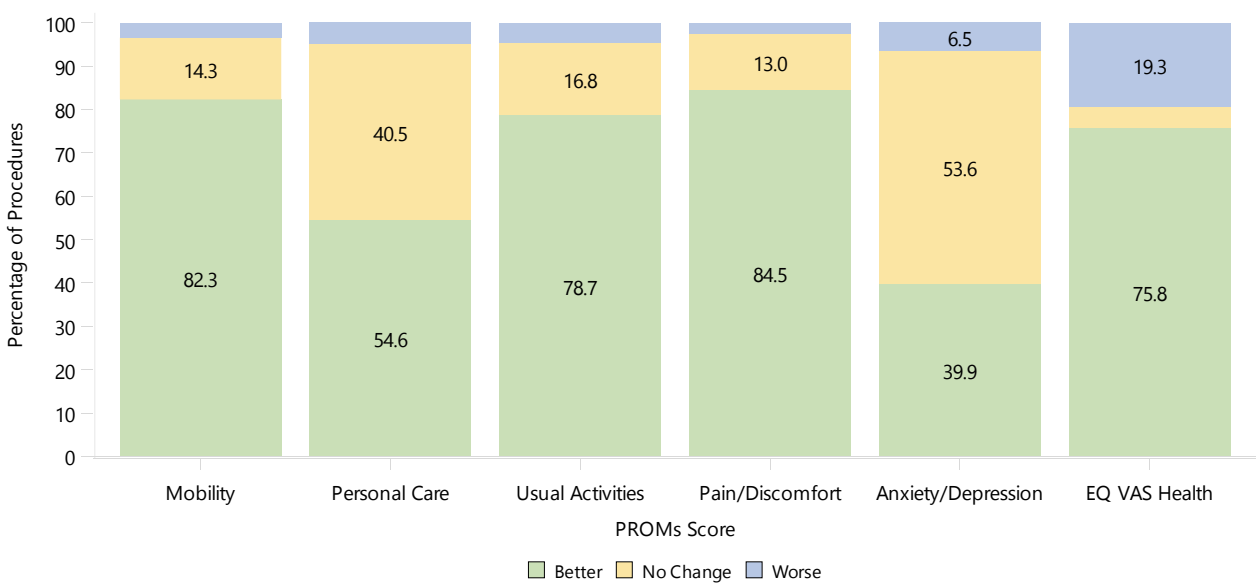
Note: Restricted to modern prostheses

Figure SPR1 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Figure SPR2 Change in EQ-5D-5L Domain Score and EQ-VAS Health in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)



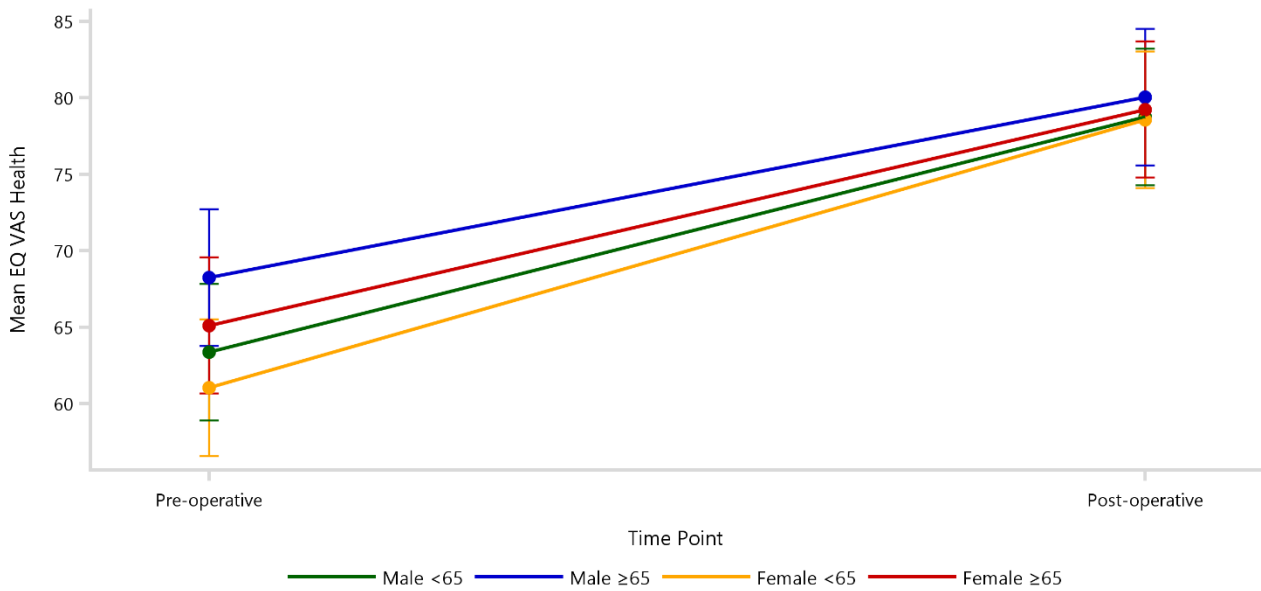
Note: Restricted to modern prostheses

Table SPR3 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Pre-operative		Post-operative		Change in Score
		N	Mean (95% CI)	N	Mean (95% CI)	
Male	<65	4634	63.37 (58.91, 67.84)	2947	78.74 (74.28, 83.21)	15.37 (14.68, 16.06)
	≥65	5603	68.24 (63.78, 72.70)	3772	80.03 (75.57, 84.49)	11.79 (11.18, 12.41)
Female	<65	4306	61.04 (56.56, 65.51)	2808	78.55 (74.08, 83.02)	17.52 (16.81, 18.22)
	≥65	7587	65.09 (60.64, 69.54)	4975	79.22 (74.77, 83.68)	14.13 (13.59, 14.67)

Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Figure SPR3 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)



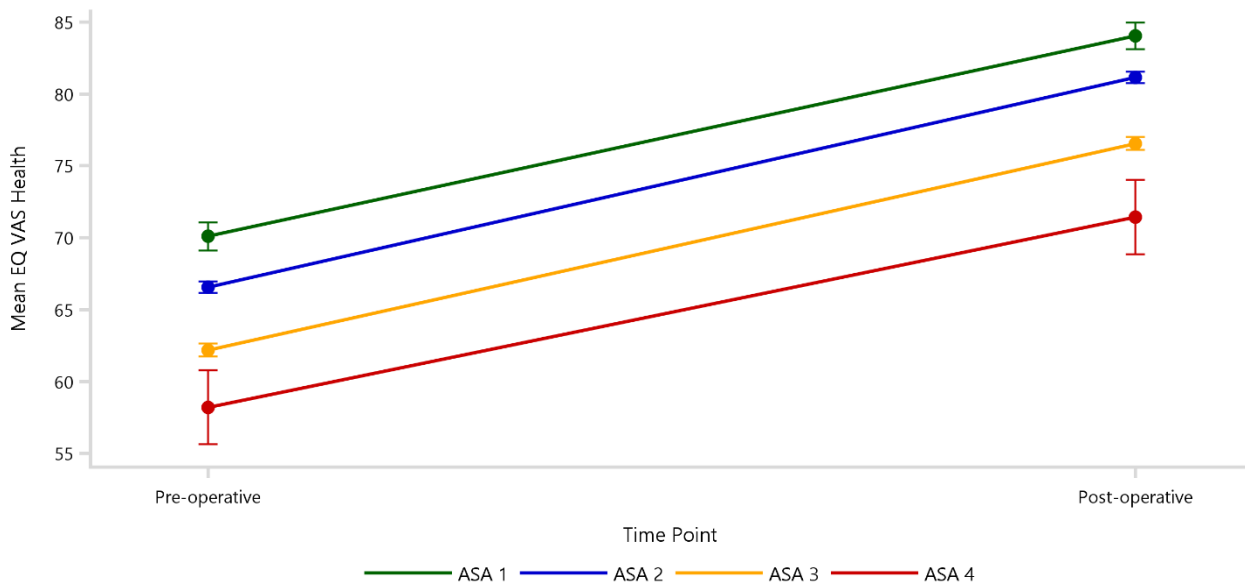
Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Table SPR4 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by ASA Score (Primary Diagnosis OA)

ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 1	1742	70.09 (69.12, 71.06)	1142	84.03 (83.10, 84.97)	13.94 (12.83, 15.06)
ASA 2	12298	66.55 (66.15, 66.95)	8272	81.14 (80.76, 81.53)	14.60 (14.18, 15.01)
ASA 3	7836	62.18 (61.73, 62.62)	4935	76.55 (76.11, 76.99)	14.37 (13.84, 14.91)
ASA 4	221	58.20 (55.62, 60.78)	134	71.44 (68.85, 74.03)	13.24 (10.01, 16.47)

Note: Restricted to modern prostheses
 Adjusted for age, gender and BMI category
 Only ASA scores with >40 pre-operative and post-operative responses are listed

Figure SPR4 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by ASA Score (Primary Diagnosis OA)



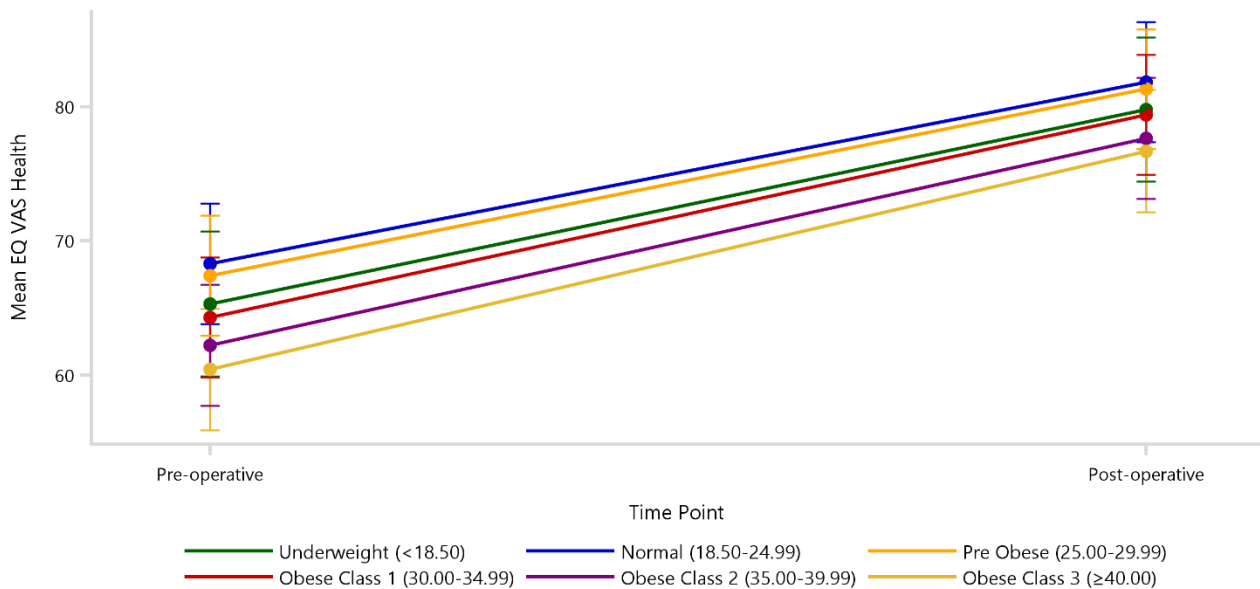
Note: Restricted to modern prostheses
 Adjusted for age, gender and BMI category
 Only ASA scores with >40 pre-operative and post-operative responses are listed

Table SPR5 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by BMI Category (Primary Diagnosis OA)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Underweight (<18.50)	154	65.30 (59.90, 70.70)	98	79.77 (74.40, 85.13)	14.47 (10.70, 18.24)
Normal (18.50-24.99)	4338	68.28 (63.80, 72.76)	2892	81.81 (77.34, 86.29)	13.53 (12.83, 14.24)
Pre Obese (25.00-29.99)	7934	67.40 (62.94, 71.86)	5157	81.30 (76.84, 85.76)	13.90 (13.38, 14.42)
Obese Class 1 (30.00-34.99)	5783	64.29 (59.82, 68.77)	3801	79.39 (74.92, 83.86)	15.09 (14.48, 15.71)
Obese Class 2 (35.00-39.99)	2505	62.20 (57.69, 66.70)	1641	77.63 (73.13, 82.13)	15.43 (14.50, 16.36)
Obese Class 3 (≥40.00)	1247	60.40 (55.86, 64.94)	803	76.67 (72.12, 81.23)	16.27 (14.94, 17.60)

Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients ≤19 years

Figure SPR5 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by BMI Category (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients ≤19 years

Oxford Scores

The Oxford Hip Score (OHS) is a joint specific assessment of pain and function. The OHS totals the responses from 12 questions, each on a 5-level scale of 0 (worst possible score) to 4 (best possible score). The mean pre-operative OHS is 20.9 and this improves to 41.5 post-operatively. The minimal clinically important change in the OHS for a single group of patients is approximately 12 points. The minimal important difference between groups of patients is 5 points (Table SPR6).

Similar to the EQ-VAS, females aged <65 years have the lowest pre-operative OHS but all groups have similar improvements with males having slightly higher scores (Table SPR7 and Figure SPR6).

The pre-operative mean OHS decreases with increasing ASA score, but the improvement in each group is similar (Table SPR8 and Figure SPR7).

The mean pre-operative OHS decreases with each increase in BMI category, apart from the underweight group where the number for assessment is small, but post-operative improvements are similar. Patients in obese class 3 have the largest change (Table SPR9 and Figure SPR8).

Table SPR6 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Conventional	22139	20.92±8.98	21.00 (14.00, 27.00)	14521	41.45±7.23	44.00 (39.00, 47.00)

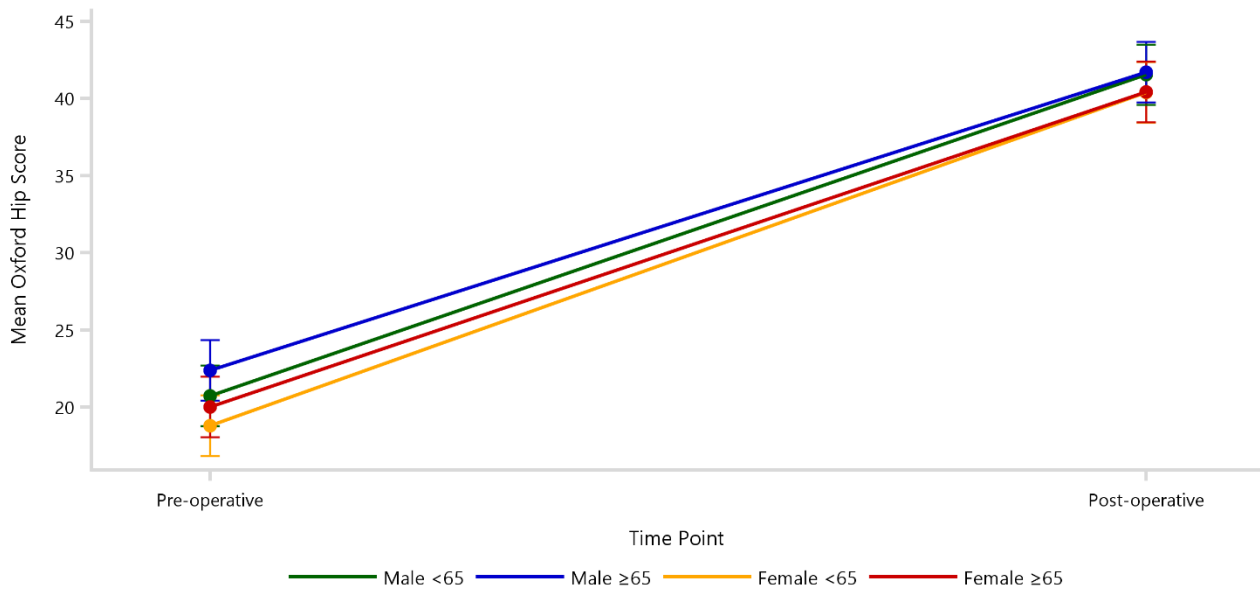
Note: Restricted to modern prostheses

Table SPR7 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Pre-operative		Post-operative		Change in Score
		N	Mean (95% CI)	N	Mean (95% CI)	
Male	<65	4640	20.72 (18.76, 22.68)	2941	41.53 (39.56, 43.49)	20.80 (20.48, 21.13)
	≥65	5599	22.37 (20.41, 24.33)	3796	41.69 (39.74, 43.65)	19.33 (19.04, 19.62)
Female	<65	4306	18.77 (16.81, 20.74)	2798	40.39 (38.43, 42.36)	21.62 (21.29, 21.95)
	≥65	7594	19.99 (18.04, 21.95)	4986	40.41 (38.46, 42.37)	20.42 (20.17, 20.67)

Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Figure SPR6 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)



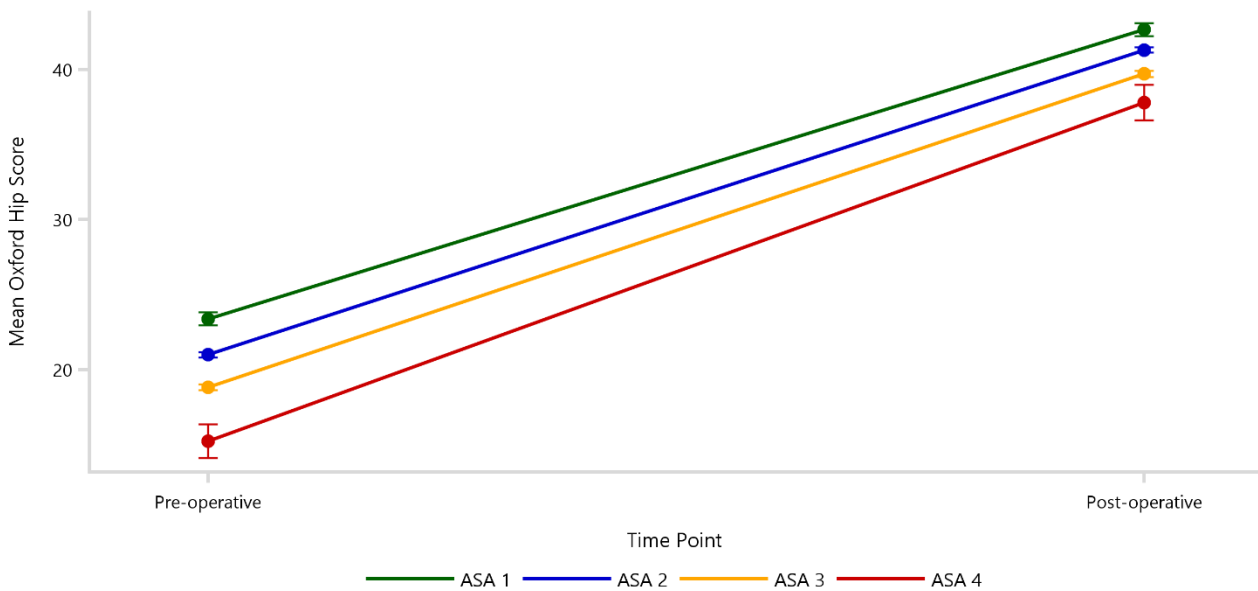
Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Table SPR8 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by ASA Score (Primary Diagnosis OA)

ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 1	1746	23.36 (22.94, 23.79)	1145	42.64 (42.22, 43.07)	19.28 (18.76, 19.80)
ASA 2	12293	20.97 (20.80, 21.15)	8288	41.29 (41.11, 41.46)	20.31 (20.12, 20.51)
ASA 3	7846	18.79 (18.60, 18.99)	4936	39.69 (39.49, 39.89)	20.90 (20.65, 21.15)
ASA 4	221	15.21 (14.08, 16.35)	134	37.78 (36.59, 38.97)	22.57 (21.06, 24.08)

Note: Restricted to modern prostheses
Adjusted for age, gender and BMI category

Figure SPR7 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by ASA Score (Primary Diagnosis OA)



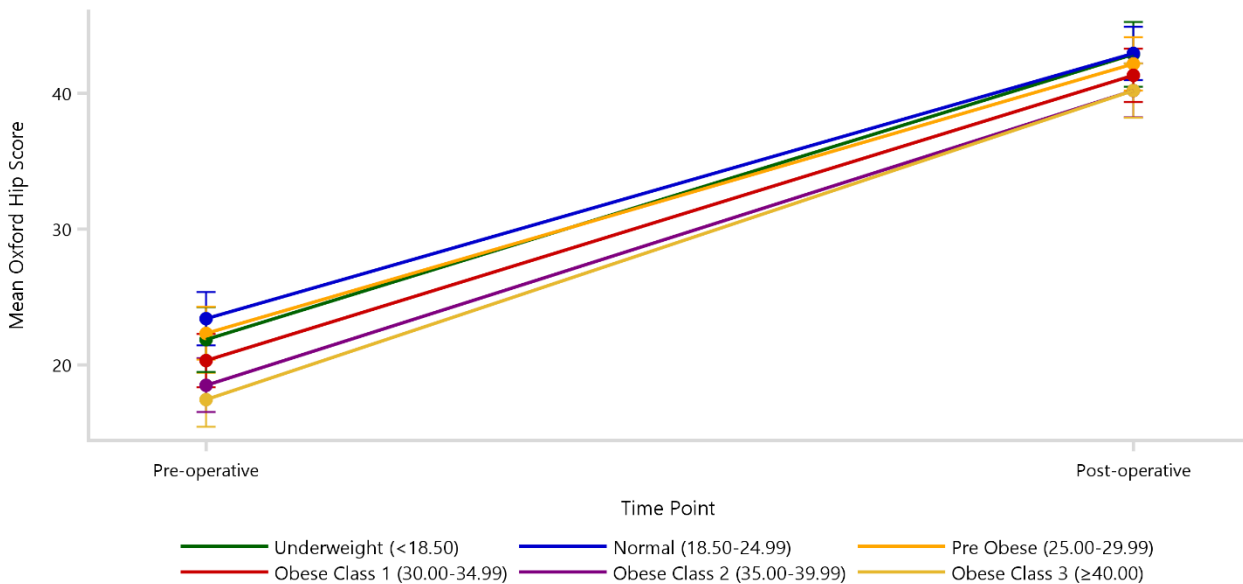
Note: Restricted to modern prostheses
Adjusted for age, gender and BMI category

Table SPR9 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by BMI Category (Primary Diagnosis OA)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Underweight (<18.50)	150	21.87 (19.49, 24.25)	100	42.86 (40.48, 45.24)	20.99 (19.22, 22.76)
Normal (18.50-24.99)	4339	23.40 (21.44, 25.37)	2905	42.94 (40.97, 44.90)	19.53 (19.21, 19.86)
Pre Obese (25.00-29.99)	7944	22.34 (20.38, 24.30)	5169	42.16 (40.21, 44.12)	19.82 (19.58, 20.07)
Obese Class 1 (30.00-34.99)	5784	20.33 (18.37, 22.29)	3798	41.30 (39.34, 43.26)	20.98 (20.69, 21.26)
Obese Class 2 (35.00-39.99)	2494	18.51 (16.54, 20.49)	1638	40.21 (38.23, 42.18)	21.69 (21.26, 22.13)
Obese Class 3 (≥40.00)	1256	17.44 (15.45, 19.43)	802	40.19 (38.19, 42.20)	22.75 (22.14, 23.37)

Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients aged ≤19 years

Figure SPR8 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by BMI Category (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients aged ≤19 years

Patient Satisfaction and Change

Patients were surveyed at 6 months post-operatively on how satisfied they were with their primary hip replacement, and on their perceived change in their hip after surgery. There are 90.9% of patients who are either very satisfied or satisfied (Table SPR10 and Figure SPR9).

Age and gender have minimal effect on the proportion of patients who are satisfied. However, in general there is a larger percentage of younger patients who are very satisfied (Table SPR11 and Figure SPR10).

There is a high percentage (96.7%) of patients who rate their hip as much better or a little better (Table SPR12 and Figure SPR11).

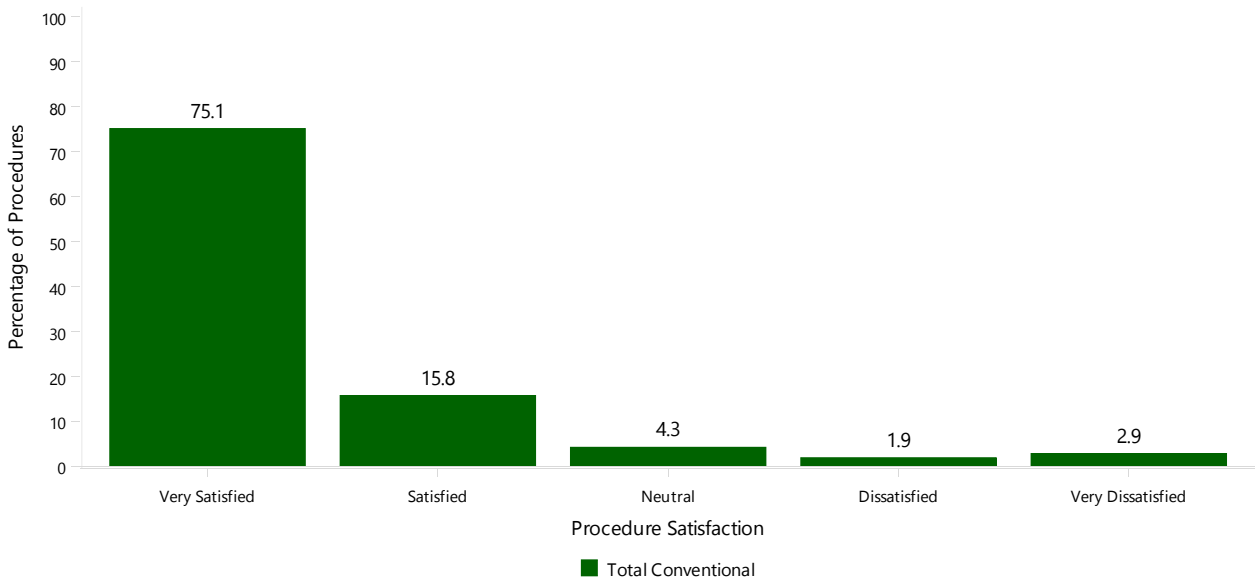
Patient-reported change by age and gender are presented in Table SPR13 and Figure SPR12.

Table SPR10 Procedure Satisfaction in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)

Class	Very Satisfied		Satisfied		Neutral		Dissatisfied		Very Dissatisfied		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Conventional	10891	75.1	2287	15.8	617	4.3	281	1.9	417	2.9	14493	100.0

Note: Restricted to modern prostheses

Figure SPR9 Procedure Satisfaction in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)



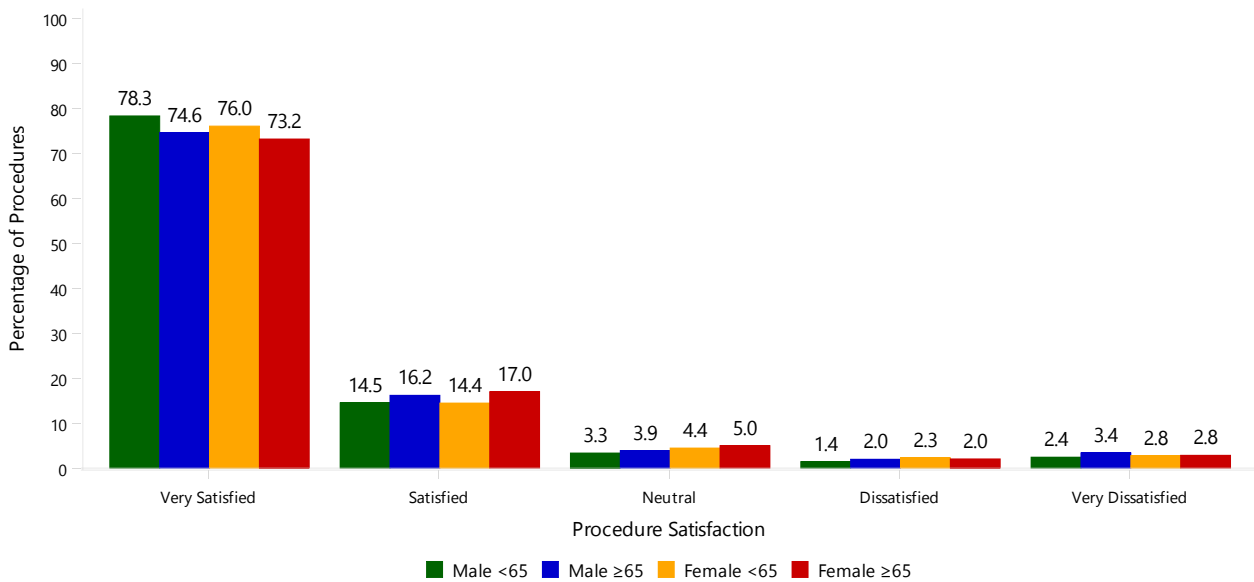
Note: Restricted to modern prostheses

Table SPR11 Procedure Satisfaction in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
		N	Row%	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%
Male	<65	2300	78.3	21.1	426	14.5	18.6	98	3.3	15.9	42	1.4	14.9	71	2.4	17.0	2937	100.0	20.3
	≥65	2828	74.6	26.0	613	16.2	26.8	147	3.9	23.8	74	2.0	26.3	128	3.4	30.7	3790	100.0	26.2
Female	<65	2121	76.0	19.5	403	14.4	17.6	124	4.4	20.1	64	2.3	22.8	77	2.8	18.5	2789	100.0	19.2
	≥65	3642	73.2	33.4	845	17.0	36.9	248	5.0	40.2	101	2.0	35.9	141	2.8	33.8	4977	100.0	34.3
TOTAL		10891	75.1	100.0	2287	15.8	100.0	617	4.3	100.0	281	1.9	100.0	417	2.9	100.0	14493	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR10 Procedure Satisfaction in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)



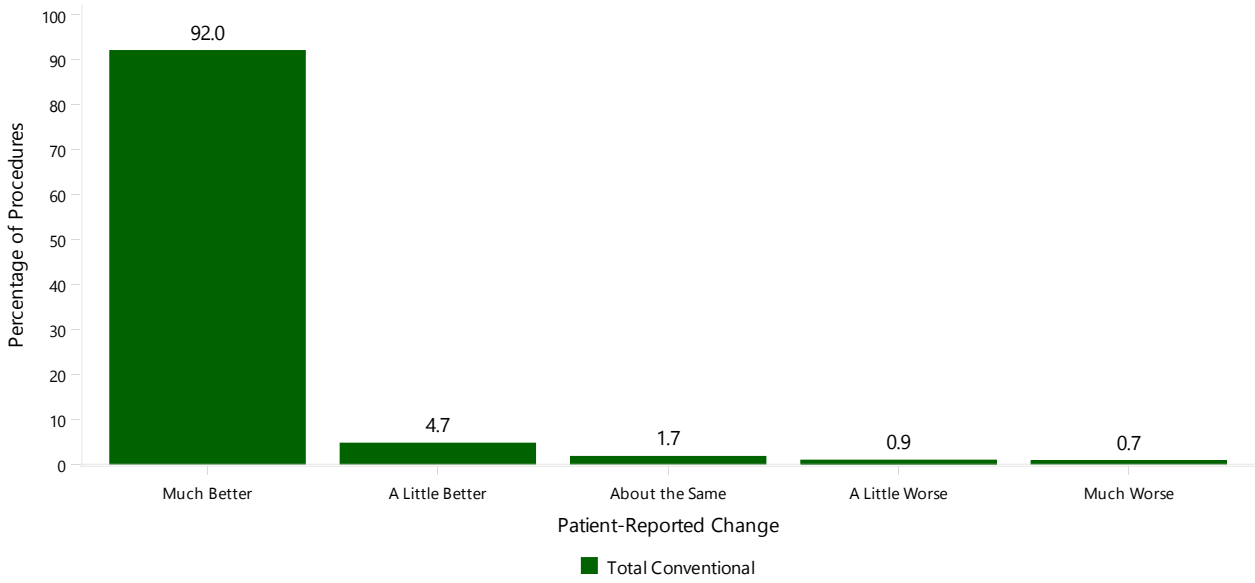
Note: Restricted to modern prostheses

Table SPR12 Patient-Reported Change in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)

Class	Much Better		A Little Better		About the Same		A Little Worse		Much Worse		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Conventional	13330	92.0	676	4.7	249	1.7	129	0.9	107	0.7	14491	100.0

Note: Restricted to modern prostheses

Figure SPR11 Patient-Reported Change in Primary Total Conventional Hip Replacement (Primary Diagnosis OA)



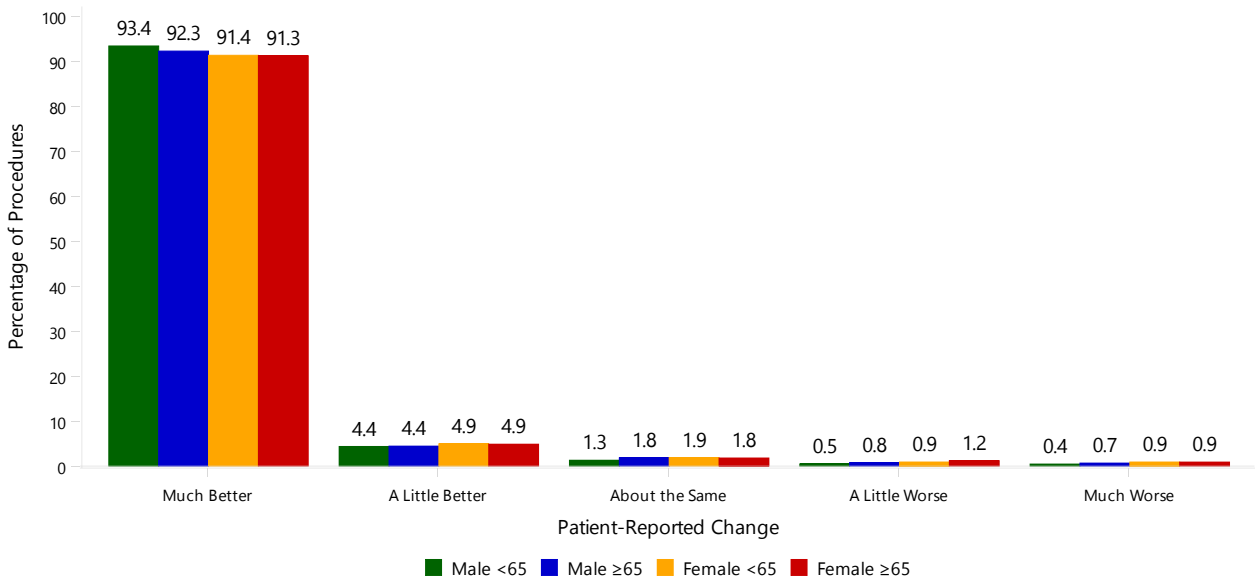
Note: Restricted to modern prostheses

Table SPR13 Patient-Reported Change in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
		N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%
Male	<65	2744	93.4	20.6	128	4.4	18.9	38	1.3	15.3	14	0.5	10.9	13	0.4	12.1	2937	100.0	20.3
	≥65	3497	92.3	26.2	168	4.4	24.9	69	1.8	27.7	30	0.8	23.3	25	0.7	23.4	3789	100.0	26.1
Female	<65	2548	91.4	19.1	138	4.9	20.4	53	1.9	21.3	25	0.9	19.4	25	0.9	23.4	2789	100.0	19.2
	≥65	4541	91.3	34.1	242	4.9	35.8	89	1.8	35.7	60	1.2	46.5	44	0.9	41.1	4976	100.0	34.3
TOTAL		13330	92.0	100.0	676	4.7	100.0	249	1.7	100.0	129	0.9	100.0	107	0.7	100.0	14491	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR12 Patient-Reported Change in Primary Total Conventional Hip Replacement by Gender and Age (Primary Diagnosis OA)



Note: Restricted to modern prostheses

PROSTHESIS CHARACTERISTICS

Femoral Fixation

PROMs have been analysed with respect to the method of femoral fixation when only cementless acetabular inserts were used. When patient age was assessed, there was a slightly lower change in EQ-VAS for cementless femoral fixation for patients aged ≥ 75 years but for patients aged < 75 years there was no difference (Table SPR14 and Figure SPR13). There were no differences in the

pre- to post-operative change in OHS scores with regards to age and femoral fixation (Table SPR15 and Figure SPR14). Satisfaction and patient-reported change were similar for both cemented and cementless femoral fixation irrespective of age (Table SPR16, Figure SPR15, Table SPR17 and Figure SPR16).

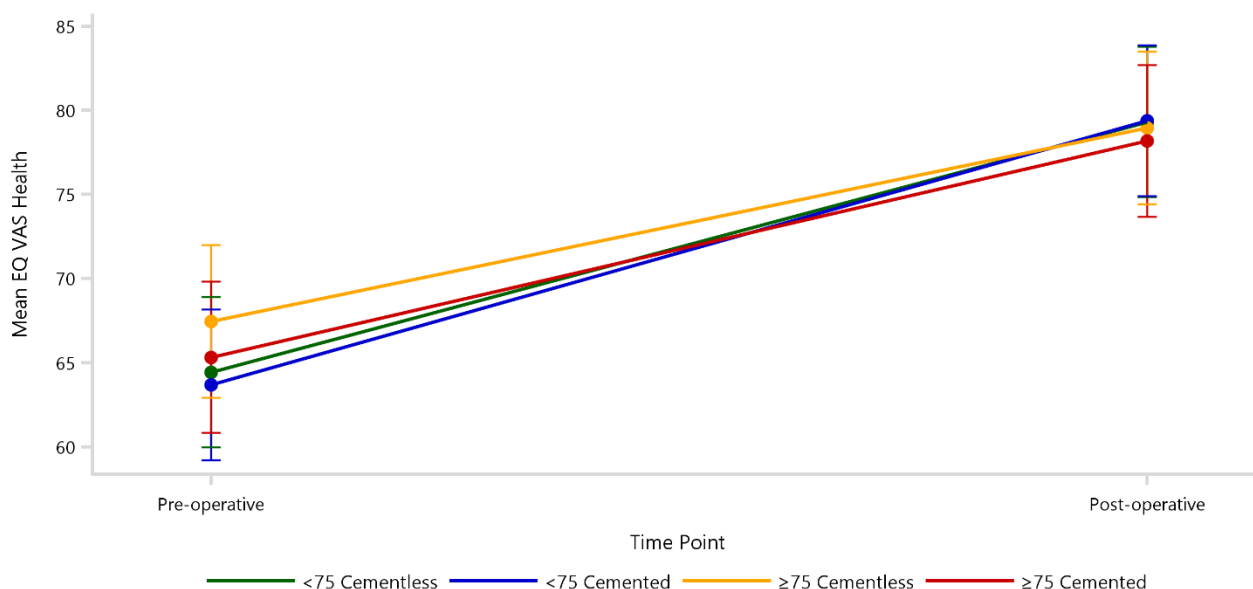
Table SPR14 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement with Cementless Acetabular Fixation by Age and Femoral Fixation (Primary Diagnosis OA)

Age	Femoral Fixation	Pre-operative		Post-operative		Change in Score
		N	Mean (95% CI)	N	Mean (95% CI)	
<75	Cementless	11515	64.42 (59.96, 68.89)	7443	79.30 (74.83, 83.77)	14.88 (14.44, 15.31)
	Cemented	5263	63.67 (59.19, 68.16)	3624	79.37 (74.88, 83.85)	15.69 (15.06, 16.33)
≥ 75	Cementless	1858	67.43 (62.89, 71.98)	1197	78.95 (74.41, 83.49)	11.51 (10.42, 12.61)
	Cemented	3042	65.31 (60.82, 69.81)	1900	78.18 (73.68, 82.69)	12.87 (12.01, 13.73)

Note: Restricted to modern prostheses

Adjusted for gender, ASA score and BMI category

Figure SPR13 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement with Cementless Acetabular Fixation by Age and Femoral Fixation (Primary Diagnosis OA)



Note: Restricted to modern prostheses

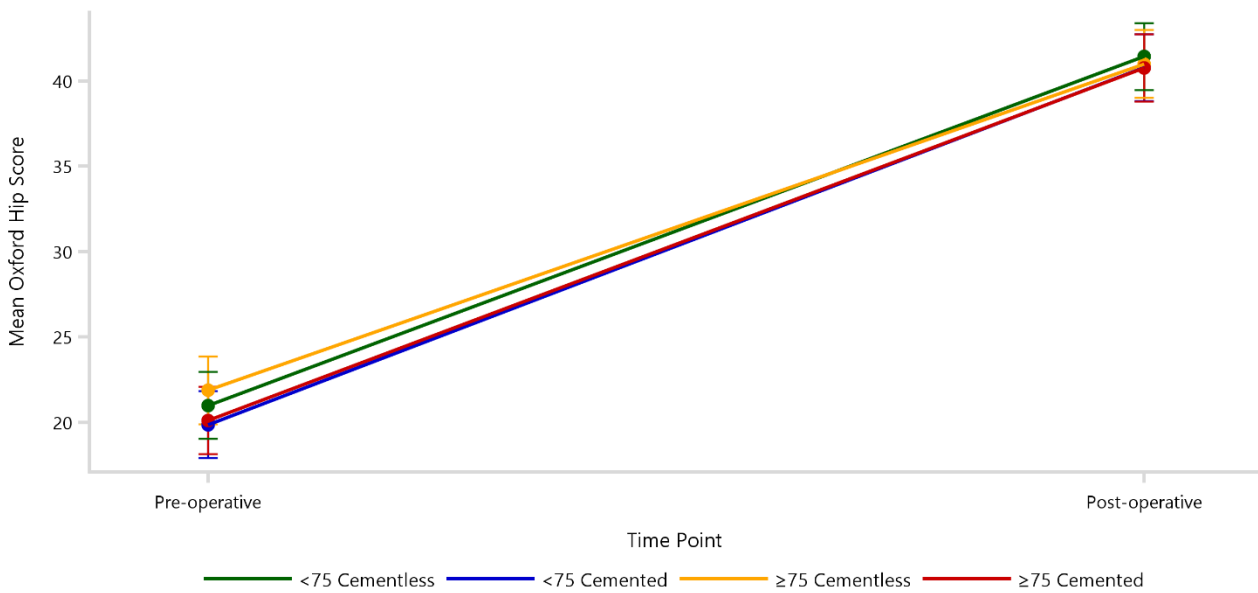
Adjusted for gender, ASA score and BMI category

Table SPR15 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement with Cementless Acetabular Fixation by Age and Femoral Fixation (Primary Diagnosis OA)

Age	Femoral Fixation	Pre-operative		Post-operative		Change in Score
		N	Mean (95% CI)	N	Mean (95% CI)	
<75	Cementless	11507	20.99 (19.04, 22.95)	7447	41.42 (39.47, 43.37)	20.43 (20.22, 20.63)
	Cemented	5263	19.87 (17.91, 21.83)	3631	40.78 (38.82, 42.74)	20.91 (20.61, 21.21)
≥75	Cementless	1860	21.88 (19.89, 23.86)	1199	40.99 (39.00, 42.97)	19.11 (18.60, 19.62)
	Cemented	3057	20.12 (18.15, 22.08)	1902	40.77 (38.80, 42.74)	20.65 (20.25, 21.05)

Note: Restricted to modern prostheses
Adjusted for gender, ASA score and BMI category

Figure SPR14 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement with Cementless Acetabular Fixation by Age and Femoral Fixation (Primary Diagnosis OA)



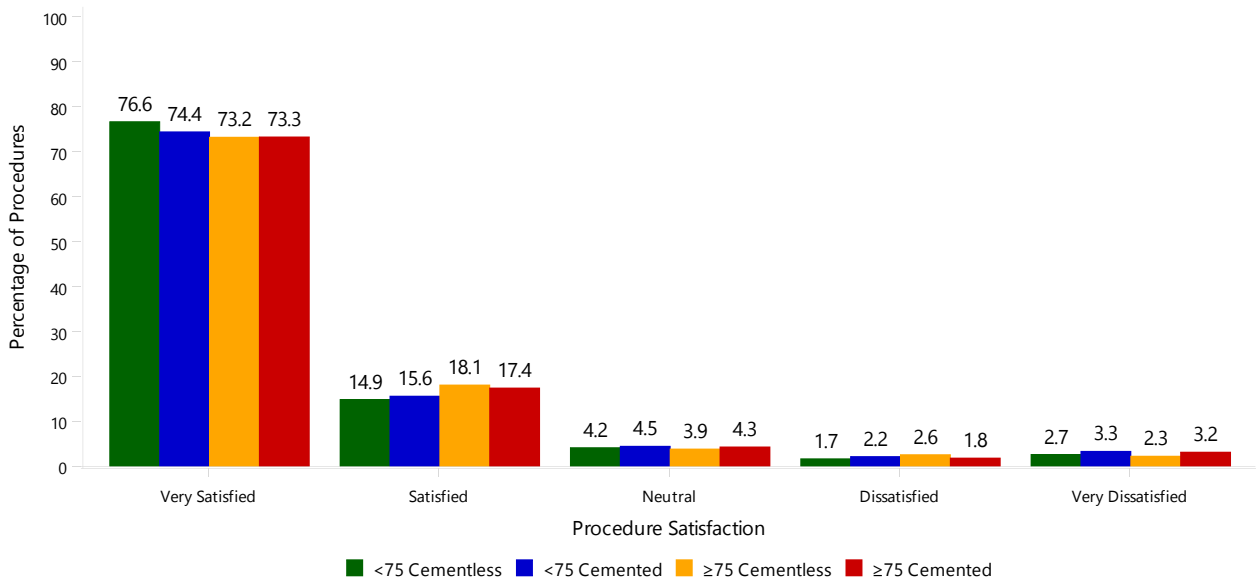
Note: Restricted to modern prostheses
Adjusted for gender, ASA score and BMI category

Table SPR16 Procedure Satisfaction in Primary Total Conventional Hip Replacement with Cementless Acetabular Fixation by Age and Femoral Fixation (Primary Diagnosis OA)

Age	Femoral Fixation	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
		N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
<75	Cementless	5697	76.6	53.4	1105	14.9	49.8	309	4.2	51.6	125	1.7	46.3	197	2.7	48.6	7433	100.0	52.5
	Cemented	2697	74.4	25.3	566	15.6	25.5	162	4.5	27.0	79	2.2	29.3	121	3.3	29.9	3625	100.0	25.6
≥75	Cementless	874	73.2	8.2	216	18.1	9.7	46	3.9	7.7	31	2.6	11.5	27	2.3	6.7	1194	100.0	8.4
	Cemented	1392	73.3	13.1	331	17.4	14.9	82	4.3	13.7	35	1.8	13.0	60	3.2	14.8	1900	100.0	13.4
TOTAL		10660	75.3	100.0	2218	15.7	100.0	599	4.2	100.0	270	1.9	100.0	405	2.9	100.0	14152	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR15 Procedure Satisfaction in Primary Total Conventional Hip Replacement with Cementless Acetabular Fixation by Age and Femoral Fixation (Primary Diagnosis OA)



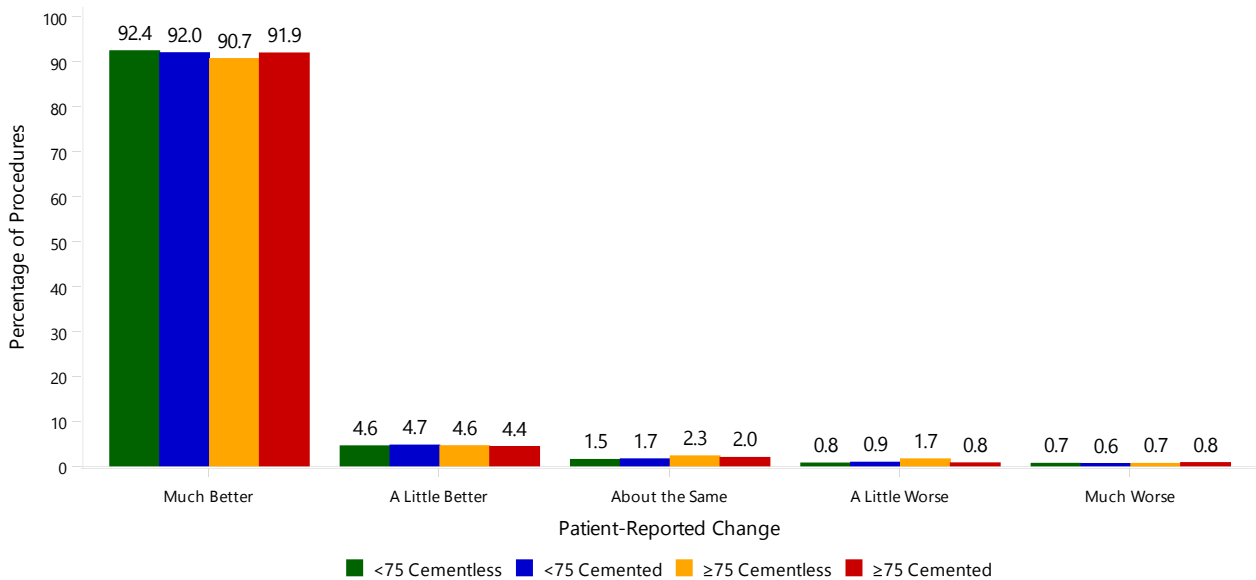
Note: Restricted to modern prostheses

Table SPR17 Patient-Reported Change in Primary Total Conventional Hip Replacement with Cementless Acetabular Component by Age and Femoral Fixation (Primary Diagnosis OA)

Age	Femoral Fixation	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
		N	Row%	Col%	N	Row %	Col%	N	Row %	Col%	N	Row%	Col%	N	Row %	Col%	N	Row%	Col%
<75	Cementless	6869	92.4	52.7	340	4.6	52.2	115	1.5	47.5	56	0.8	44.8	51	0.7	52.0	7431	100.0	52.5
	Cemented	3335	92.0	25.6	172	4.7	26.4	61	1.7	25.2	34	0.9	27.2	23	0.6	23.5	3625	100.0	25.6
≥75	Cementless	1083	90.7	8.3	55	4.6	8.4	28	2.3	11.6	20	1.7	16.0	8	0.7	8.2	1194	100.0	8.4
	Cemented	1747	91.9	13.4	84	4.4	12.9	38	2.0	15.7	15	0.8	12.0	16	0.8	16.3	1900	100.0	13.4
TOTAL		13034	92.1	100.0	651	4.6	100.0	242	1.7	100.0	125	0.9	100.0	98	0.7	100.0	14150	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR16 Patient-Reported Change in Primary Total Conventional Hip Replacement with Cementless Acetabular Component by Age and Femoral Fixation (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Surgical Approach

Patient-reported outcomes for the three commonly performed surgical approaches for primary total hip replacement were analysed. The anterior approach has slightly higher pre- and post-operative mean EQ-VAS scores, but the change in score after surgery is similar for each approach (Table SPR18 and Figure SPR17). There were similar findings for the OHS (Table SPR19 and Figure SPR18).

The patient-reported change of “much better” is slightly higher for the anterior approach compared to the lateral approach (Table SPR21 and Figure SPR20).

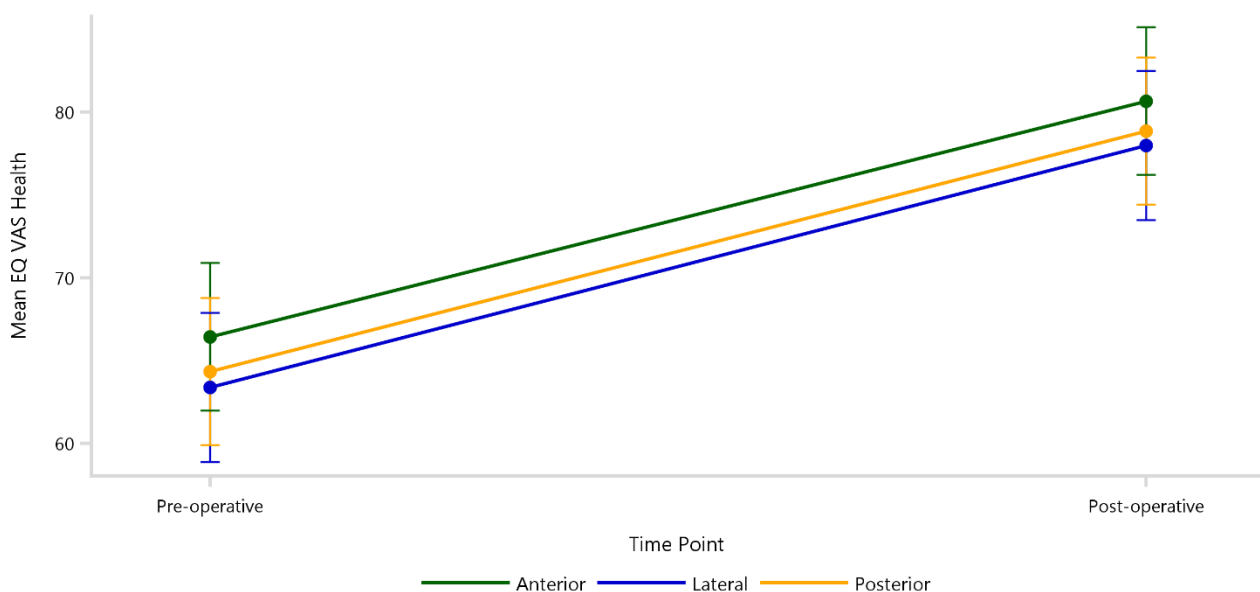
There is a similar proportion of patients who were very satisfied or satisfied when comparing the three surgical approaches (Table SPR20 and Figure SPR19).

Table SPR18 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)

Surgical Approach	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Anterior	5523	66.44 (61.97, 70.90)	3652	80.66 (76.20, 85.12)	14.22 (13.59, 14.85)
Lateral	2234	63.37 (58.87, 67.87)	1544	77.98 (73.48, 82.48)	14.61 (13.63, 15.59)
Posterior	14340	64.34 (59.89, 68.78)	9287	78.86 (74.41, 83.30)	14.52 (14.13, 14.91)

Note: Restricted to modern prostheses
Adjusted for age, gender, ASA score and BMI category

Figure SPR17 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Adjusted for age, gender, ASA score and BMI category

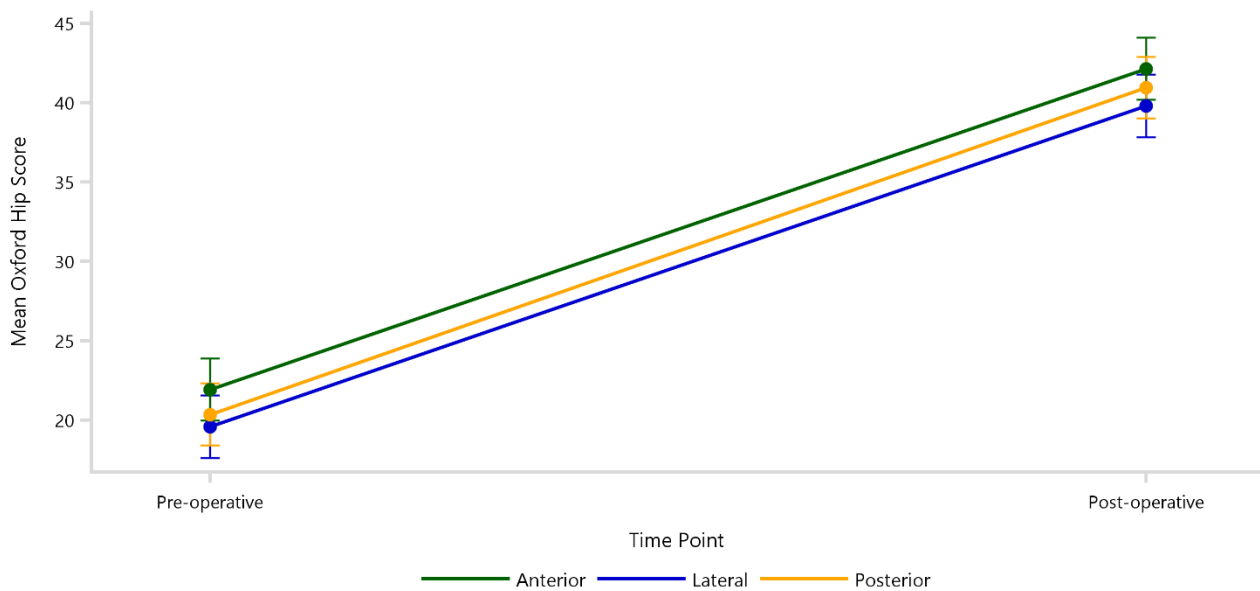
Table SPR19 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)

Surgical Approach	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Anterior	5506	21.92 (19.96, 23.88)	3650	42.13 (40.17, 44.08)	20.20 (19.91, 20.50)
Lateral	2240	19.57 (17.60, 21.54)	1536	39.80 (37.82, 41.77)	20.23 (19.77, 20.68)
Posterior	14360	20.35 (18.40, 22.29)	9316	40.94 (38.99, 42.89)	20.59 (20.41, 20.78)

Note: Restricted to modern prostheses

Adjusted for age, gender, ASA score and BMI category

Figure SPR18 Mean Pre-operative and Post-operative Oxford Hip Score in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)



Note: Restricted to modern prostheses

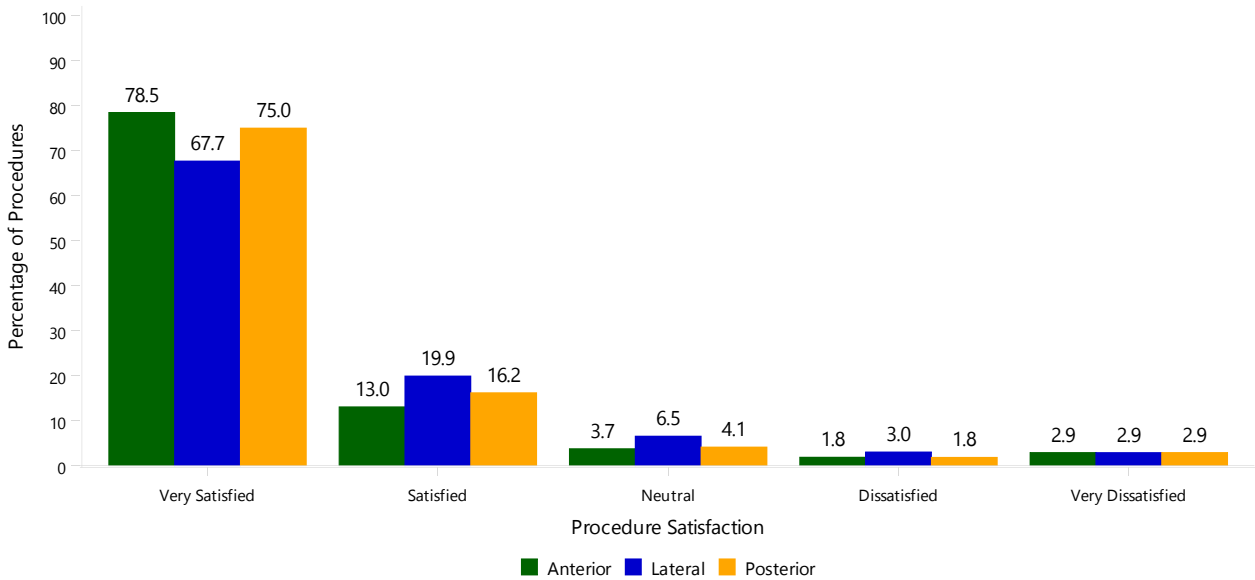
Adjusted for age, gender, ASA score and BMI category

Table SPR20 Procedure Satisfaction in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)

Surgical Approach	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Anterior	2861	78.5	26.3	475	13.0	20.8	136	3.7	22.0	67	1.8	23.8	105	2.9	25.2	3644	100.0	25.2
Lateral	1038	67.7	9.5	305	19.9	13.4	100	6.5	16.2	46	3.0	16.4	44	2.9	10.6	1533	100.0	10.6
Posterior	6976	75.0	64.1	1504	16.2	65.8	381	4.1	61.8	168	1.8	59.8	268	2.9	64.3	9297	100.0	64.2
TOTAL	10875	75.1	100.0	2284	15.8	100.0	617	4.3	100.0	281	1.9	100.0	417	2.9	100.0	14474	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR19 Procedure Satisfaction in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)



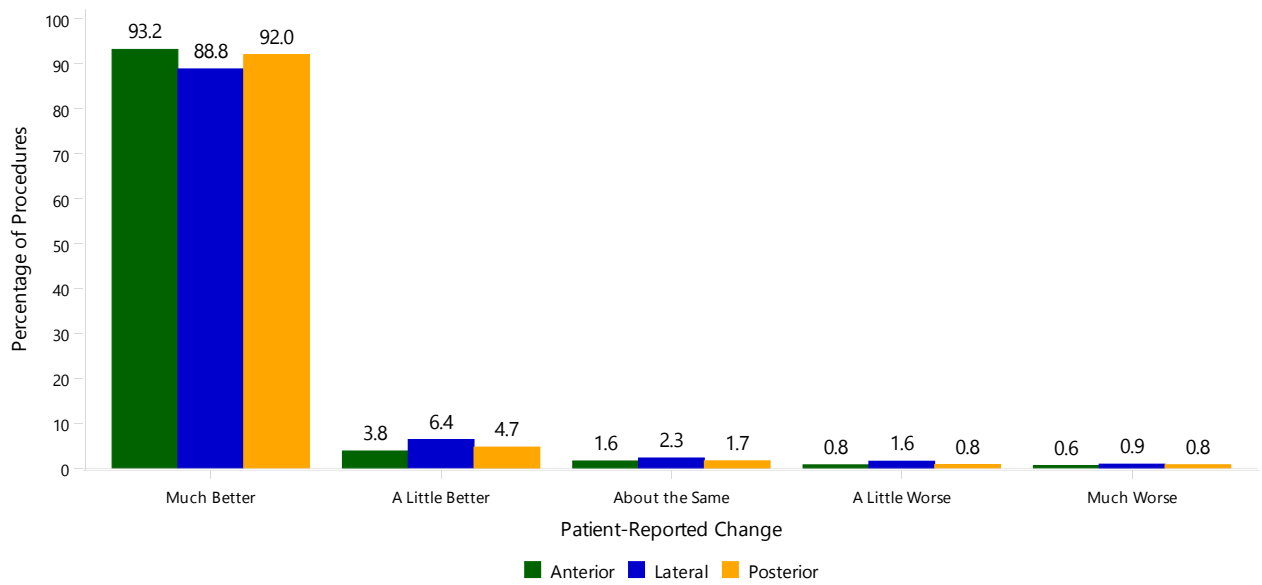
Note: Restricted to modern prostheses

Table SPR21 Patient-Reported Change in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)

Surgical Approach	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Anterior	3395	93.2	25.5	140	3.8	20.7	59	1.6	23.8	28	0.8	21.7	21	0.6	19.6	3643	100.0	25.2
Lateral	1362	88.8	10.2	98	6.4	14.5	35	2.3	14.1	24	1.6	18.6	14	0.9	13.1	1533	100.0	10.6
Posterior	8555	92.0	64.3	438	4.7	64.8	154	1.7	62.1	77	0.8	59.7	72	0.8	67.3	9296	100.0	64.2
TOTAL	13312	92.0	100.0	676	4.7	100.0	248	1.7	100.0	129	0.9	100.0	107	0.7	100.0	14472	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR20 Patient-Reported Change in Primary Total Conventional Hip Replacement by Surgical Approach (Primary Diagnosis OA)



Note: Restricted to modern prostheses

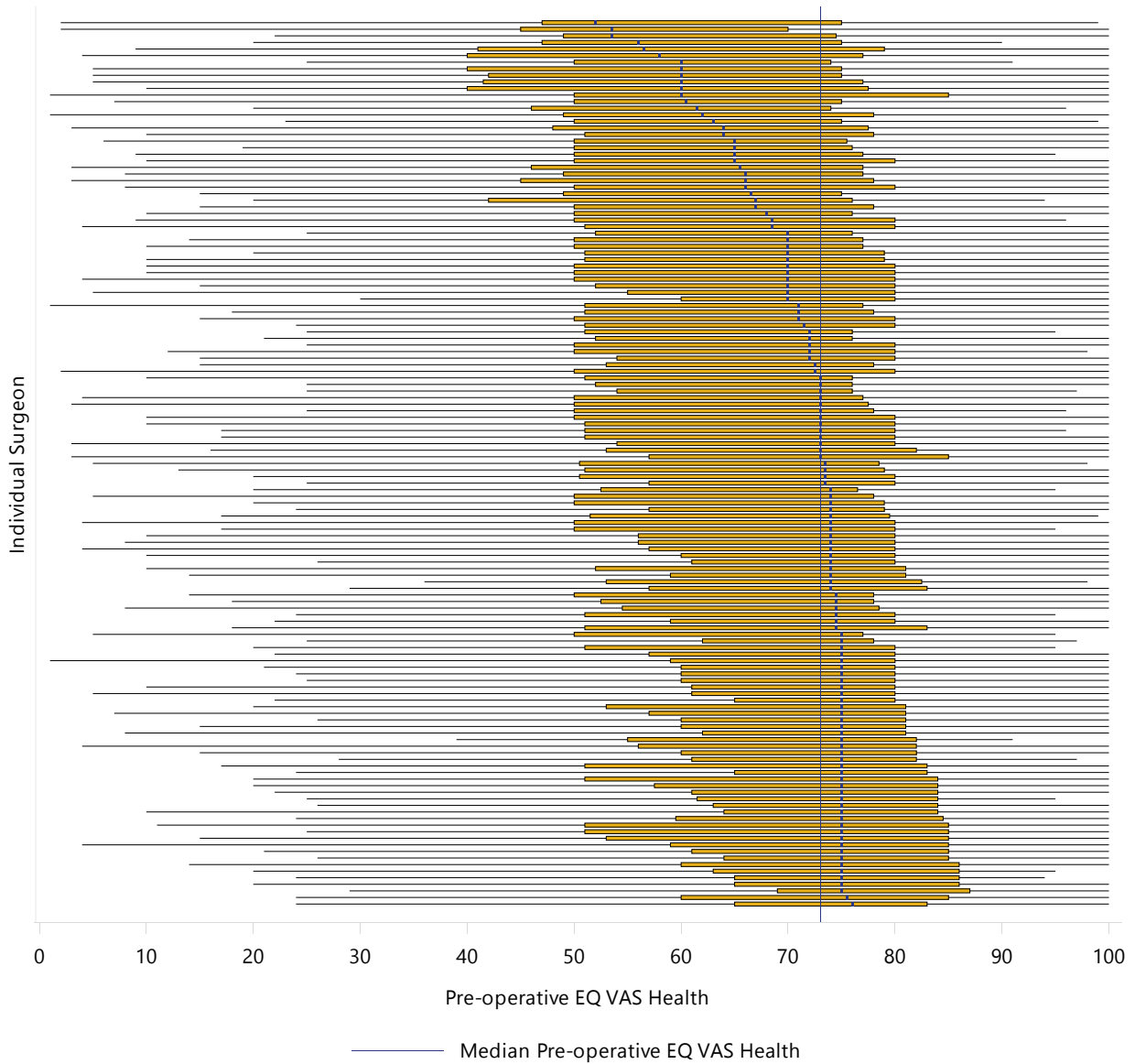
SURGEON AND HOSPITAL PROMS

EQ-VAS

Variation between surgeons and between hospitals in the EQ-VAS is displayed as 'caterpillar plots' for surgeons and hospitals with at least 50

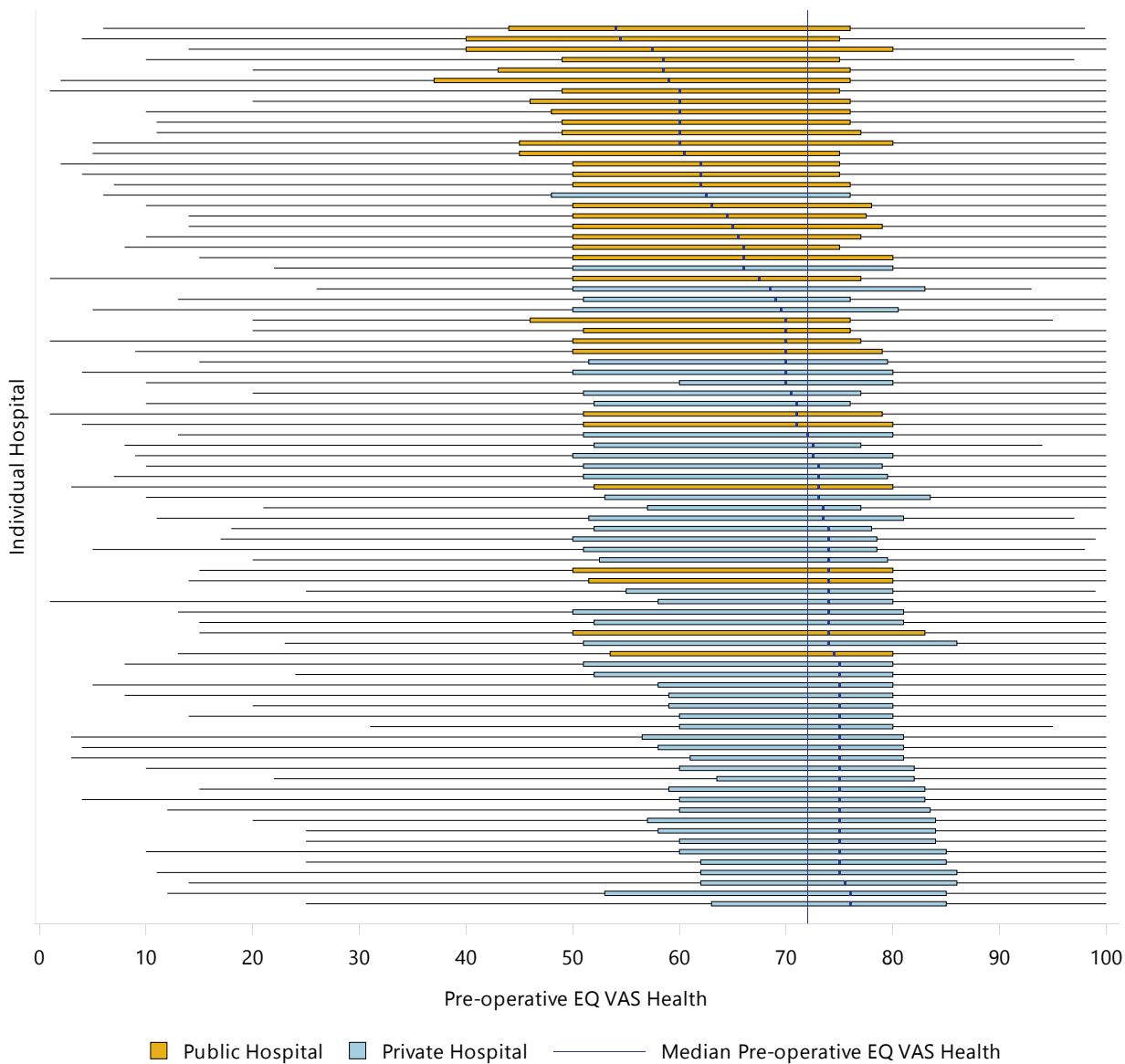
recorded cases for primary total conventional hip replacement (Figure SPR21 and Figure SPR22).

Figure SPR21 Pre-Operative EQ-VAS Health in Primary Total Conventional Hip Replacement by Surgeon (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Only surgeons with at least 50 procedures have been shown
The median pre-operative EQ-VAS Health is 73

Figure SPR22 Pre-Operative EQ-VAS Health in Primary Total Conventional Hip Replacement by Hospital (Primary Diagnosis OA)



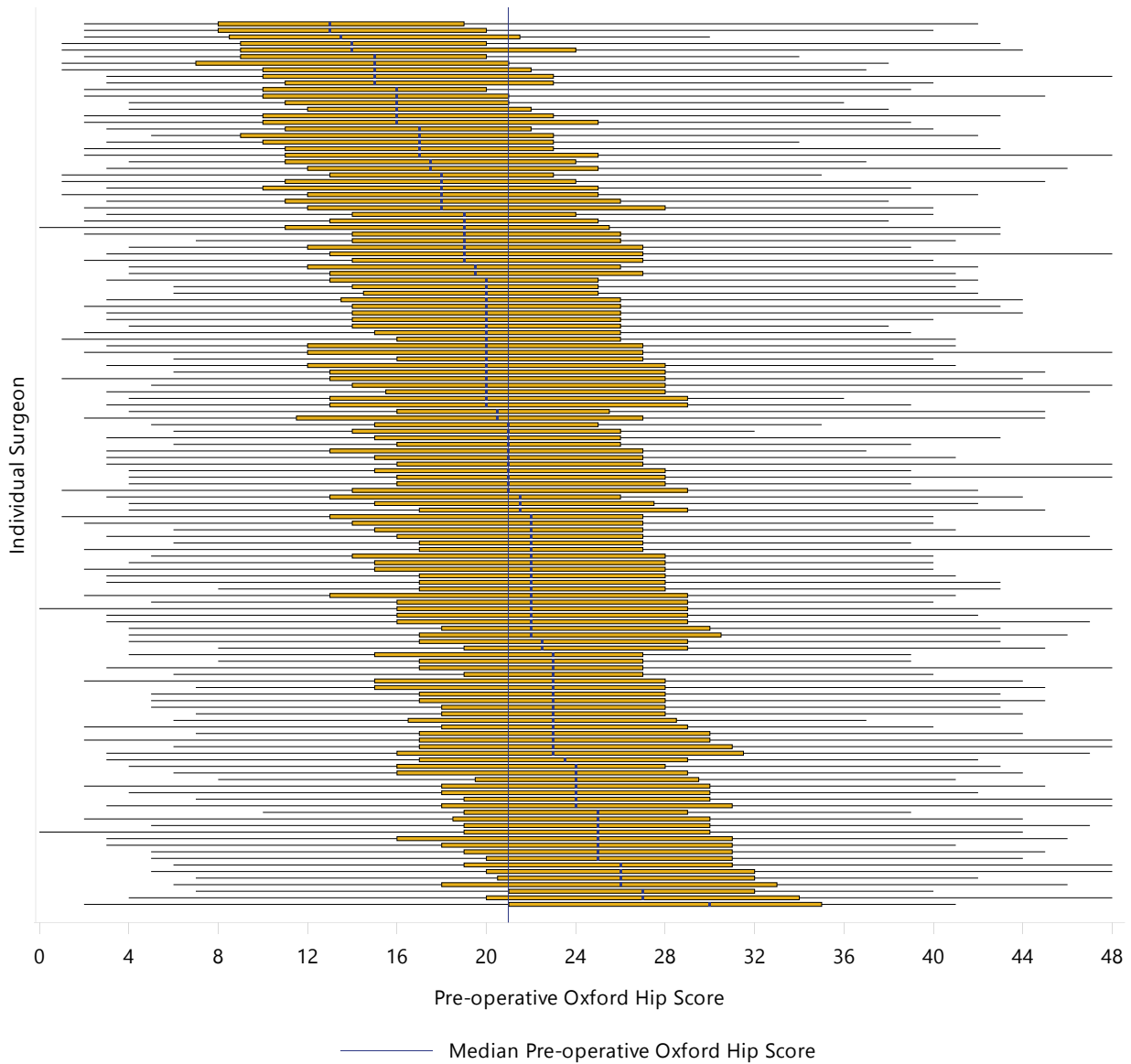
Note: Restricted to modern prostheses
 Only hospitals with at least 50 procedures have been shown
 The median pre-operative EQ-VAS Health is 72

Oxford Score

Comparisons of pre-operative Oxford Scores between surgeons and between hospitals for

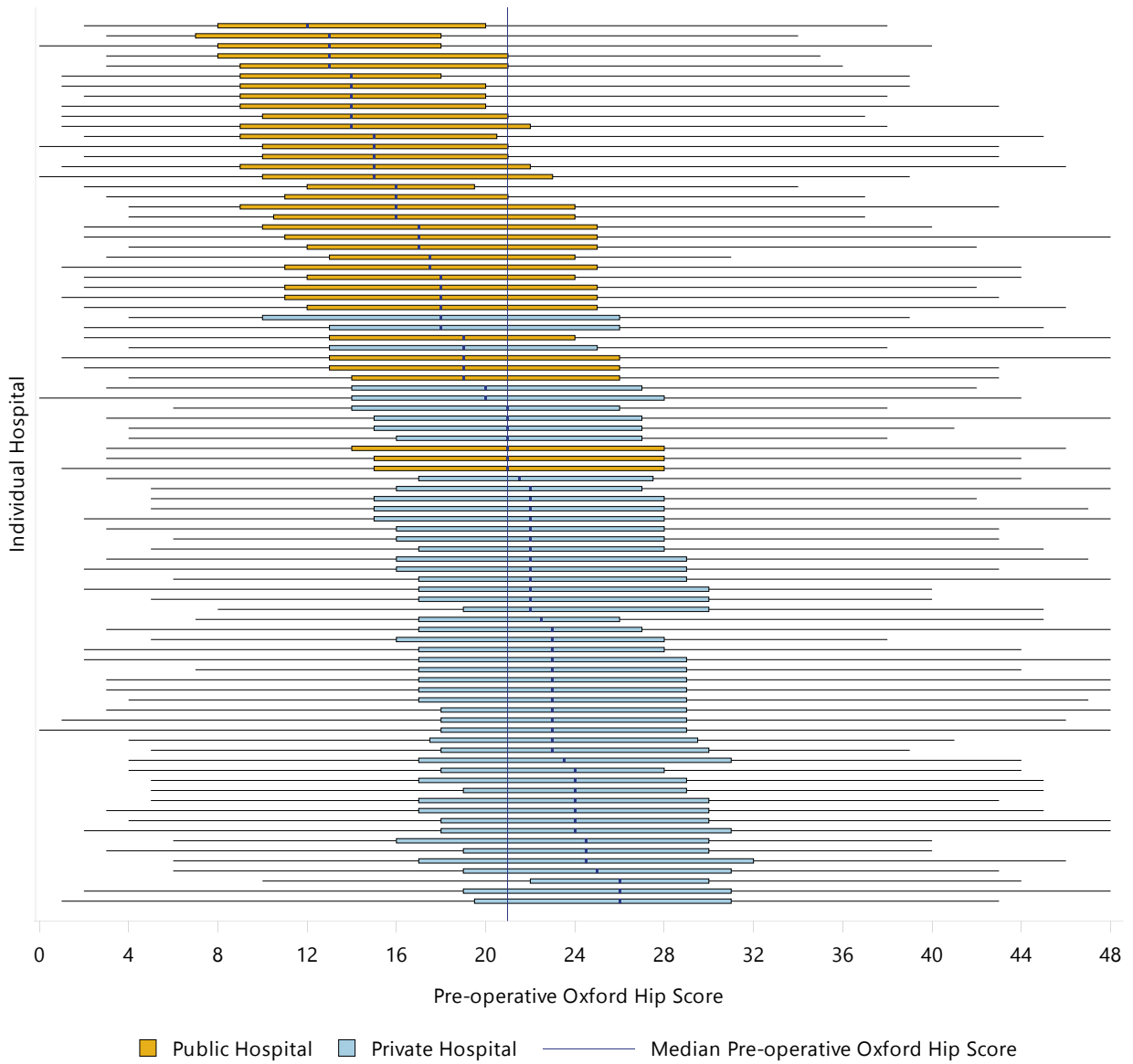
primary total conventional hip replacement are shown in Figure SPR23 and Figure SPR24.

Figure SPR23 Pre-Operative Oxford Hip Score in Primary Total Conventional Hip Replacement by Surgeon (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Only surgeons with at least 50 procedures have been shown
The median pre-operative Oxford Hip Score is 21

Figure SPR24 Pre-Operative Oxford Hip Score in Primary Total Conventional Hip Replacement by Hospital (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Only hospitals with at least 50 procedures have been shown
 The median pre-operative Oxford Hip Score is 21

Knee Summary

PATIENT CHARACTERISTICS

EQ-VAS and EQ-5D-5L

The EQ-VAS and EQ-5D-5L are measures of quality of life. EQ-VAS is a measure of patient-reported health, and ranges from 0 (worst health imaginable) to 100 (best health imaginable).

The mean EQ-VAS increased by almost 10 points following knee replacement (Table SPR22). Pre-operative and 6-month post-operative scores following total knee replacement are shown in Figure SPR25. The percentage of patients who reported being better, worse or no different post-operatively compared to their pre-operative response for each of the EQ-5D domains and the EQ-VAS is shown in Figure SPR26.

Age <65 years and female gender are associated with lower pre-operative EQ-VAS assessments. Change after surgery occurs in all subgroups, but the change is greater for patients aged <65 years, and for females (Table SPR23 and Figure SPR27).

Pre-operative mean EQ-VAS decreases with increasing ASA score, but the magnitude of change after surgery is similar in each group (Table SPR24 and Figure SPR28).

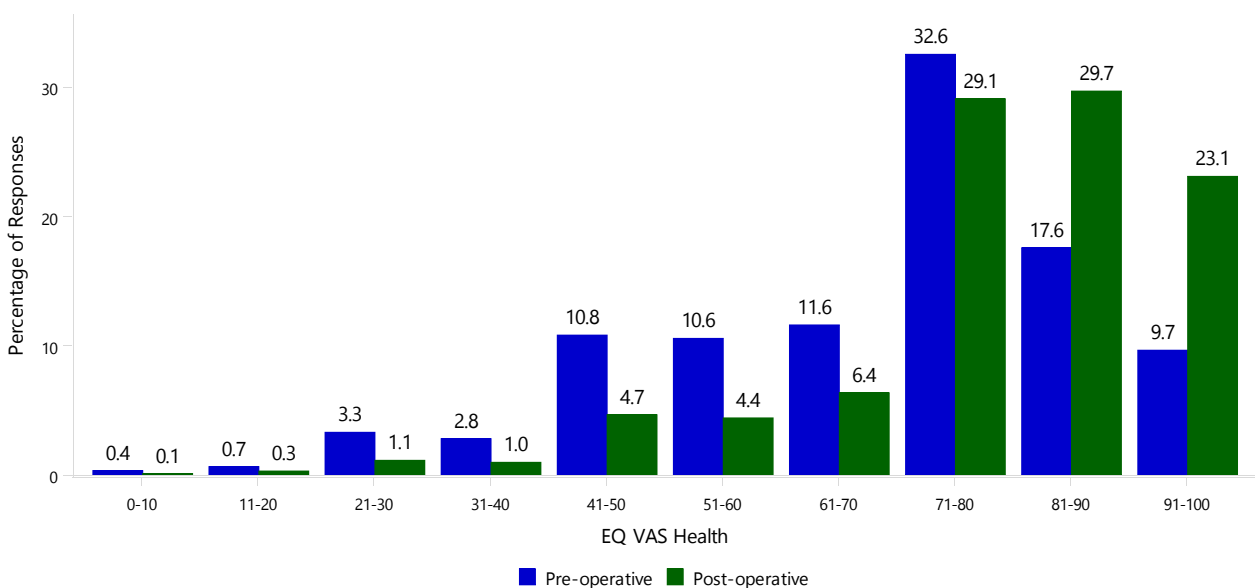
The mean EQ-VAS assessment before surgery decreases with each rise in BMI category, except in the underweight group where there are too few procedures for analysis. The magnitude of change increases with each BMI category (Table SPR25 and Figure SPR29).

Table SPR22 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement (Primary Diagnosis OA)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Knee	34329	70.02±18.26	75.00 (58.00, 83.00)	22068	79.89±15.47	83.00 (75.00, 90.00)

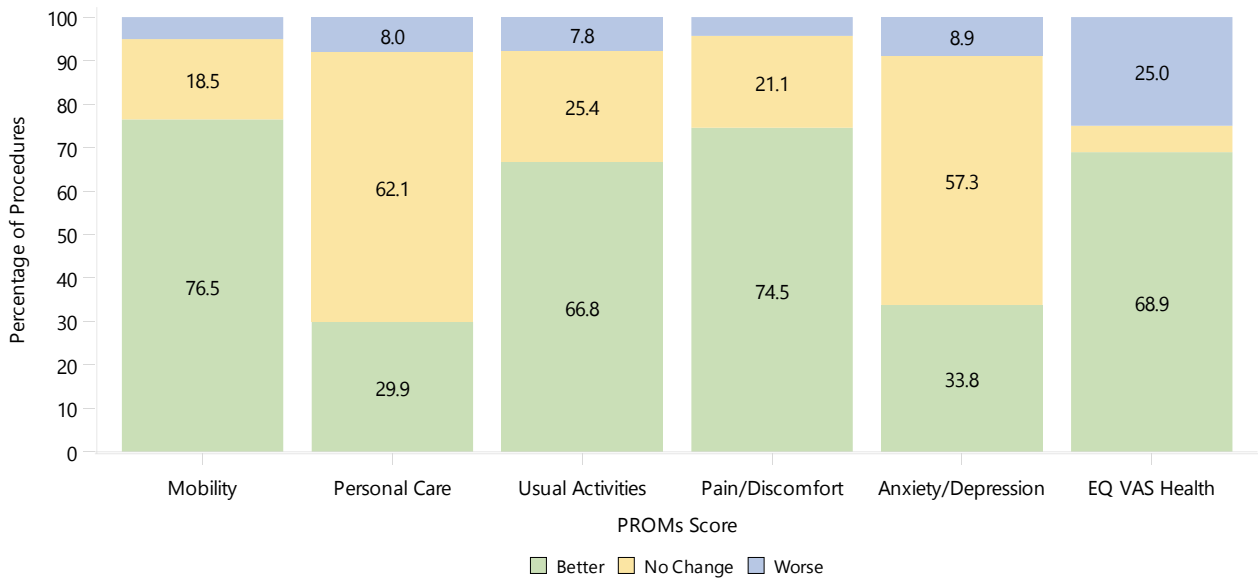
Note: Restricted to modern prostheses

Figure SPR25 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Figure SPR26 Change in EQ-5D-5L Domain Score and EQ-VAS Health in Primary Total Knee Replacement (Primary Diagnosis OA)



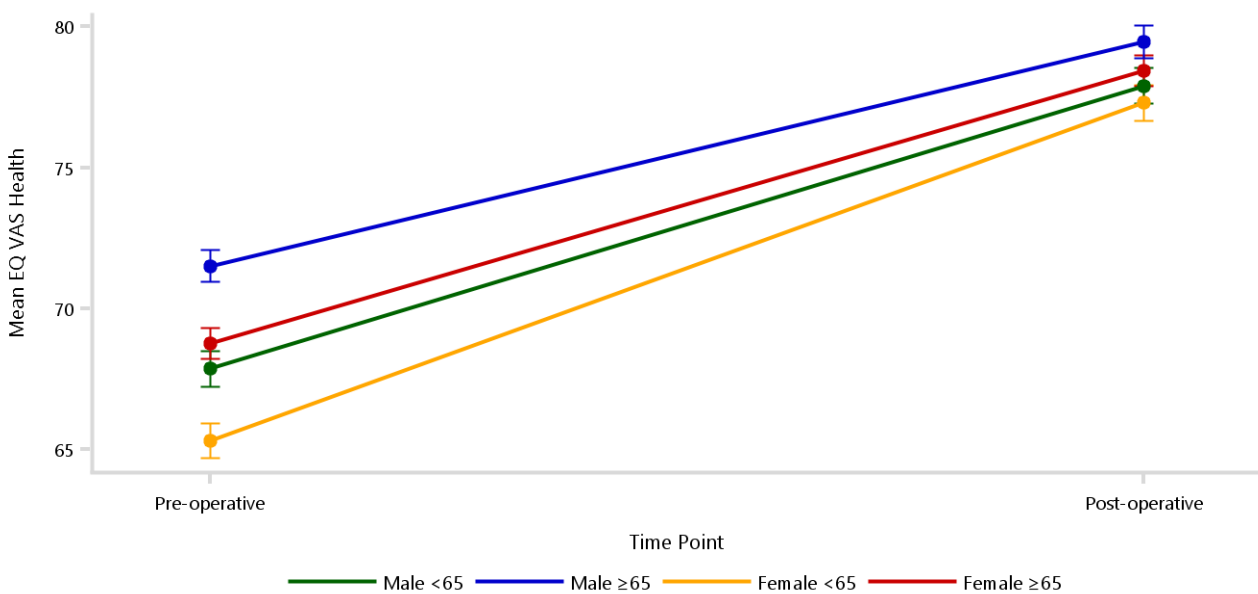
Note: Restricted to modern prostheses

Table SPR23 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Pre-operative		Post-operative		Change in Score
		N	Mean (95% CI)	N	Mean (95% CI)	
Male	<65	5787	67.88 (67.25, 68.51)	3749	77.90 (77.26, 78.54)	10.02 (9.46, 10.59)
	≥65	9701	71.51 (70.95, 72.08)	6196	79.46 (78.89, 80.04)	7.95 (7.51, 8.39)
Female	<65	6760	65.31 (64.70, 65.92)	4351	77.29 (76.67, 77.92)	11.98 (11.46, 12.50)
	≥65	12081	68.78 (68.23, 69.32)	7772	78.42 (77.87, 78.98)	9.65 (9.26, 10.04)

Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Figure SPR27 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement by Gender and Age (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Table SPR24 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement by ASA Score (Primary Diagnosis OA)

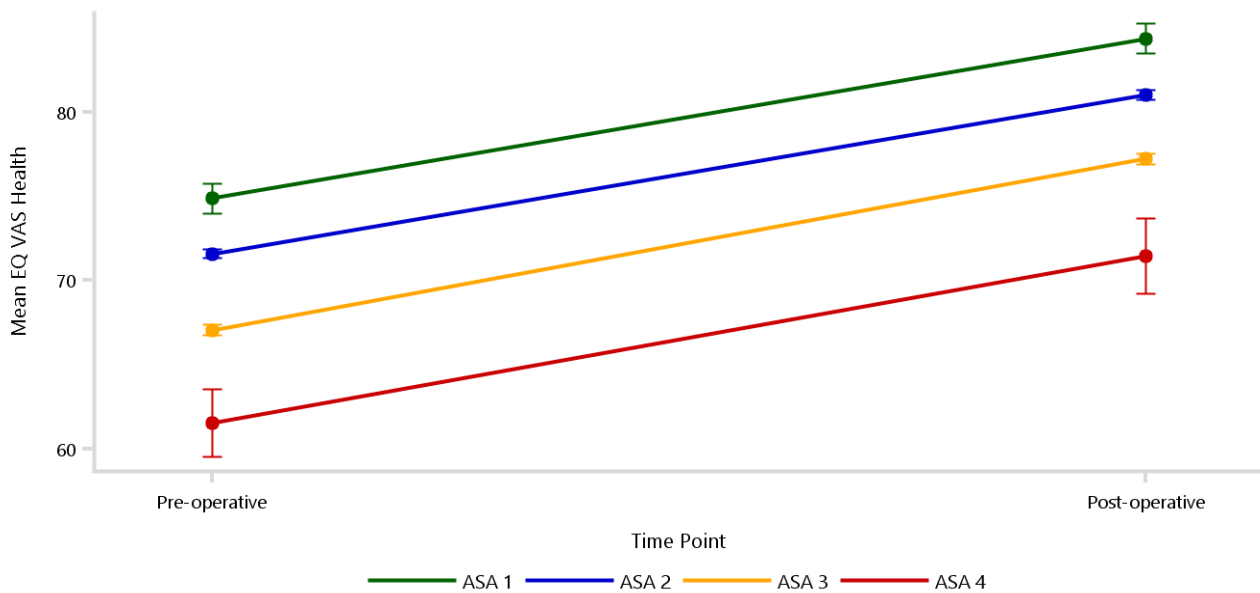
ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 1	1675	74.86 (73.99, 75.74)	1137	84.36 (83.47, 85.25)	9.49 (8.46, 10.53)
ASA 2	18375	71.60 (71.31, 71.88)	11961	80.99 (80.70, 81.29)	9.40 (9.08, 9.71)
ASA 3	13930	67.06 (66.76, 67.37)	8755	77.21 (76.89, 77.54)	10.15 (9.78, 10.52)
ASA 4	298	61.56 (59.54, 63.58)	171	71.46 (69.23, 73.68)	9.90 (7.31, 12.48)

Note: Restricted to modern prostheses

Adjusted for age, gender and BMI category

Only ASA scores with >40 pre-operative and post-operative responses are listed

Figure SPR28 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement by ASA Score (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Adjusted for age, gender and BMI category

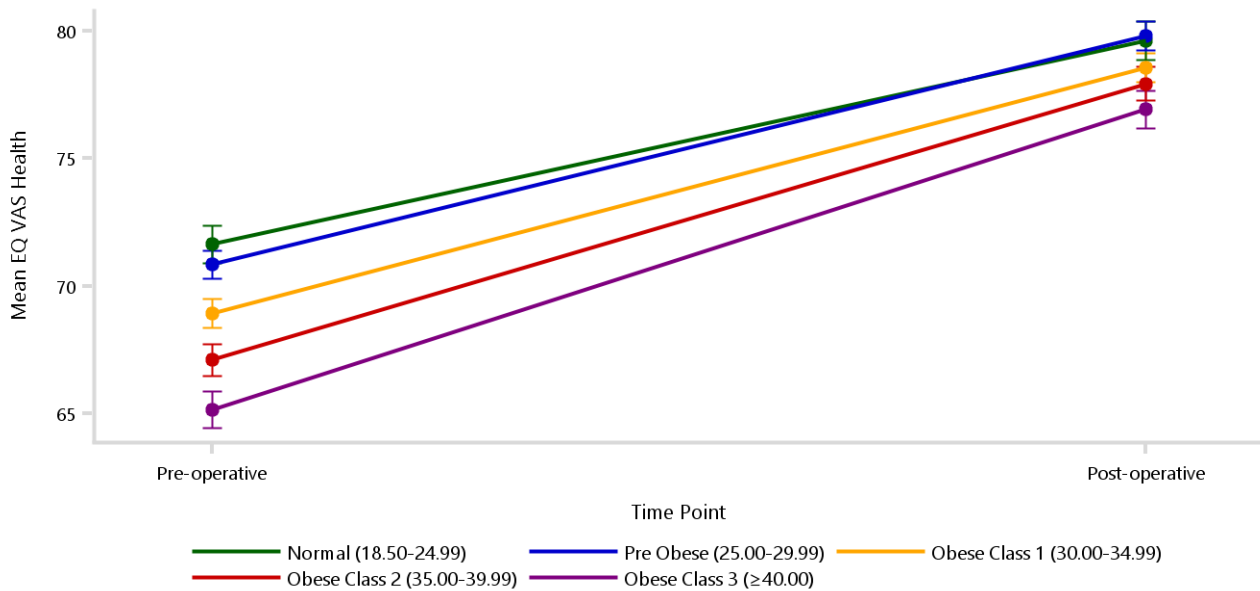
Only ASA scores with >40 pre-operative and post-operative responses are listed

Table SPR25 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement by BMI Category (Primary Diagnosis OA)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Normal (18.50-24.99)	3443	71.63 (70.90, 72.37)	2201	79.61 (78.85, 80.37)	7.98 (7.24, 8.71)
Pre Obese (25.00-29.99)	10481	70.84 (70.29, 71.39)	6702	79.79 (79.23, 80.36)	8.96 (8.54, 9.38)
Obese Class 1 (30.00-34.99)	10449	68.93 (68.37, 69.48)	6718	78.57 (78.00, 79.13)	9.64 (9.22, 10.06)
Obese Class 2 (35.00-39.99)	5852	67.10 (66.47, 67.74)	3770	77.93 (77.28, 78.58)	10.83 (10.27, 11.39)
Obese Class 3 (≥ 40.00)	3809	65.14 (64.43, 65.86)	2496	76.92 (76.19, 77.65)	11.78 (11.09, 12.47)

Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients aged ≤ 19 years
 Only BMI categories with >40 pre-operative and post-operative responses are listed

Figure SPR29 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Knee Replacement by BMI Category (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients aged ≤ 19 years
 Only BMI categories with >40 pre-operative and post-operative responses are listed

Oxford Scores

The Oxford Knee Score (OKS) provides a joint specific assessment of pain and function. The OKS totals the responses from 12 questions, each on a 5-level scale of 0 (worst possible score) to 4 (best possible score). The minimal clinically important change in the OKS for a single group of patients is approximately 6 points. The minimal important difference between groups of patients is 5 points (Table SPR26).

Similar to the EQ-VAS assessments, lower pre-operative mean OKS are associated with age <65

years and female gender (Table SPR27 and Figure SPR30).

Pre-operative mean Oxford scores decreases with each increase in ASA score and with each increase in BMI category, except for those in the underweight group, where there are too few procedures for analysis. Similar increases in Oxford score are seen post-operatively in all ASA scores and BMI categories (Table SPR28, Figure SPR31, Table SPR29 and Figure SPR32).

Table SPR26 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement (Primary Diagnosis OA)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Knee	34253	22.74±8.35	23.00 (17.00, 29.00)	22119	37.68±7.86	40.00 (34.00, 44.00)

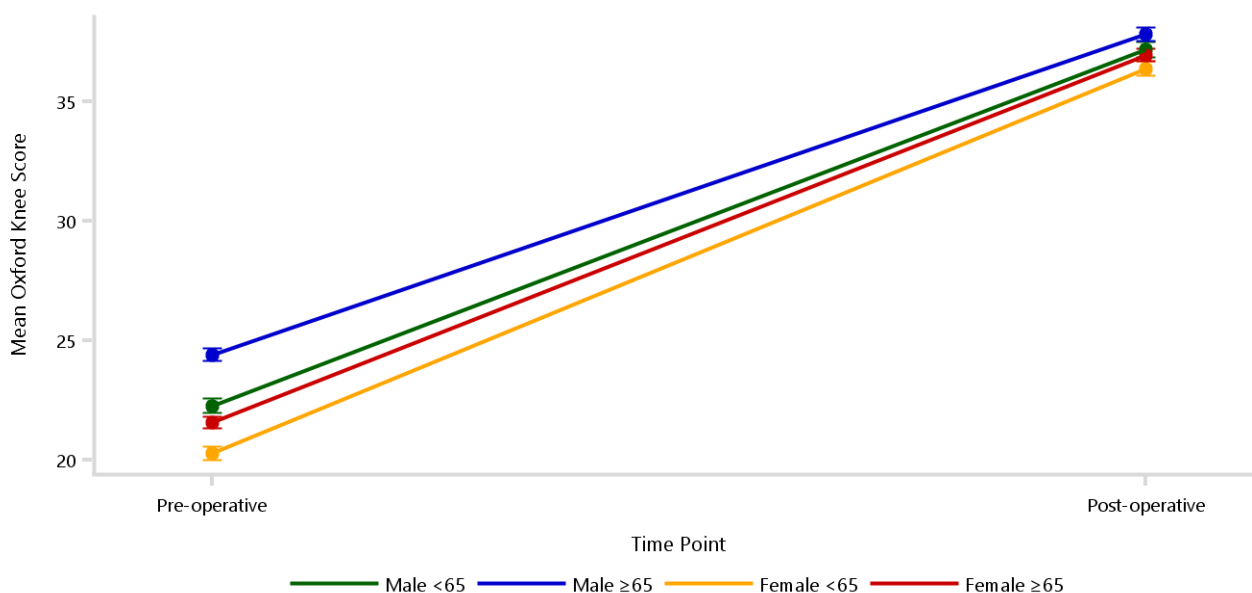
Note: Restricted to modern prostheses

Table SPR27 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Pre-operative		Post-operative		Change in Score
		N	Mean (95% CI)	N	Mean (95% CI)	
Male	<65	5758	22.27 (21.98, 22.56)	3751	37.18 (36.86, 37.50)	14.91 (14.63, 15.19)
	≥65	9660	24.41 (24.15, 24.67)	6214	37.82 (37.54, 38.10)	13.41 (13.19, 13.63)
Female	<65	6738	20.27 (19.99, 20.55)	4358	36.38 (36.07, 36.68)	16.11 (15.85, 16.37)
	≥65	12097	21.56 (21.31, 21.81)	7796	36.95 (36.68, 37.21)	15.38 (15.19, 15.58)

Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Figure SPR30 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement by Gender and Age (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Adjusted for ASA score and BMI category

Table SPR28 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement by ASA Score (Primary Diagnosis OA)

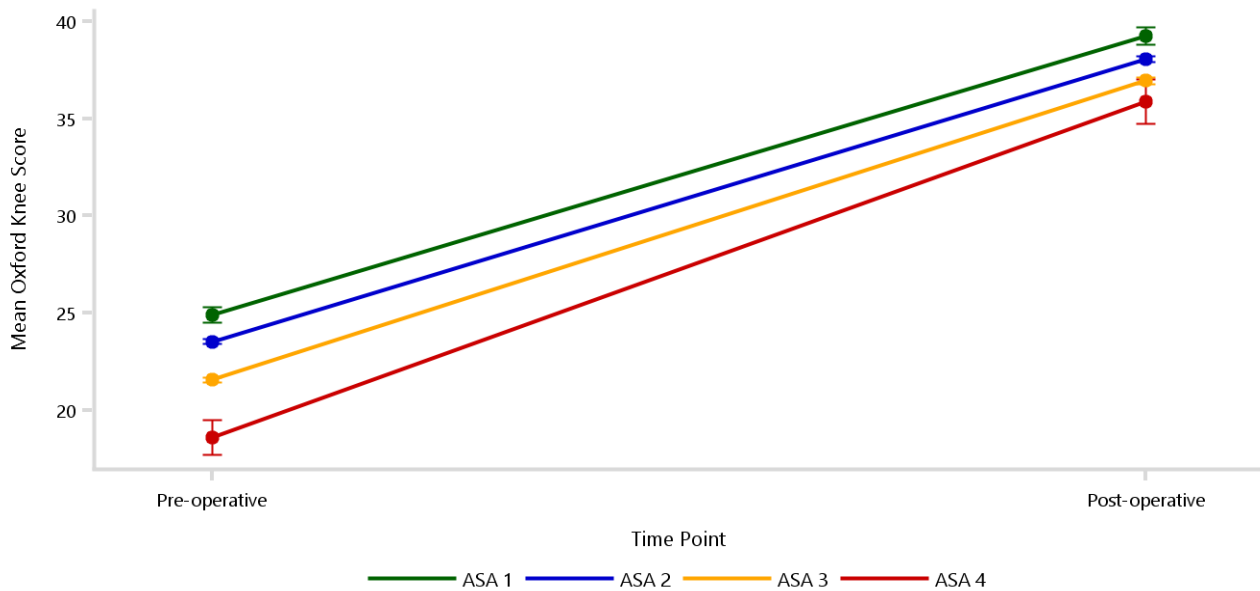
ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 1	1664	24.91 (24.52, 25.31)	1145	39.25 (38.80, 39.71)	14.34 (13.82, 14.86)
ASA 2	18328	23.51 (23.38, 23.63)	11993	38.05 (37.90, 38.20)	14.55 (14.39, 14.70)
ASA 3	13914	21.55 (21.41, 21.69)	8766	36.95 (36.78, 37.11)	15.40 (15.22, 15.58)
ASA 4	296	18.59 (17.68, 19.50)	172	35.87 (34.72, 37.01)	17.28 (15.97, 18.58)

Note: Restricted to modern prostheses

Adjusted for age, gender and BMI category

Only ASA scores with >40 pre-operative and post-operative responses are listed

Figure SPR31 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement by ASA Score (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Adjusted for age, gender and BMI category

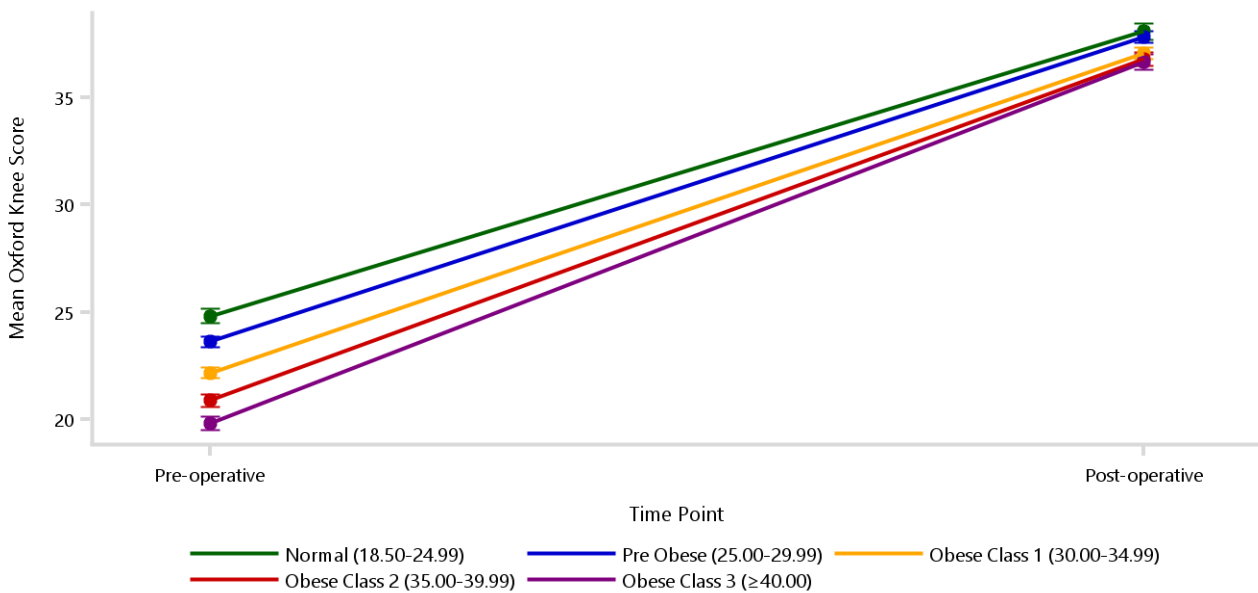
Only ASA scores with >40 pre-operative and post-operative responses are listed

Table SPR29 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement by BMI Category (Primary Diagnosis OA)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Normal (18.50-24.99)	3428	24.82 (24.48, 25.15)	2208	38.07 (37.69, 38.45)	13.25 (12.89, 13.62)
Pre Obese (25.00-29.99)	10464	23.63 (23.38, 23.89)	6718	37.82 (37.55, 38.09)	14.19 (13.98, 14.40)
Obese Class 1 (30.00-34.99)	10423	22.18 (21.92, 22.43)	6733	37.07 (36.79, 37.34)	14.89 (14.68, 15.10)
Obese Class 2 (35.00-39.99)	5850	20.89 (20.60, 21.18)	3782	36.79 (36.47, 37.11)	15.90 (15.62, 16.18)
Obese Class 3 (≥ 40.00)	3796	19.83 (19.50, 20.15)	2498	36.65 (36.28, 37.01)	16.82 (16.47, 17.17)

Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients aged ≤ 19 years
 Only BMI categories with >40 pre-operative and post-operative responses are listed

Figure SPR32 Mean Pre-operative and Post-operative Oxford Knee Score in Primary Total Knee Replacement by BMI Category (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Adjusted for age, gender and ASA score
 BMI has not been presented for patients aged ≤ 19 years
 Only BMI categories with >40 pre-operative and post-operative responses are listed

Patient Satisfaction and Change

Patients were surveyed at 6 months post-operatively on how satisfied they were with their primary knee replacement, and on their perceived change in their knee after surgery. Satisfaction following knee replacement is shown in Table SPR30.

After knee replacement, 84.5% of patients are satisfied or very satisfied (Figure SPR33).

Procedure satisfaction by age and gender are presented in Table SPR31 and Figure SPR34.

There is a high percentage (81.5%) of patients who rate their knee as much better (Table SPR32 and Figure SPR35).

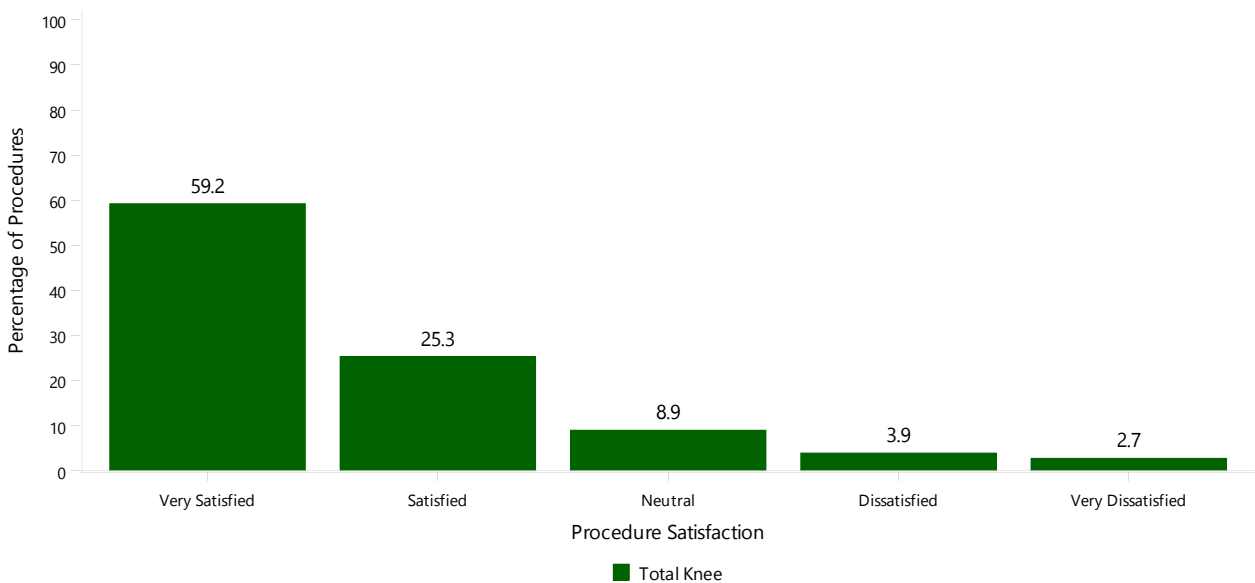
Patient-reported change by age and gender are presented in Table SPR33 and Figure SPR36.

Table SPR30 Procedure Satisfaction in Primary Total Knee Replacement (Primary Diagnosis OA)

Class	Very Satisfied		Satisfied		Neutral		Dissatisfied		Very Dissatisfied		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Knee	13072	59.2	5587	25.3	1974	8.9	855	3.9	597	2.7	22085	100.0

Note: Restricted to modern prostheses

Figure SPR33 Procedure Satisfaction in Primary Total Knee Replacement (Primary Diagnosis OA)



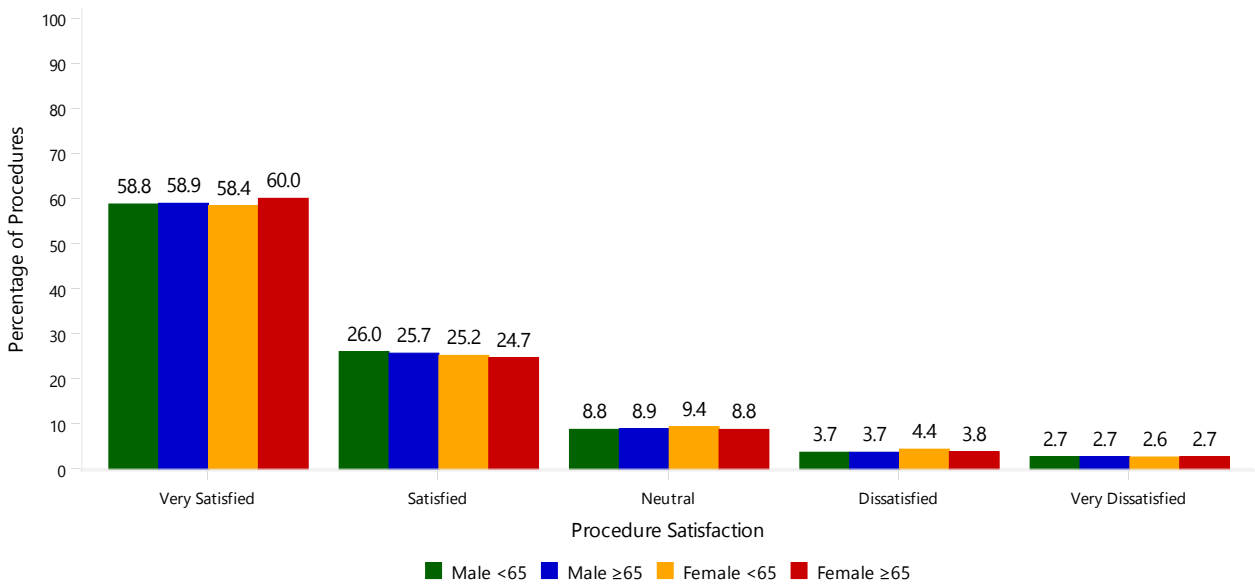
Note: Restricted to modern prostheses

Table SPR31 Procedure Satisfaction in Primary Total Knee Replacement by Gender and Age (Primary Diagnosis OA)

Gender	Age	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
		N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%
Male	<65	2203	58.8	16.9	976	26.0	17.5	329	8.8	16.7	139	3.7	16.3	101	2.7	16.9	3748	100.0	17.0
	≥65	3658	58.9	28.0	1594	25.7	28.5	554	8.9	28.1	230	3.7	26.9	170	2.7	28.5	6206	100.0	28.1
Female	<65	2539	58.4	19.4	1096	25.2	19.6	409	9.4	20.7	191	4.4	22.3	115	2.6	19.3	4350	100.0	19.7
	≥65	4672	60.0	35.7	1921	24.7	34.4	682	8.8	34.5	295	3.8	34.5	211	2.7	35.3	7781	100.0	35.2
TOTAL		13072	59.2	100.0	5587	25.3	100.0	1974	8.9	100.0	855	3.9	100.0	597	2.7	100.0	22085	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR34 Procedure Satisfaction in Primary Total Knee Replacement by Gender and Age (Primary Diagnosis OA)



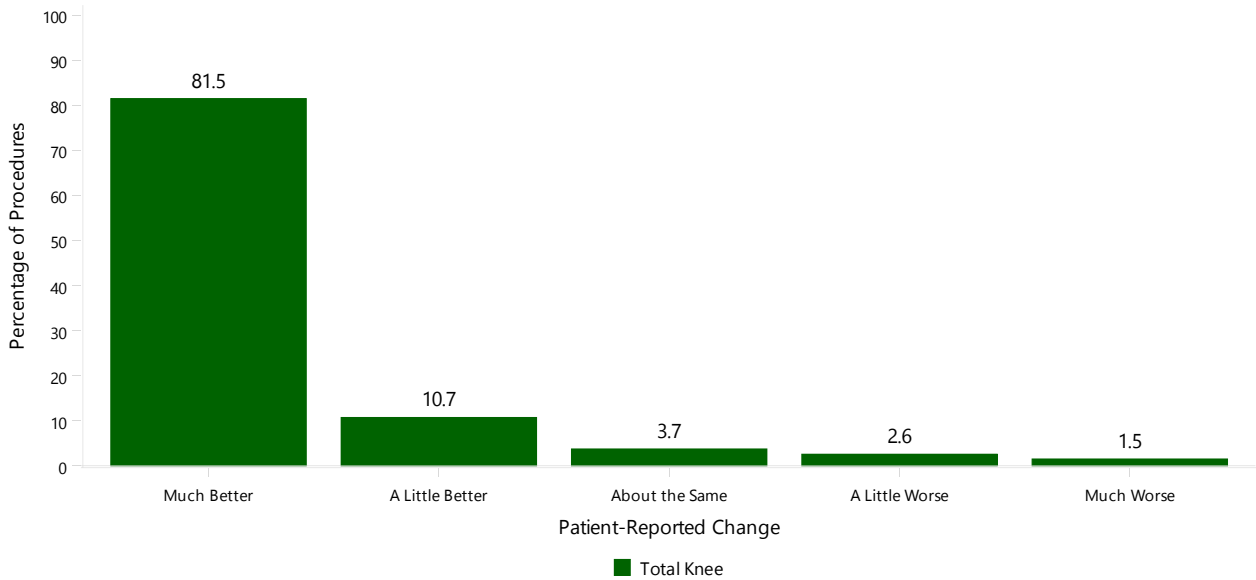
Note: Restricted to modern prostheses

Table SPR32 Patient-Reported Change after Primary Total Knee Replacement (Primary Diagnosis OA)

Class	Much Better		A Little Better		About the Same		A Little Worse		Much Worse		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Knee	17990	81.5	2367	10.7	825	3.7	567	2.6	333	1.5	22082	100.0

Note: Restricted to modern prostheses

Figure SPR35 Patient-Reported Change after Primary Total Knee Replacement (Primary Diagnosis OA)



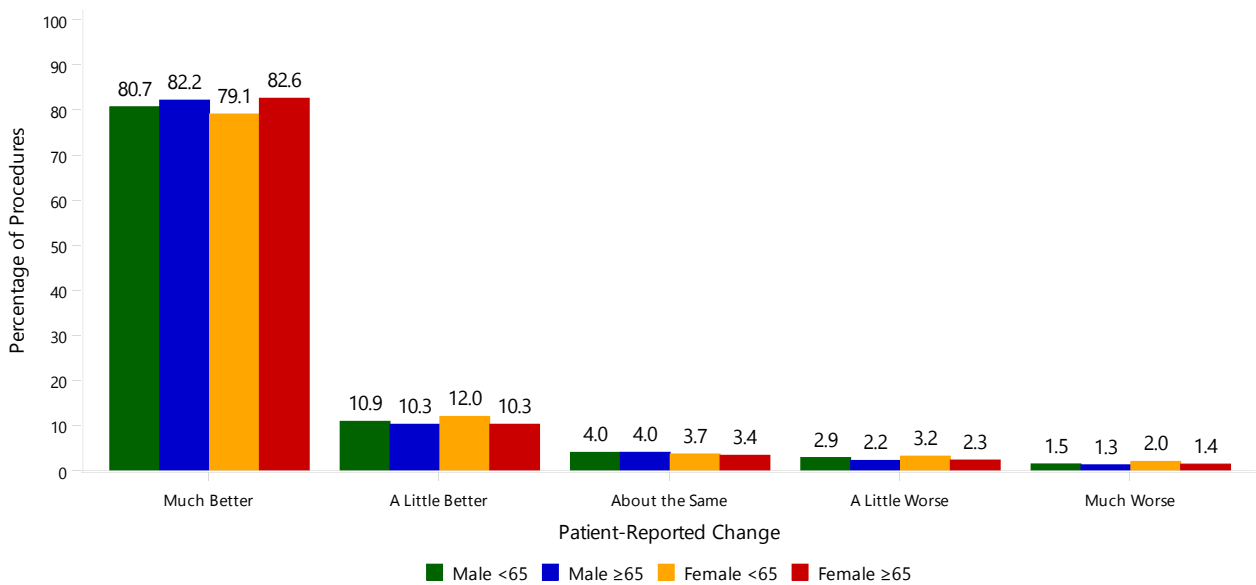
Note: Restricted to modern prostheses

Table SPR33 Patient-Reported Change after Primary Total Knee Replacement by Age and Gender (Primary Diagnosis OA)

Gender	Age	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
		N	Row%	Col%	N	Row%	Col%	N	Row %	Col%	N	Row%	Col%	N	Row %	Col%	N	Row%	Col%
Male	<65	3024	80.7	16.8	409	10.9	17.3	151	4.0	18.3	108	2.9	19.0	55	1.5	16.5	3747	100.0	17.0
	≥65	5100	82.2	28.3	637	10.3	26.9	251	4.0	30.4	139	2.2	24.5	79	1.3	23.7	6206	100.0	28.1
Female	<65	3440	79.1	19.1	522	12.0	22.1	160	3.7	19.4	139	3.2	24.5	88	2.0	26.4	4349	100.0	19.7
	≥65	6426	82.6	35.7	799	10.3	33.8	263	3.4	31.9	181	2.3	31.9	111	1.4	33.3	7780	100.0	35.2
TOTAL		17990	81.5	100.0	2367	10.7	100.0	825	3.7	100.0	567	2.6	100.0	333	1.5	100.0	22082	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR36 Patient-Reported Change after Primary Total Knee Replacement by Age and Gender (Primary Diagnosis OA)



Note: Restricted to modern prostheses

PROSTHESIS CHARACTERISTICS

Stability

PROMs are reported with respect to selected prosthesis characteristics. Patient satisfaction (the proportion of patients who are satisfied or very satisfied) following knee replacement ranges from 83% to 87% when prosthesis stability is considered (Table SPR34 and Figure SPR1).

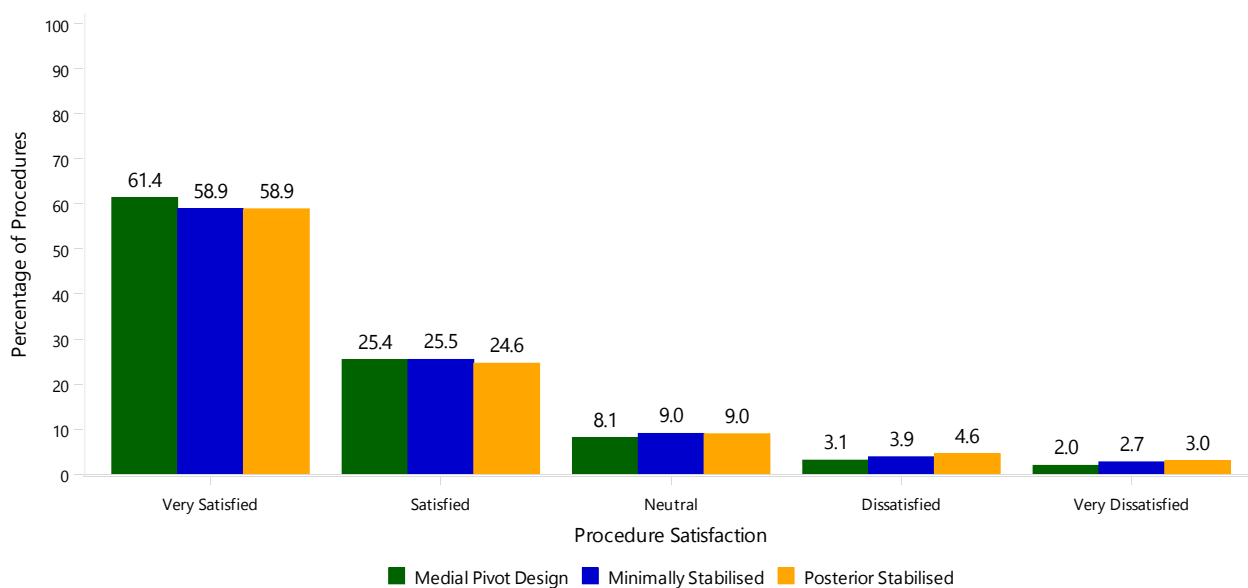
For all stability types, patient-reported change (the proportion of patients who are much better or a little better) is over 91% (Table SPR35 and Figure SPR38).

Table SPR34 Procedure Satisfaction in Primary Total Knee Replacement by Stability (Primary Diagnosis OA)

Stability	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Medial Pivot Design	1007	61.4	7.8	417	25.4	7.5	133	8.1	6.8	51	3.1	6.0	32	2.0	5.4	1640	100.0	7.5
Minimally Stabilised	10193	58.9	78.8	4405	25.5	79.4	1564	9.0	79.7	667	3.9	78.2	472	2.7	79.7	17301	100.0	79.0
Posterior Stabilised	1741	58.9	13.5	728	24.6	13.1	265	9.0	13.5	135	4.6	15.8	88	3.0	14.9	2957	100.0	13.5
TOTAL	12941	59.1	100.0	5550	25.3	100.0	1962	9.0	100.0	853	3.9	100.0	592	2.7	100.0	21898	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR37 Procedure Satisfaction in Primary Total Knee Replacement by Stability (Primary Diagnosis OA)



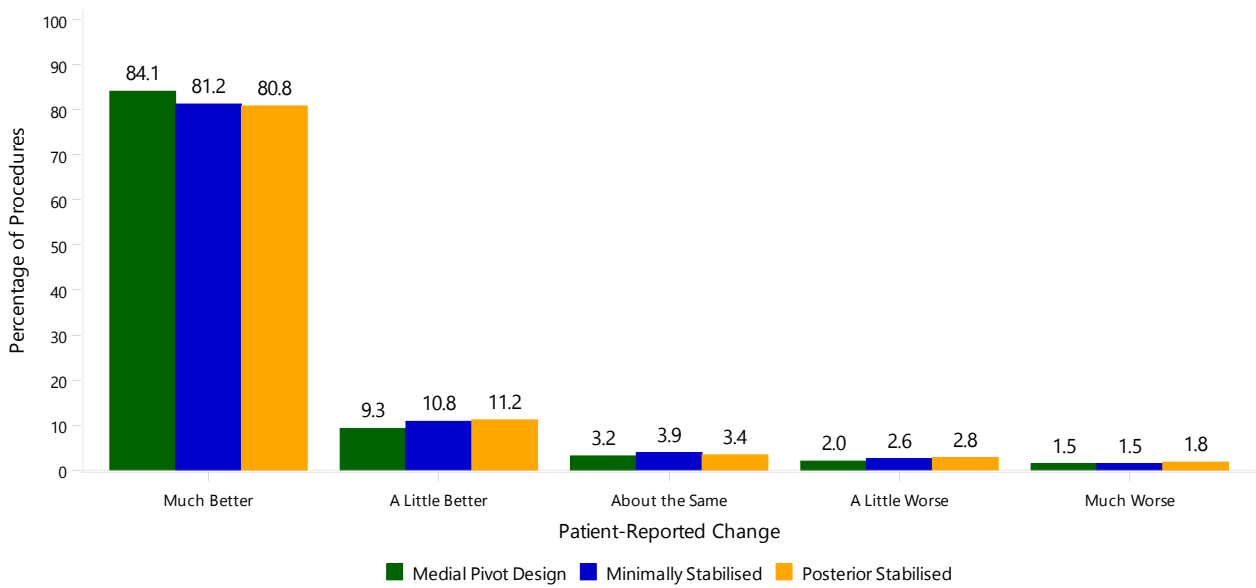
Note: Restricted to modern prostheses

Table SPR35 Patient-Reported Change after Primary Total Knee Replacement by Stability (Primary Diagnosis OA)

Stability	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row%	Col%	N	Row %	Col%	N	Row%	Col%
Medial Pivot Design	1378	84.1	7.7	152	9.3	6.4	52	3.2	6.3	33	2.0	5.9	24	1.5	7.2	1639	100.0	7.5
Minimally Stabilised	14055	81.2	78.9	1875	10.8	79.6	671	3.9	81.4	444	2.6	79.3	255	1.5	76.8	17300	100.0	79.0
Posterior Stabilised	2389	80.8	13.4	330	11.2	14.0	101	3.4	12.3	83	2.8	14.8	53	1.8	16.0	2956	100.0	13.5
TOTAL	17822	81.4	100.0	2357	10.8	100.0	824	3.8	100.0	560	2.6	100.0	332	1.5	100.0	21895	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR38 Patient-Reported Change after Primary Total Knee Replacement by Stability (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Patella Usage

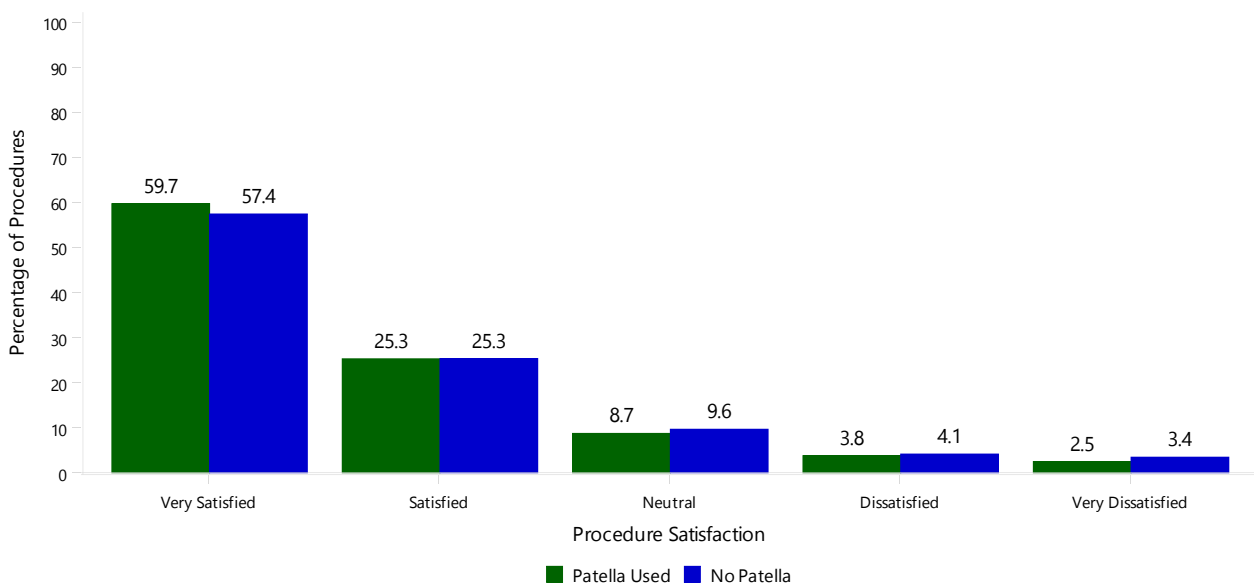
Post-operative satisfaction and patient-reported change are similar when analysed by patella component use (Table SPR36, Figure SPR39, Table SPR37 and Figure SPR40).

Table SPR36 Procedure Satisfaction in Primary Total Knee Replacement by Patella Usage (Primary Diagnosis OA)

Patella Usage	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Patella Used	10174	59.7	77.8	4308	25.3	77.1	1487	8.7	75.3	646	3.8	75.6	423	2.5	70.9	17038	100.0	77.1
No Patella	2898	57.4	22.2	1279	25.3	22.9	487	9.6	24.7	209	4.1	24.4	174	3.4	29.1	5047	100.0	22.9
TOTAL	13072	59.2	100.0	5587	25.3	100.0	1974	8.9	100.0	855	3.9	100.0	597	2.7	100.0	22085	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR39 Procedure Satisfaction in Primary Total Knee Replacement by Patella Usage (Primary Diagnosis OA)



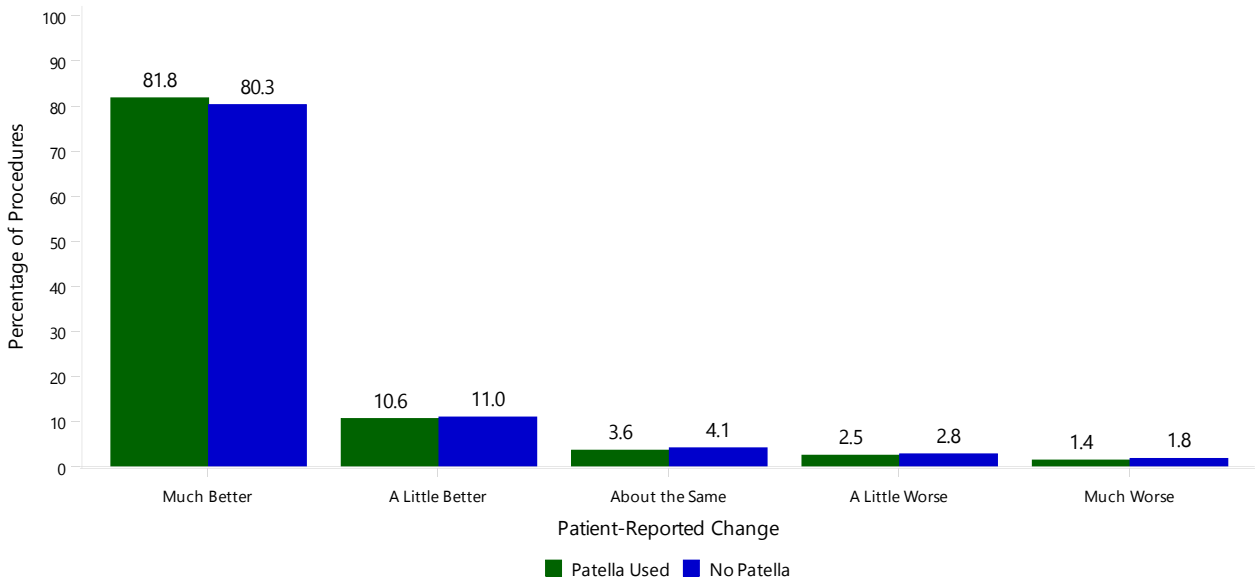
Note: Restricted to modern prostheses

Table SPR37 Patient-Reported Change after Primary Total Knee Replacement by Patella Usage (Primary Diagnosis OA)

Patella Usage	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%
Patella Used	13937	81.8	77.5	1813	10.6	76.6	616	3.6	74.7	426	2.5	75.1	243	1.4	73.0	17035	100.0	77.1
No Patella	4053	80.3	22.5	554	11.0	23.4	209	4.1	25.3	141	2.8	24.9	90	1.8	27.0	5047	100.0	22.9
TOTAL	17990	81.5	100.0	2367	10.7	100.0	825	3.7	100.0	567	2.6	100.0	333	1.5	100.0	22082	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR40 Patient-Reported Change after Primary Total Knee Replacement by Patella Usage (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Technology Assistance

PROMs are reported with respect to surgical technique. Satisfaction (patients who report they are satisfied or very satisfied) with and without technology assistance is over 83% for each surgical technique (Table SPR38 and Figure SPR41).

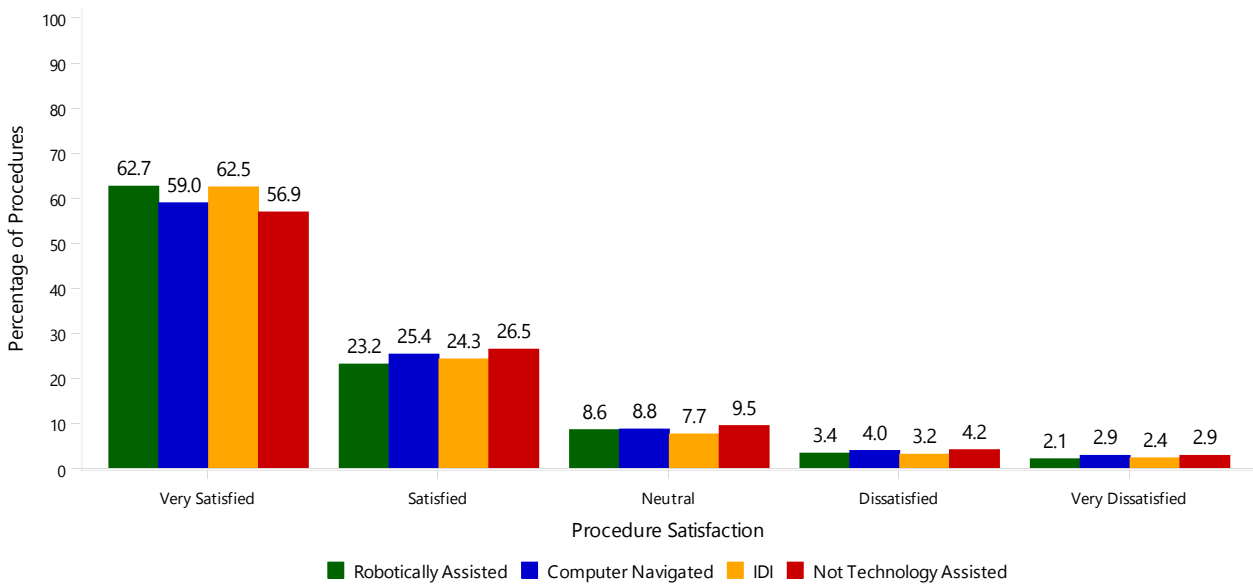
Change after surgery is reported as much better in over 81% of procedures with each surgical technique used with assistive performance (Table SPR39 and Figure SPR42).

Table SPR38 Procedure Satisfaction in Primary Total Knee Replacement by Technology Assistance (Primary Diagnosis OA)

Technology Assistance	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Robotically Assisted	2742	62.7	21.0	1014	23.2	18.1	377	8.6	19.1	149	3.4	17.4	94	2.1	15.7	4376	100.0	19.8
Computer Navigated	3794	59.0	29.0	1633	25.4	29.2	563	8.8	28.5	257	4.0	30.1	187	2.9	31.3	6434	100.0	29.1
IDI	1321	62.5	10.1	514	24.3	9.2	162	7.7	8.2	67	3.2	7.8	50	2.4	8.4	2114	100.0	9.6
Not Technology Assisted	5215	56.9	39.9	2426	26.5	43.4	872	9.5	44.2	382	4.2	44.7	266	2.9	44.6	9161	100.0	41.5
TOTAL	13072	59.2	100.0	5587	25.3	100.0	1974	8.9	100.0	855	3.9	100.0	597	2.7	100.0	22085	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR41 Procedure Satisfaction in Primary Total Knee Replacement by Technology Assistance (Primary Diagnosis OA)



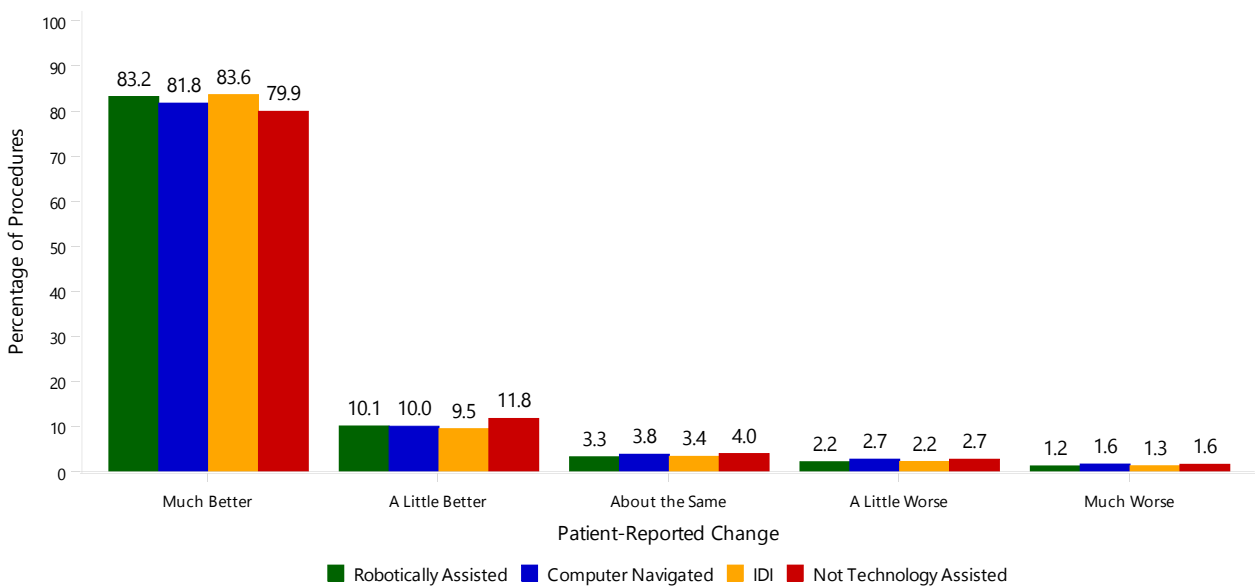
Note: Restricted to modern prostheses

Table SPR39 Patient-Reported Change after Primary Total Knee Replacement by Technology Assistance (Primary Diagnosis OA)

Technology Assistance	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row%	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row%	Col%
Robotically Assisted	3642	83.2	20.2	442	10.1	18.7	143	3.3	17.3	95	2.2	16.8	54	1.2	16.2	4376	100.0	19.8
Computer Navigated	5259	81.8	29.2	646	10.0	27.3	246	3.8	29.8	176	2.7	31.0	106	1.6	31.8	6433	100.0	29.1
IDI	1768	83.6	9.8	201	9.5	8.5	71	3.4	8.6	47	2.2	8.3	27	1.3	8.1	2114	100.0	9.6
Not Technology Assisted	7321	79.9	40.7	1078	11.8	45.5	365	4.0	44.2	249	2.7	43.9	146	1.6	43.8	9159	100.0	41.5
TOTAL	17990	81.5	100.0	2367	10.7	100.0	825	3.7	100.0	567	2.6	100.0	333	1.5	100.0	22082	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR42 Patient-Reported Change after Primary Total Knee Replacement by Technology Assistance (Primary Diagnosis OA)



Note: Restricted to modern prostheses

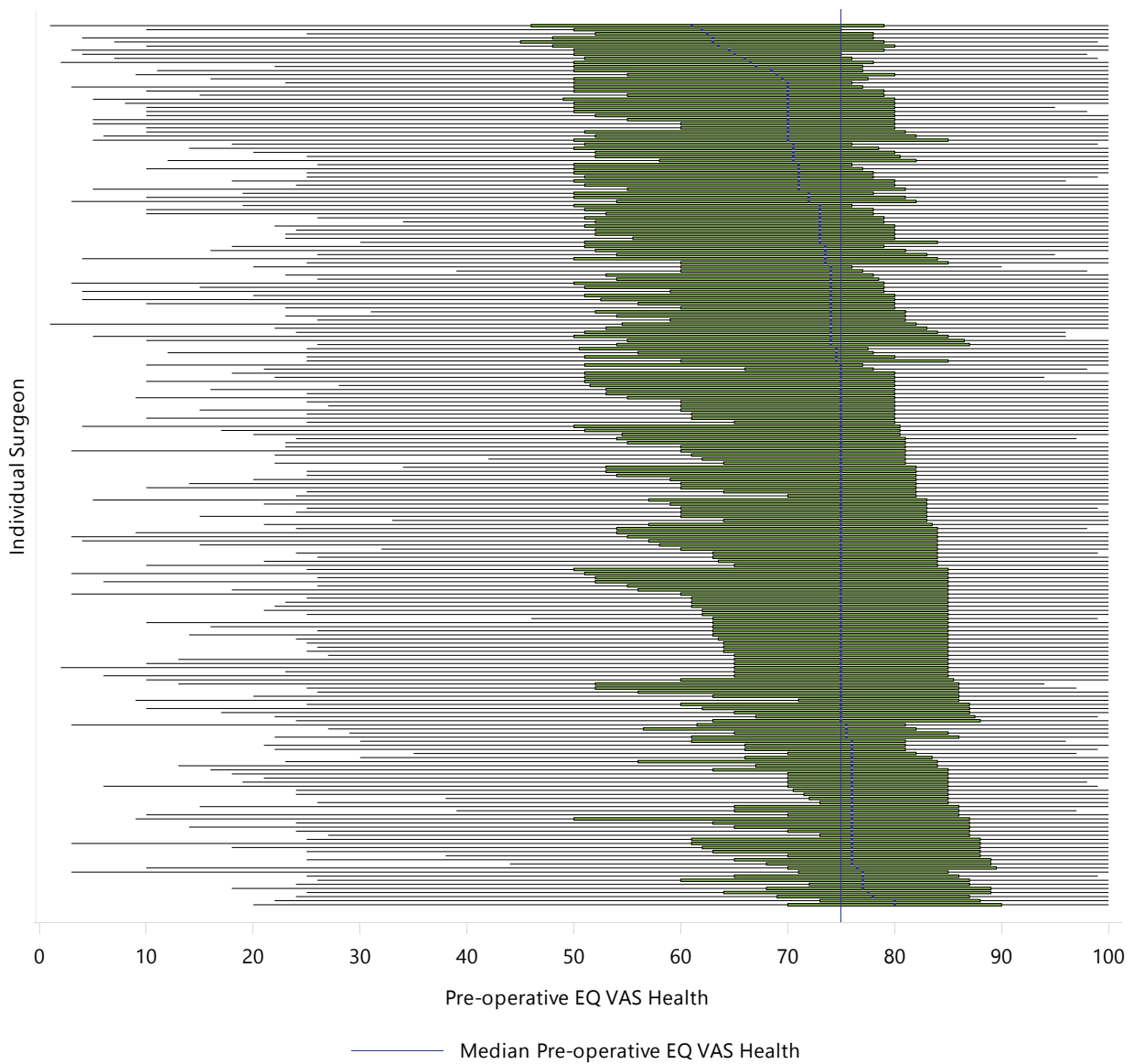
SURGEON AND HOSPITAL PROMS

EQ-VAS

Variation between surgeons and between hospitals in the EQ-VAS is displayed as 'caterpillar plots' for surgeons and hospitals with at least 50

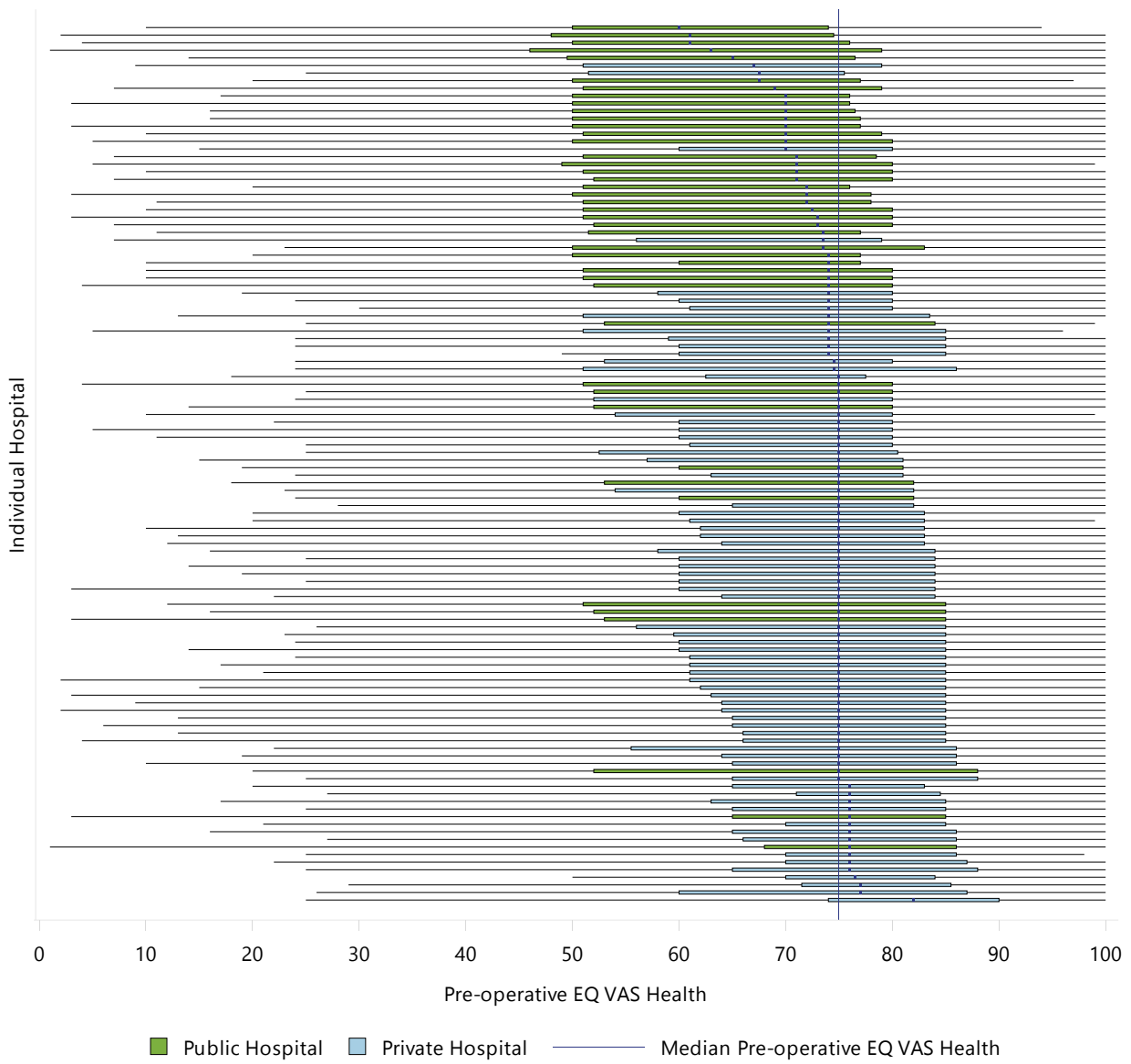
recorded cases for knee replacement (Figure SPR43 to Figure SPR44).

Figure SPR43 Pre-Operative EQ VAS Health in Primary Total Knee Replacement by Surgeon (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Only surgeons with at least 50 procedures have been shown
The median pre-operative EQ-VAS Health is 75

Figure SPR44 Pre-Operative EQ-VAS Health in Primary Total Knee Replacement by Hospital (Primary Diagnosis OA)



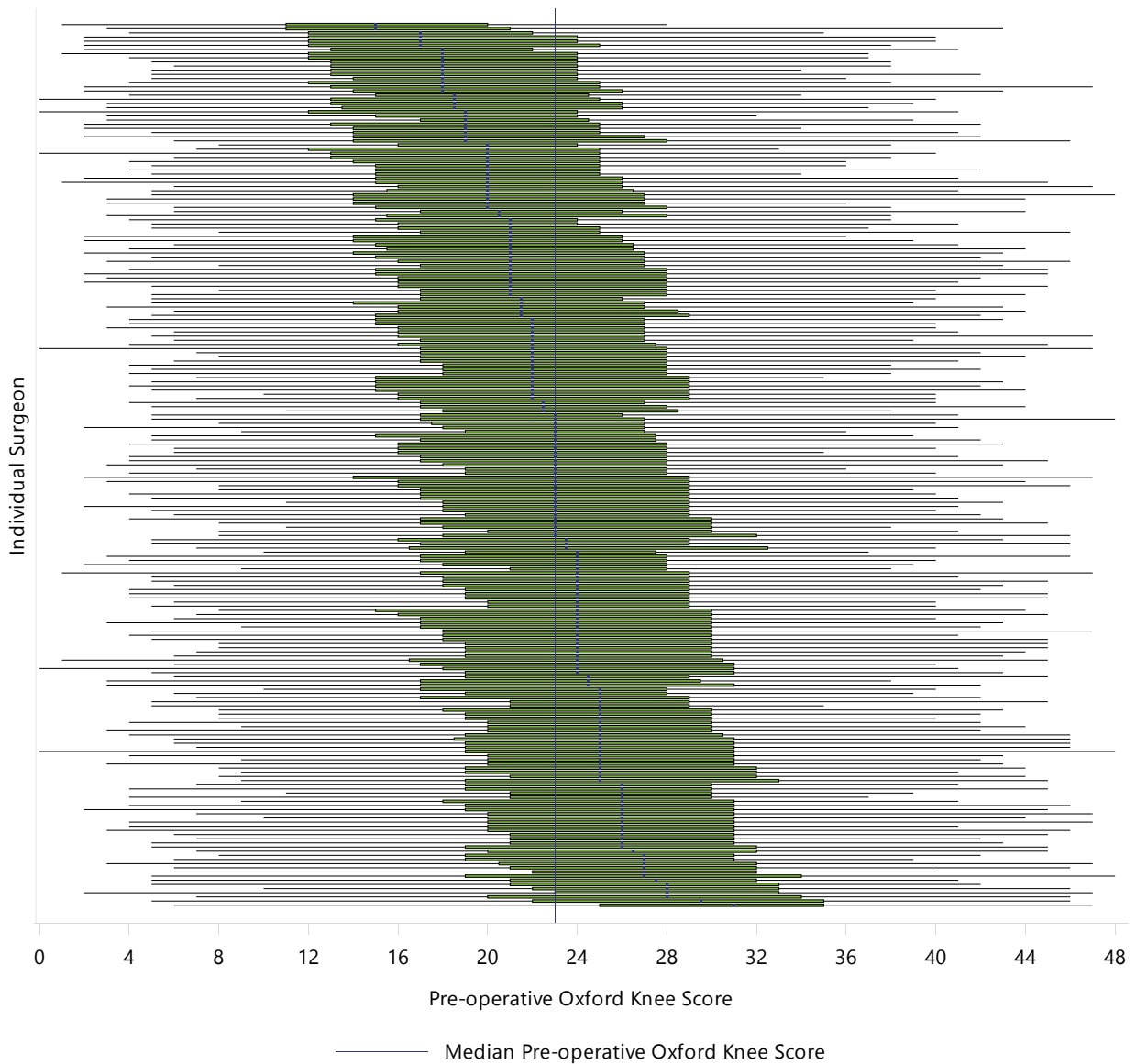
Note: Restricted to modern prostheses
Only hospitals with at least 50 procedures have been shown
The median pre-operative EQ-VAS Health is 75

Oxford Score

Comparisons of pre-operative Oxford Scores between hospitals and between surgeons for

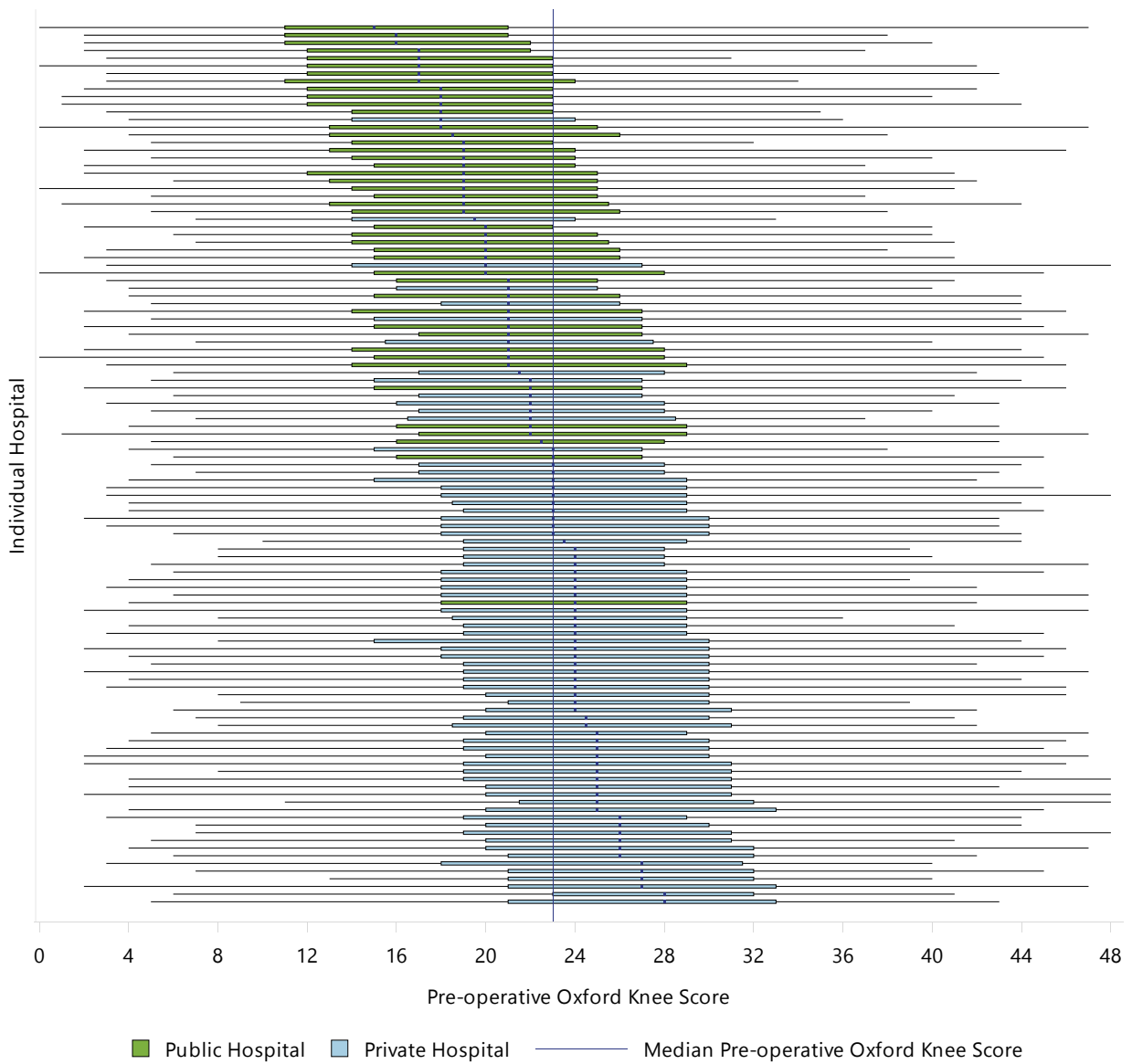
primary total knee replacement are shown in Figure SPR45 to Figure SPR46.

Figure SPR45 Pre-Operative Oxford Knee Score in Primary Total Knee Replacement by Surgeon (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Only surgeons with at least 50 procedures have been shown
The median pre-operative Oxford Knee Score is 23

Figure SPR46 Pre-Operative Oxford Knee Score in Primary Total Knee Replacement by Hospital (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Only hospitals with at least 50 procedures have been shown
The median pre-operative Oxford Knee Score is 23

Shoulder Summary

In this section, PROMs for primary total stemmed anatomic and primary total stemmed reverse shoulder replacement are compared.

More detailed analyses of the effect of patient factors on PROMs for stemmed reverse shoulder replacement used for the management of osteoarthritis and rotator cuff arthropathy are also presented. However, similar detailed analyses for total stemmed anatomic and total stemless shoulder replacement are not yet available, due to limited data for these classes of prostheses.

There are insufficient data to report surgeon and hospital variation in total stemmed shoulder outcomes for comparisons of pre-operative Oxford Scores between hospitals and between surgeons to be undertaken.

COMPARISON OF PRIMARY TOTAL STEMMED ANATOMIC AND PRIMARY TOTAL STEMMED REVERSE SHOULDER REPLACEMENT

The EQ-VAS and EQ-5D-5L are measures of quality of life. EQ-VAS is a measure of patient reported health, and ranges from 0 (worst health imaginable) to 100 (best health imaginable).

Total stemmed anatomic shoulder replacement has a higher pre-operative EQ-VAS. The EQ-VAS score increase following surgery is similar for both classes of shoulder replacement (Table SPR40 and Figure SPR47).

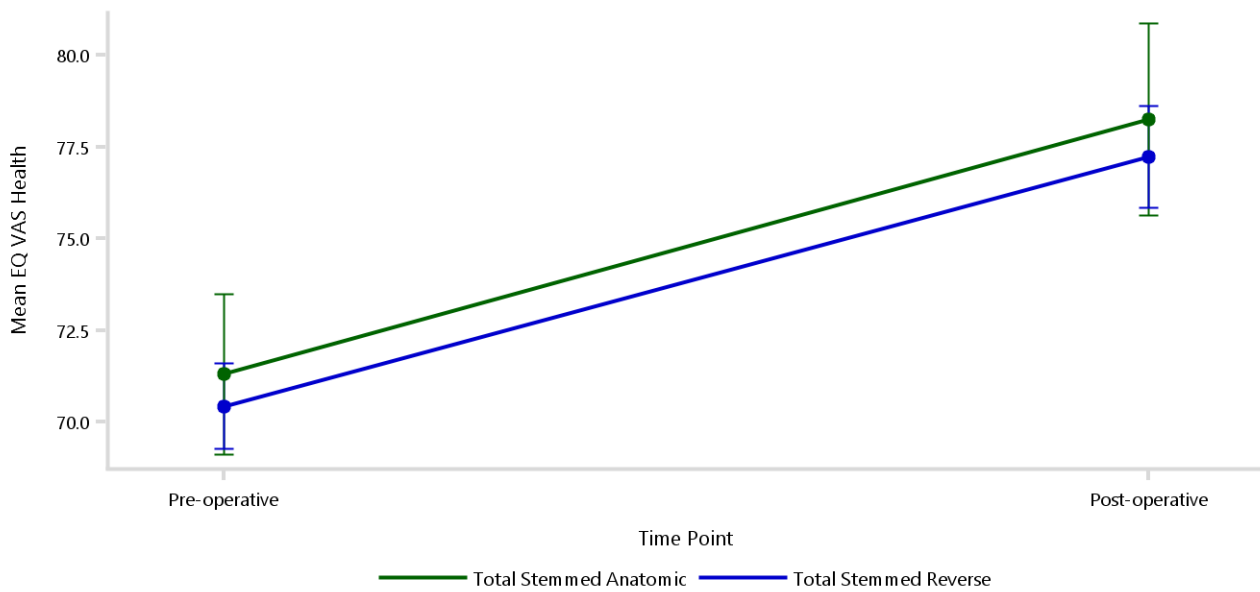
The percentage of total stemmed anatomic shoulder replacement patients who reported being better, worse or no different post-operatively compared to their pre-operative response for each of the EQ-5D domains and the EQ-VAS is shown in Figure SPR48. The corresponding percentages for patients who underwent primary total stemmed reverse shoulder replacement are shown in Figure SPR53.

Table SPR40 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)

Type of Primary	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Total Stemmed Anatomic	287	71.30 (69.11, 73.49)	167	78.24 (75.62, 80.86)	6.94 (4.12, 9.76)
Total Stemmed Reverse	1018	70.44 (69.27, 71.60)	597	77.23 (75.85, 78.61)	6.79 (5.29, 8.28)

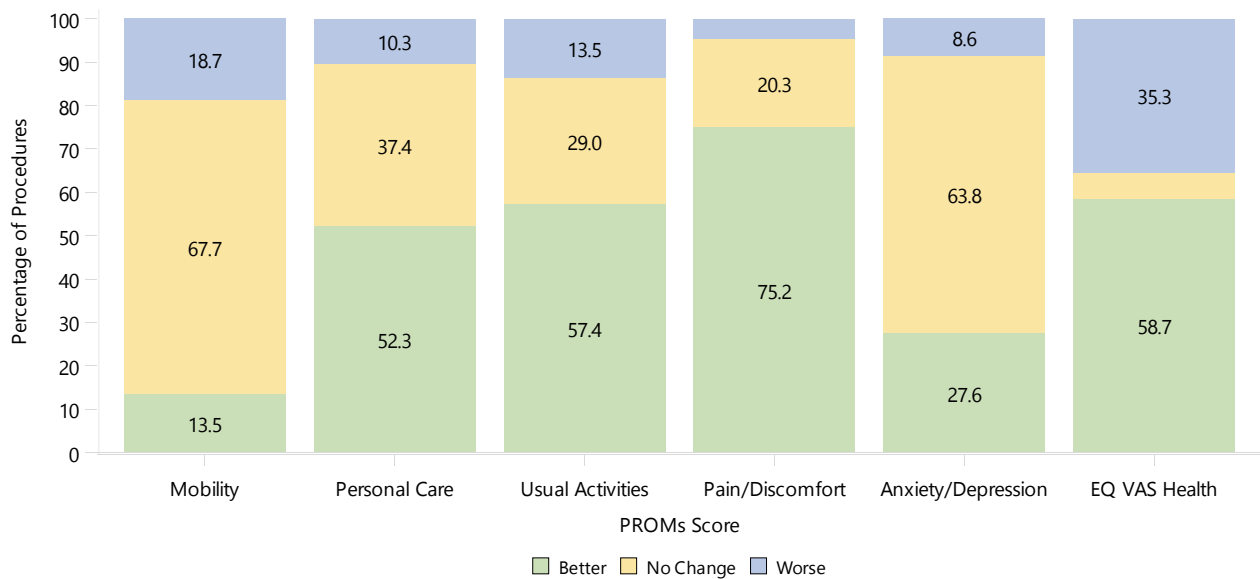
Note: Restricted to modern prostheses
Adjusted for age and gender

Figure SPR47 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Adjusted for age and gender

Figure SPR48 Change in EQ-5D-5L Domain Score and EQ-VAS Health in Primary Total Stemmed Anatomic Shoulder Replacement (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Oxford Score

The Oxford Shoulder Score (OSS) provides a joint specific score of pain and function. The OSS totals the responses from 12 questions, each on a 5-level scale of 0 (worst possible score) to 4 (best possible score). OSS scores before and 6 months after surgery for the two shoulder classes are

provided in Table SPR41 and shown graphically in Figure SPR49.

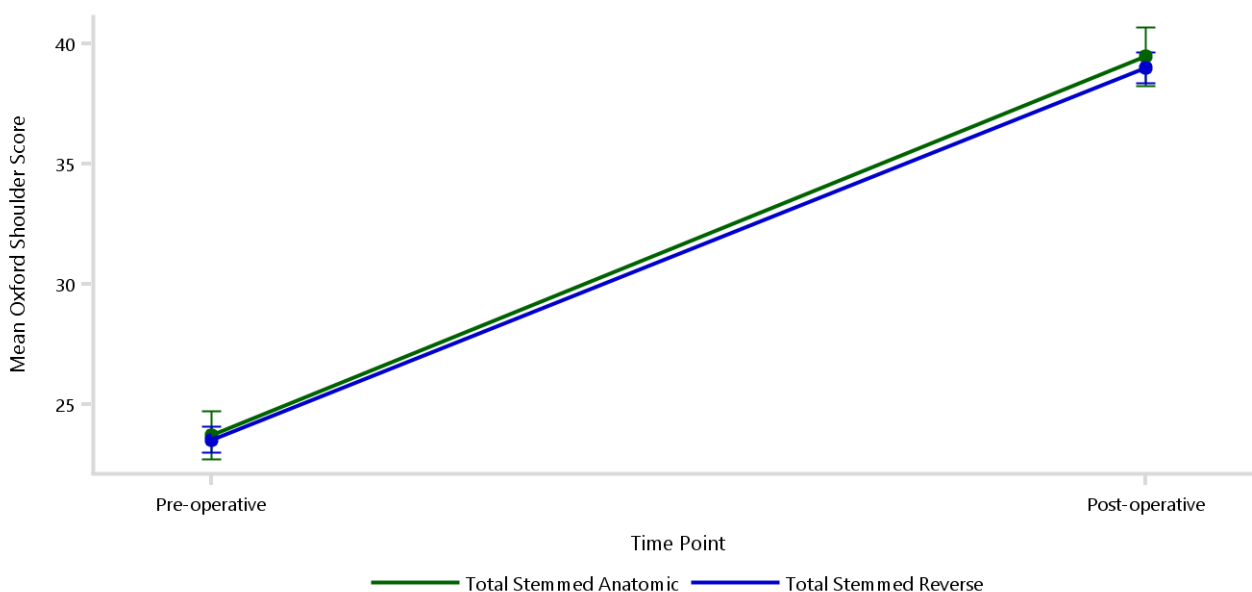
There is no difference in the pre- or post-operative score between shoulder classes and the mean change in score is just over 15 points.

Table SPR41 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)

Type of Primary	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Total Stemmed Anatomic	284	23.71 (22.71, 24.72)	167	39.47 (38.25, 40.68)	15.75 (14.40, 17.10)
Total Stemmed Reverse	1020	23.54 (23.01, 24.07)	600	38.99 (38.35, 39.62)	15.45 (14.74, 16.16)

Note: Restricted to modern prostheses
Adjusted for age and gender

Figure SPR49 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)



Note: Restricted to modern prostheses
Adjusted for age and gender

Patient Satisfaction and Change

Patients were surveyed at 6 months post-operatively on how satisfied they were with their primary total stemmed shoulder replacement, and on their perceived change in their shoulder after surgery.

After primary total stemmed anatomic shoulder replacement, 89.8% of patients were either very satisfied or satisfied. After primary total stemmed reverse shoulder replacement, 86.8% of patients

were either very satisfied or satisfied (Table SPR42 and Figure SPR50).

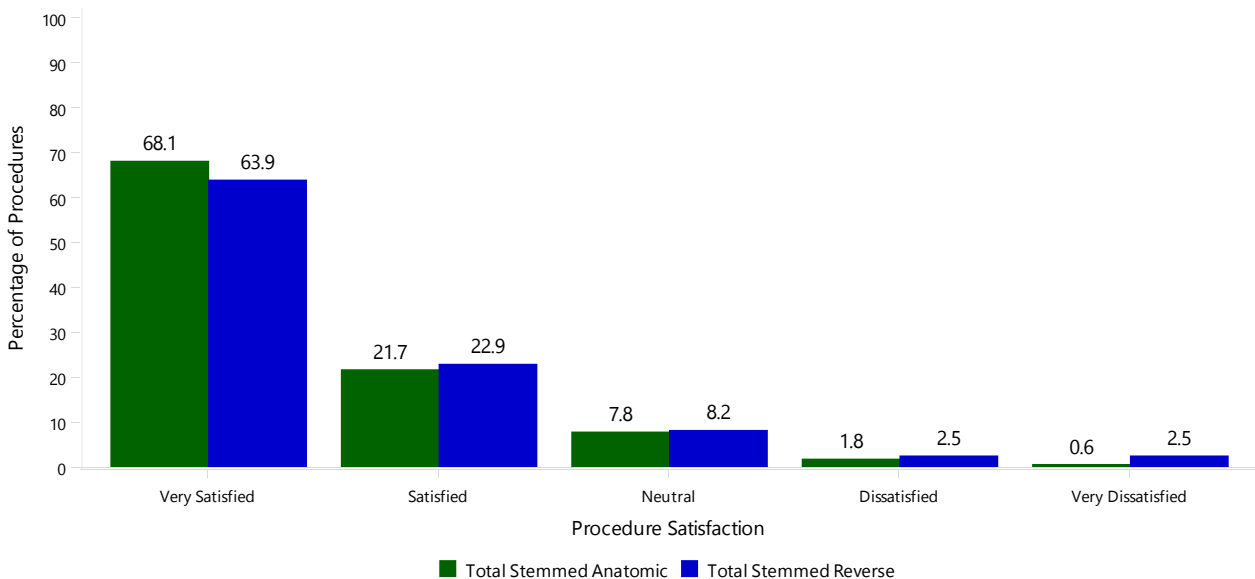
There was a high percentage (95.2%) of patients who rated their primary total stemmed anatomic shoulder replacement as much better or a little better. Patient-reported change after total stemmed reverse shoulder replacement was largely much better or a little better (93.0%) (Table SPR43 and Figure SPR51).

Table SPR42 Procedure Satisfaction in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)

Type of Primary	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Total Stemmed Anatomic	113	68.1	22.8	36	21.7	20.8	13	7.8	21.0	3	1.8	16.7	1	0.6	6.3	166	100.0	21.7
Total Stemmed Reverse	382	63.9	77.2	137	22.9	79.2	49	8.2	79.0	15	2.5	83.3	15	2.5	93.8	598	100.0	78.3
TOTAL	495	64.8	100.0	173	22.6	100.0	62	8.1	100.0	18	2.4	100.0	16	2.1	100.0	764	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR50 Procedure Satisfaction in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)



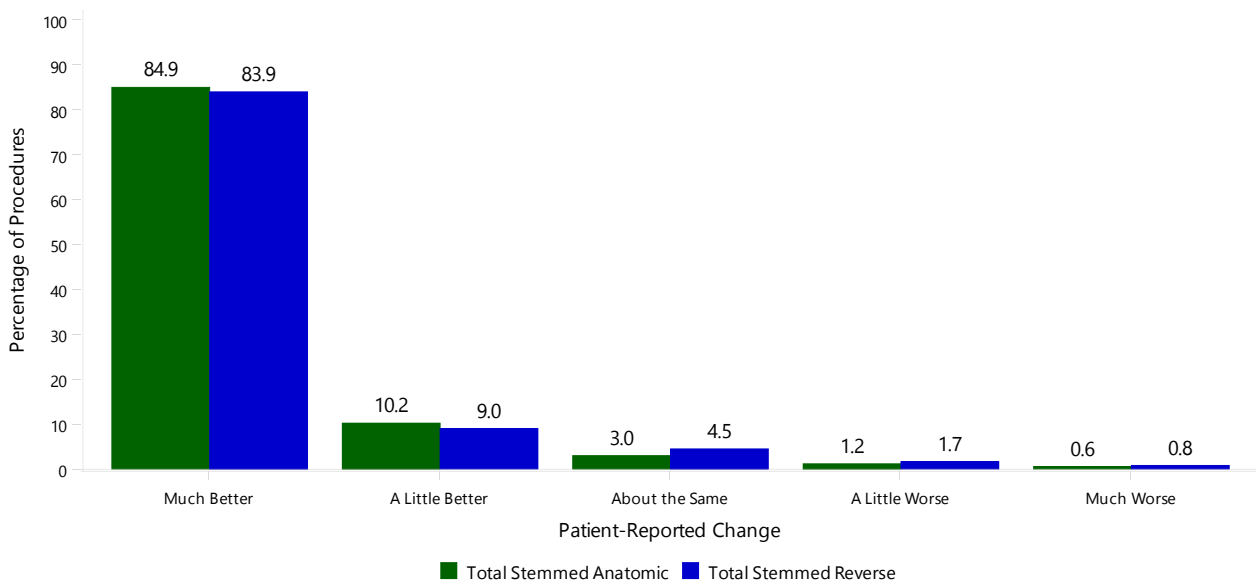
Note: Restricted to modern prostheses

Table SPR43 Patient-Reported Change in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)

Type of Primary	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%
Total Stemmed Anatomic	141	84.9	21.9	17	10.2	23.9	5	3.0	15.6	2	1.2	16.7	1	0.6	16.7	166	100.0	21.7
Total Stemmed Reverse	502	83.9	78.1	54	9.0	76.1	27	4.5	84.4	10	1.7	83.3	5	0.8	83.3	598	100.0	78.3
TOTAL	643	84.2	100.0	71	9.3	100.0	32	4.2	100.0	12	1.6	100.0	6	0.8	100.0	764	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR51 Patient-Reported Change in Primary Total Stemmed Shoulder Replacement by Type of Primary (Primary Diagnosis OA)



Note: Restricted to modern prostheses

PRIMARY TOTAL STEMMED REVERSE SHOULDER REPLACEMENT FOR OSTEOARTHRITIS

PATIENT CHARACTERISTICS

EQ-VAS and EQ-5D-5L

The mean EQ-VAS score increased by 7 points following total stemmed reverse shoulder replacement for osteoarthritis (Table SPR44). The percentage change following surgery is shown in Figure SPR52, and the change in each domain of the EQ-5D-5L is shown in Figure SPR53.

Age <65 years and female gender are associated with lower pre-operative EQ-VAS assessments. Improvement after surgery is also greater for patients aged <65 years, and for females (Table SPR45, Figure SPR54, Table SPR46 and Figure SPR55).

EQ-VAS for ASA scores 2 and 3 are reported. The pre-operative mean EQ-VAS is lower for ASA score 3 as is the post-operative improvement (Table SPR47 and Figure SPR56).

Compared to pre-obese patients, patients with increasing obesity have lower mean pre- and post-operative EQ-VAS, but larger improvements (Table SPR48 and Figure SPR57).

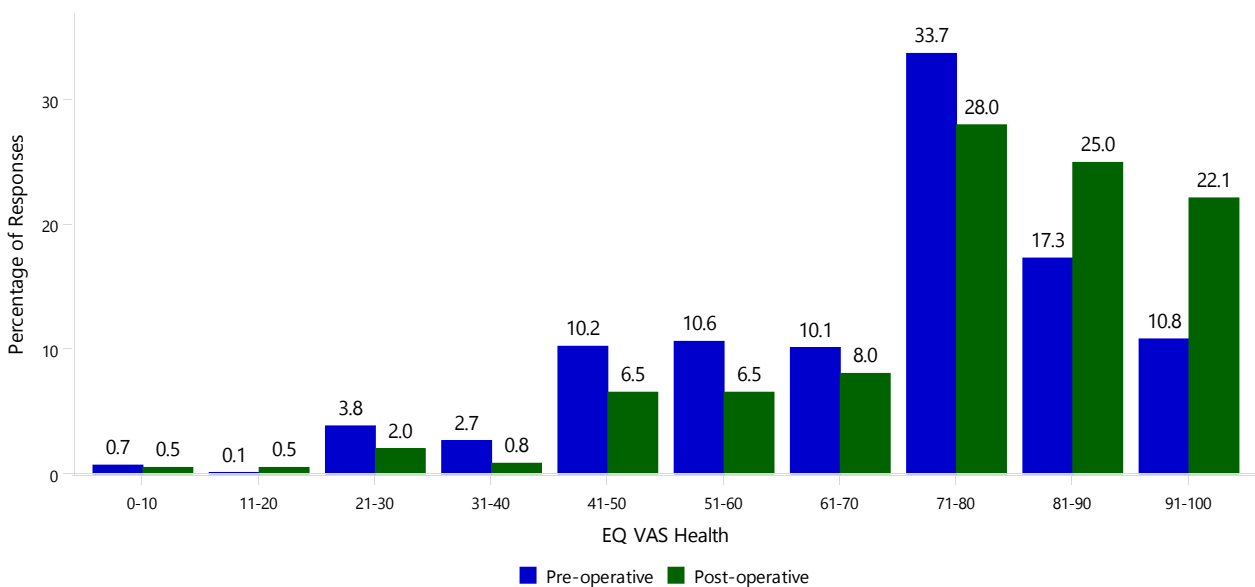
Glenoid morphology does not appear to impact the pre-operative mean EQ-VAS. The mean change in score is greatest for the A2 category (Table SPR49 and Figure SPR58).

Table SPR44 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Stemmed Reverse	1018	70.26±18.55	75.00 (59.00, 83.00)	597	77.05±17.70	80.00 (71.00, 90.00)

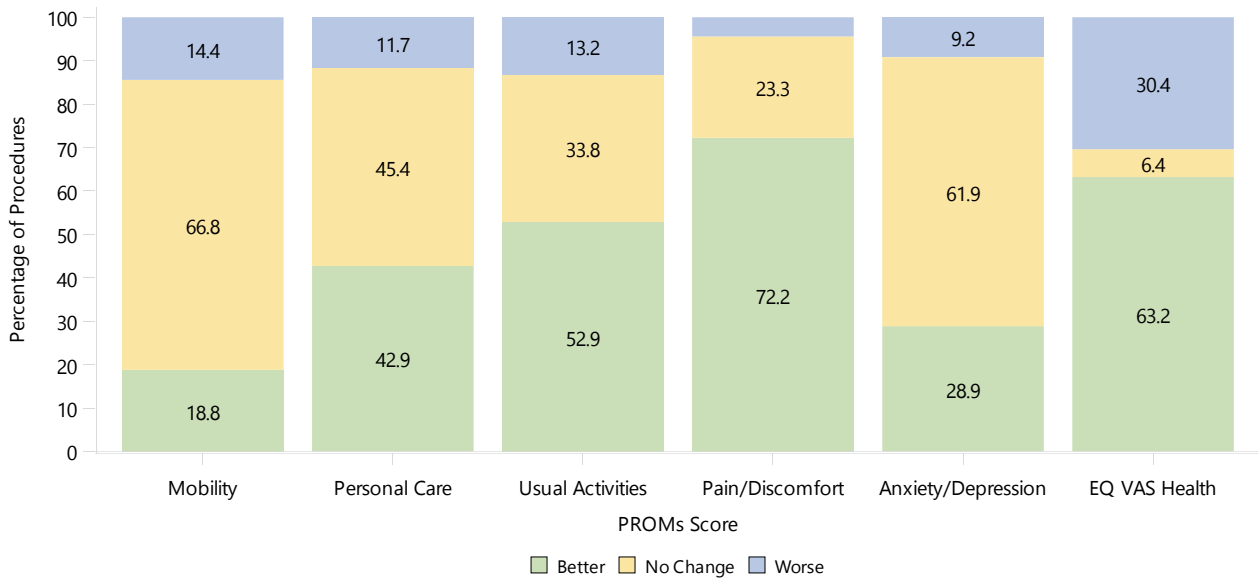
Note: Restricted to modern prostheses

Figure SPR52 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Figure SPR53 Change in EQ-5D-5L Domain Score and EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)



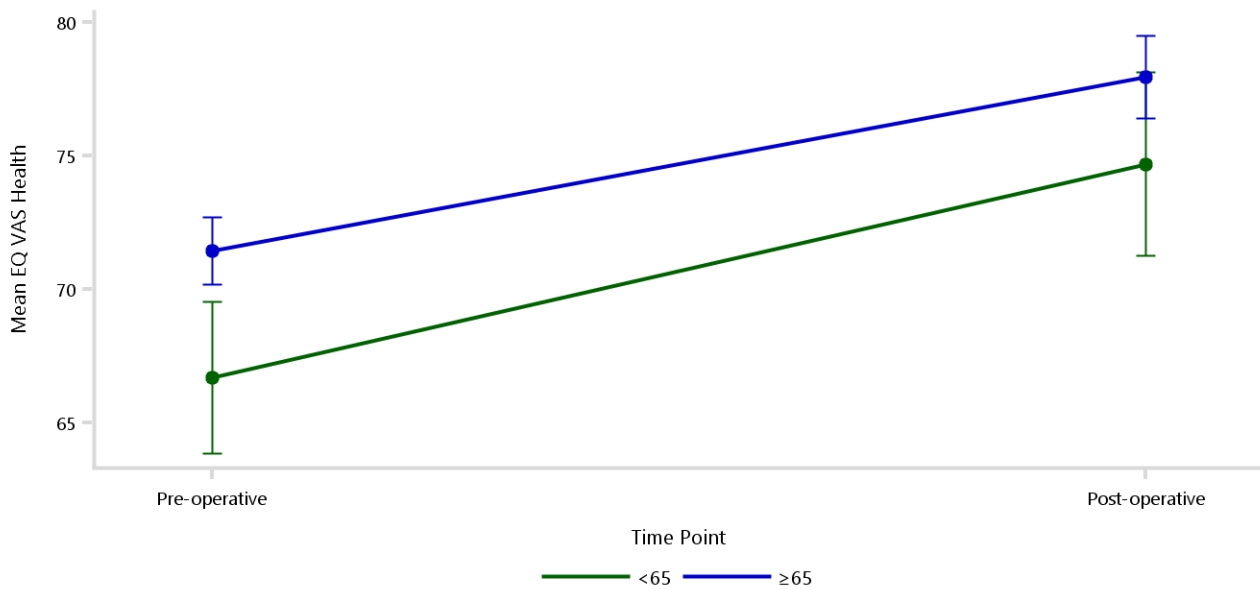
Note: Restricted to modern prostheses

Table SPR45 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)

Age	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
<65	160	66.70 (63.86, 69.55)	97	74.69 (71.26, 78.12)	7.99 (4.28, 11.69)
≥65	858	71.44 (70.17, 72.70)	500	77.95 (76.41, 79.49)	6.52 (4.87, 8.16)

Note: Restricted to modern prostheses
Adjusted for gender

Figure SPR54 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)



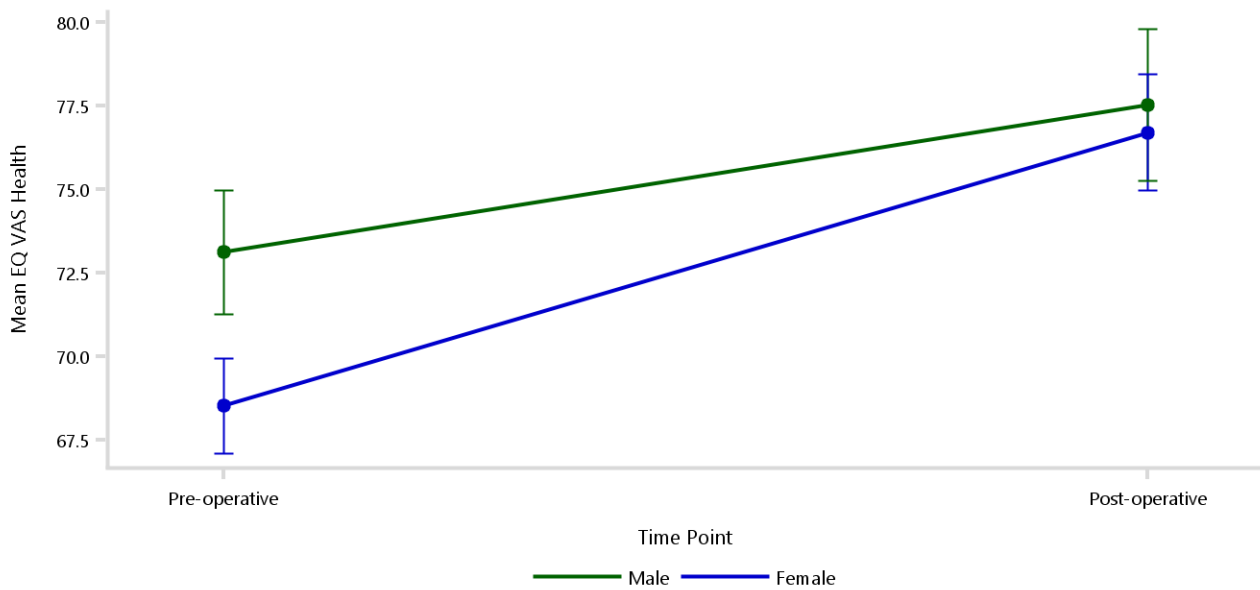
Note: Restricted to modern prostheses
Adjusted for gender

Table SPR46 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)

Gender	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Male	379	73.12 (71.27, 74.98)	219	77.53 (75.25, 79.81)	4.41 (1.94, 6.88)
Female	639	68.53 (67.10, 69.96)	378	76.70 (74.97, 78.44)	8.18 (6.29, 10.06)

Note: Restricted to modern prostheses
Adjusted for age

Figure SPR55 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)



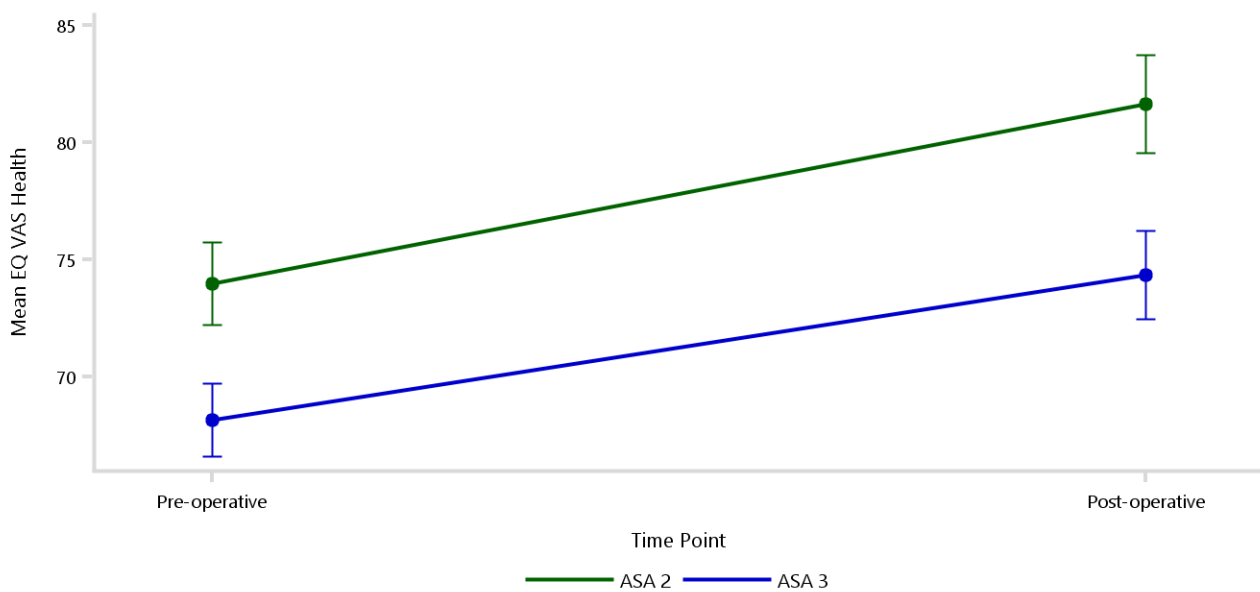
Note: Restricted to modern prostheses
Adjusted for age

Table SPR47 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis OA)

ASA Score	N	Pre-operative		N	Post-operative		Change in Score
		Mean (95% CI)			Mean (95% CI)		
ASA 2	420	73.96 (72.20, 75.72)		257	81.64 (79.56, 83.73)		7.68 (5.41, 9.96)
ASA 3	543	68.14 (66.58, 69.70)		313	74.34 (72.45, 76.23)		6.20 (4.16, 8.24)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Figure SPR56 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis OA)



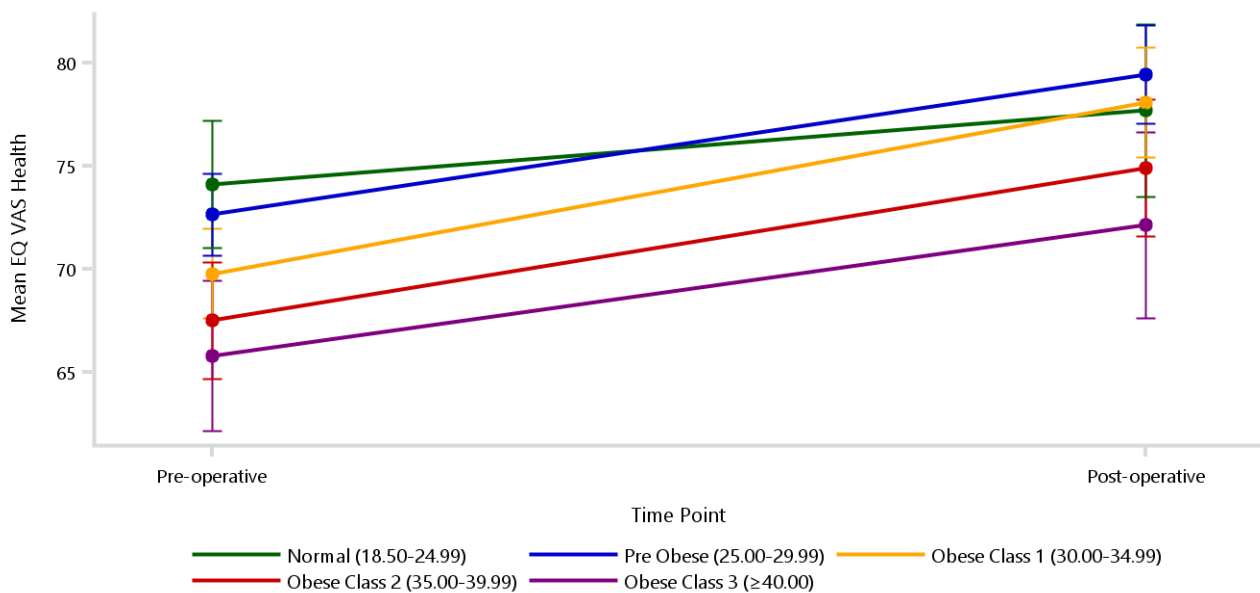
Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Table SPR48 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis OA)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Normal (18.50-24.99)	138	74.12 (71.02, 77.21)	65	77.68 (73.51, 81.86)	3.57 (-0.87, 8.01)
Pre Obese (25.00-29.99)	328	72.64 (70.66, 74.62)	202	79.43 (77.06, 81.80)	6.79 (4.19, 9.39)
Obese Class 1 (30.00-34.99)	273	69.77 (67.59, 71.95)	160	78.07 (75.40, 80.74)	8.30 (5.38, 11.22)
Obese Class 2 (35.00-39.99)	164	67.51 (64.68, 70.33)	106	74.89 (71.57, 78.20)	7.38 (3.78, 10.98)
Obese Class 3 (≥ 40.00)	102	65.76 (62.12, 69.41)	57	72.12 (67.60, 76.64)	6.35 (1.51, 11.19)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only BMI categories with >40 pre-operative and post-operative responses have been included

Figure SPR57 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis OA)



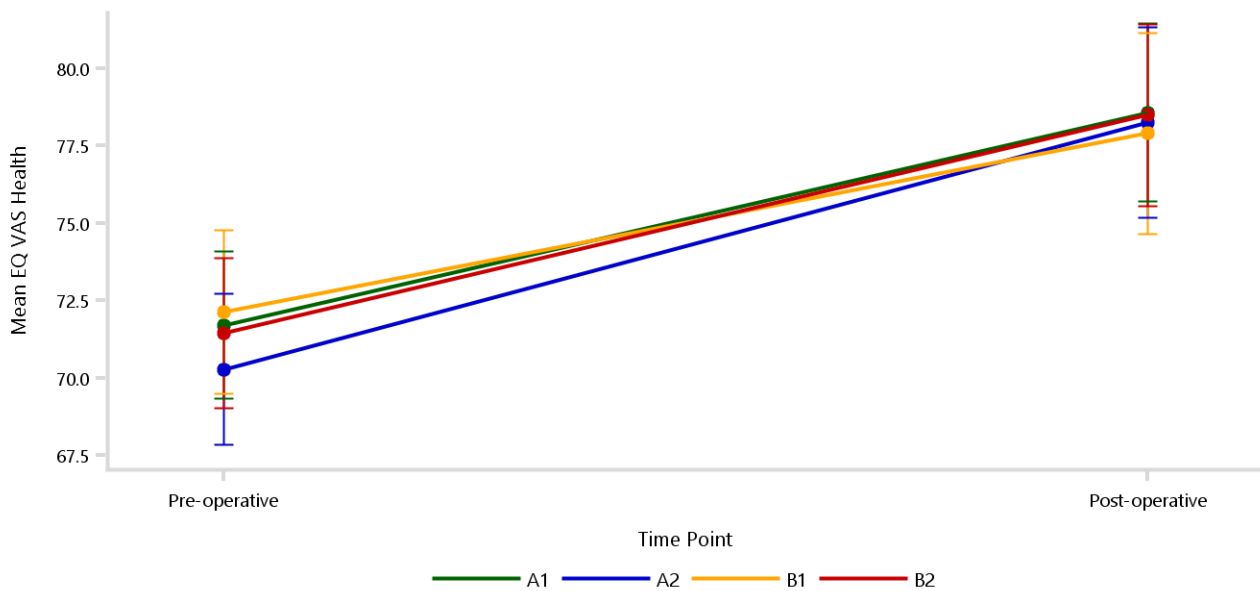
Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only BMI categories with >40 pre-operative and post-operative responses have been included

Table SPR49 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis OA)

Glenoid Morphology	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
A1	228	71.71 (69.35, 74.08)	136	78.57 (75.69, 81.45)	6.86 (3.71, 10.01)
A2	210	70.28 (67.85, 72.72)	118	78.25 (75.18, 81.32)	7.96 (4.63, 11.30)
B1	178	72.12 (69.48, 74.76)	105	77.90 (74.66, 81.13)	5.78 (2.20, 9.36)
B2	210	71.45 (69.04, 73.87)	127	78.49 (75.55, 81.42)	7.03 (3.79, 10.28)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Figure SPR58 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Oxford Score

The Oxford Shoulder Score (OSS) before and 6 months after surgery are provided in Table SPR50.

Lower pre-operative mean OSS are associated with age <65 years and female gender. Higher post-operative scores occur in all subgroups, but the amount of change is greater for females and older patients aged ≥65 years (Table SPR51, Figure SPR59, Table SPR52 and Figure SPR60).

OSS for ASA score 2 and ASA score 3 are presented. Pre-operative mean Oxford scores are

lower for ASA score 3 and mean improvement after surgery is similar (Table SPR53 and Figure SPR61).

The pre-operative mean Oxford score is similar for the different BMI categories. The largest change in mean Oxford score is in obese class 2 and obese class 3 (Table SPR54 and Figure SPR62).

The pre- and post-operative OSS is not affected by glenoid morphology (Table SPR55 and Figure SPR63).

Table SPR50 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Stemmed Reverse	1020	23.16±8.78	23.00 (17.00, 30.00)	600	38.64±7.89	41.00 (35.00, 45.00)

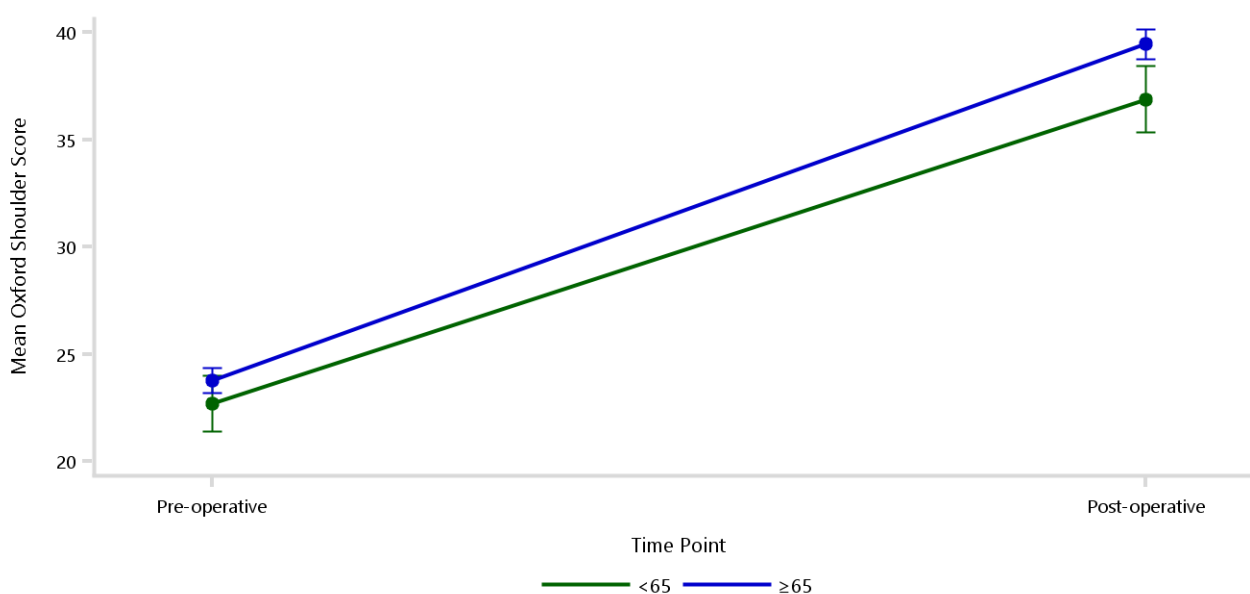
Note: Restricted to modern prostheses

Table SPR51 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)

Age	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
<65	158	22.70 (21.39, 24.02)	96	36.89 (35.33, 38.46)	14.19 (12.44, 15.95)
≥65	862	23.77 (23.19, 24.35)	504	39.46 (38.77, 40.16)	15.69 (14.92, 16.46)

Note: Restricted to modern prostheses
Adjusted for gender

Figure SPR59 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)



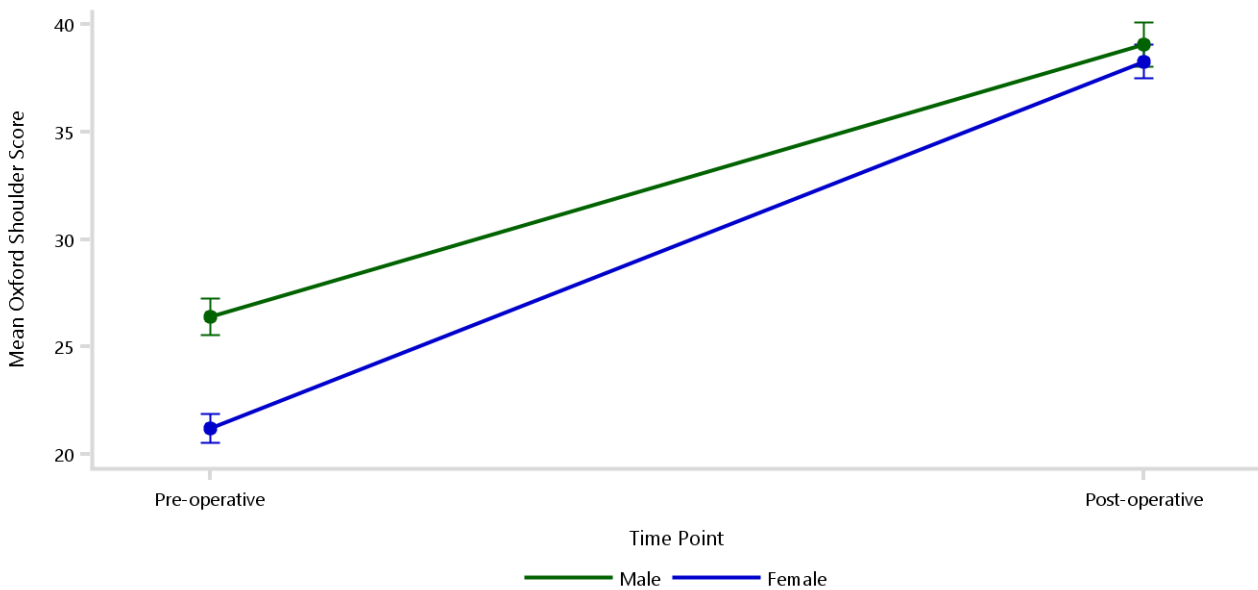
Note: Restricted to modern prostheses
Adjusted for gender

Table SPR52 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)

Gender	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Male	379	26.39 (25.54, 27.24)	220	39.07 (38.05, 40.09)	12.68 (11.54, 13.82)
Female	641	21.22 (20.57, 21.87)	380	38.27 (37.50, 39.05)	17.05 (16.18, 17.93)

Note: Restricted to modern prostheses
Adjusted for age

Figure SPR60 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)



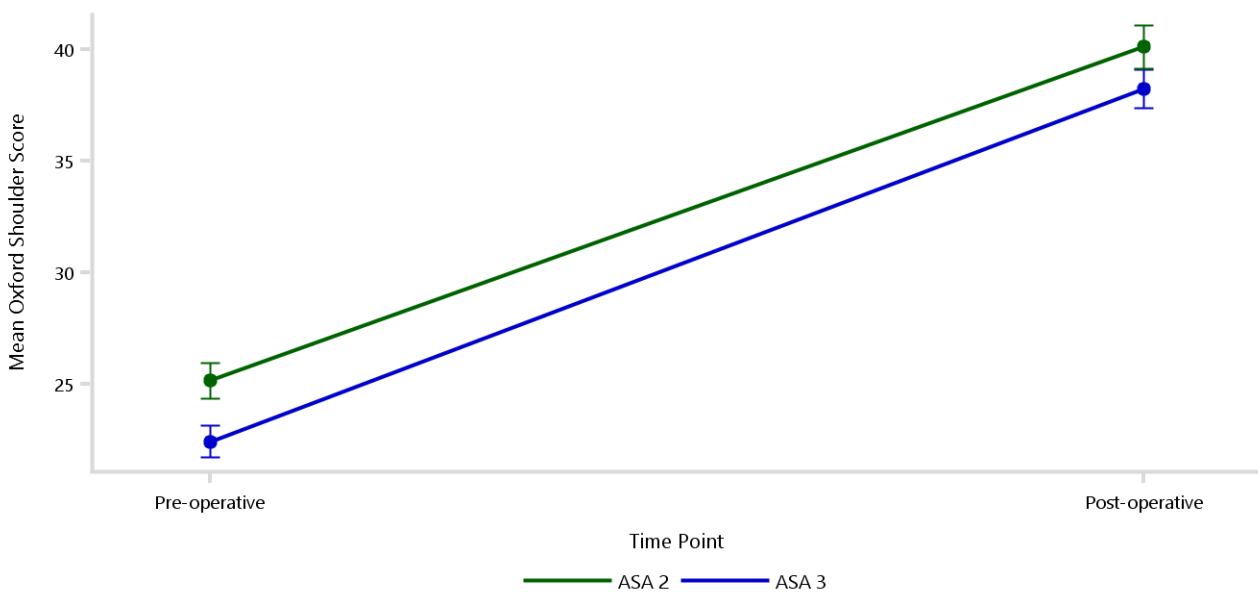
Note: Restricted to modern prostheses
Adjusted for age

Table SPR53 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis OA)

ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 2	421	25.15 (24.35, 25.95)	258	40.10 (39.13, 41.06)	14.95 (13.86, 16.03)
ASA 3	546	22.41 (21.70, 23.12)	315	38.21 (37.34, 39.09)	15.80 (14.83, 16.78)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Figure SPR61 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis OA)



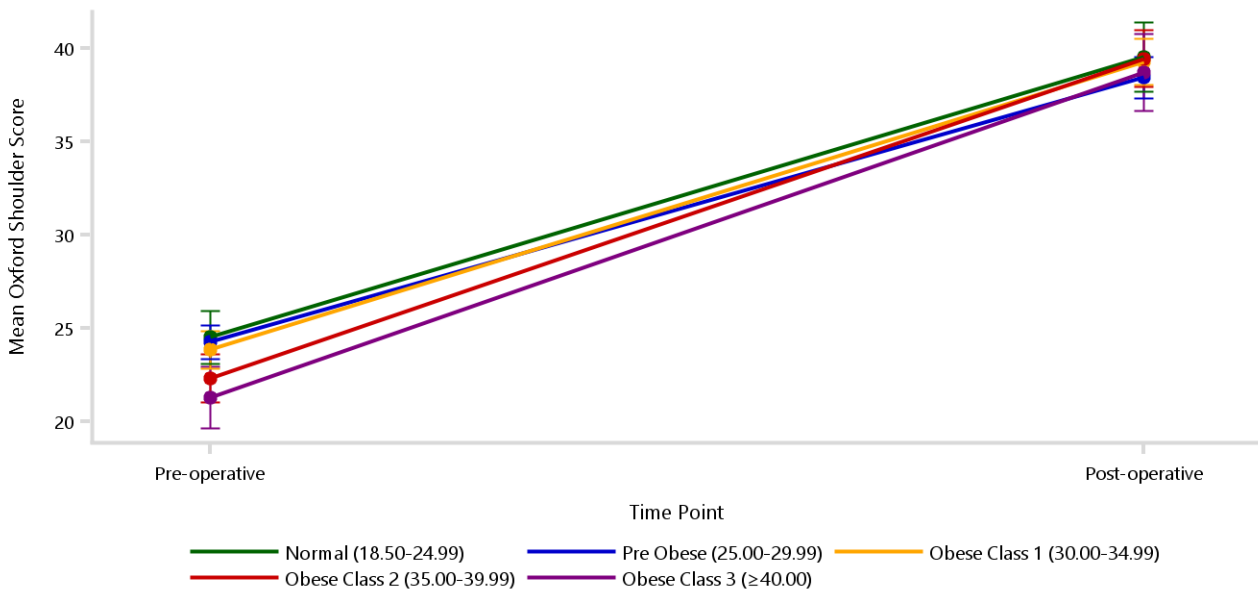
Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Table SPR54 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis OA)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Normal (18.50-24.99)	140	24.53 (23.12, 25.93)	69	39.54 (37.68, 41.39)	15.01 (12.98, 17.04)
Pre Obese (25.00-29.99)	327	24.27 (23.36, 25.18)	199	38.43 (37.34, 39.52)	14.17 (12.94, 15.39)
Obese Class 1 (30.00-34.99)	274	23.86 (22.86, 24.85)	160	39.28 (38.06, 40.50)	15.42 (14.05, 16.79)
Obese Class 2 (35.00-39.99)	163	22.32 (21.02, 23.63)	108	39.46 (37.95, 40.96)	17.13 (15.45, 18.82)
Obese Class 3 (≥ 40.00)	103	21.29 (19.63, 22.95)	57	38.70 (36.63, 40.76)	17.40 (15.14, 19.67)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only BMI categories with >40 pre-operative and post-operative responses have been included

Figure SPR62 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis OA)



Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only BMI categories with >40 pre-operative and post-operative responses have been included

Table SPR55 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis OA)

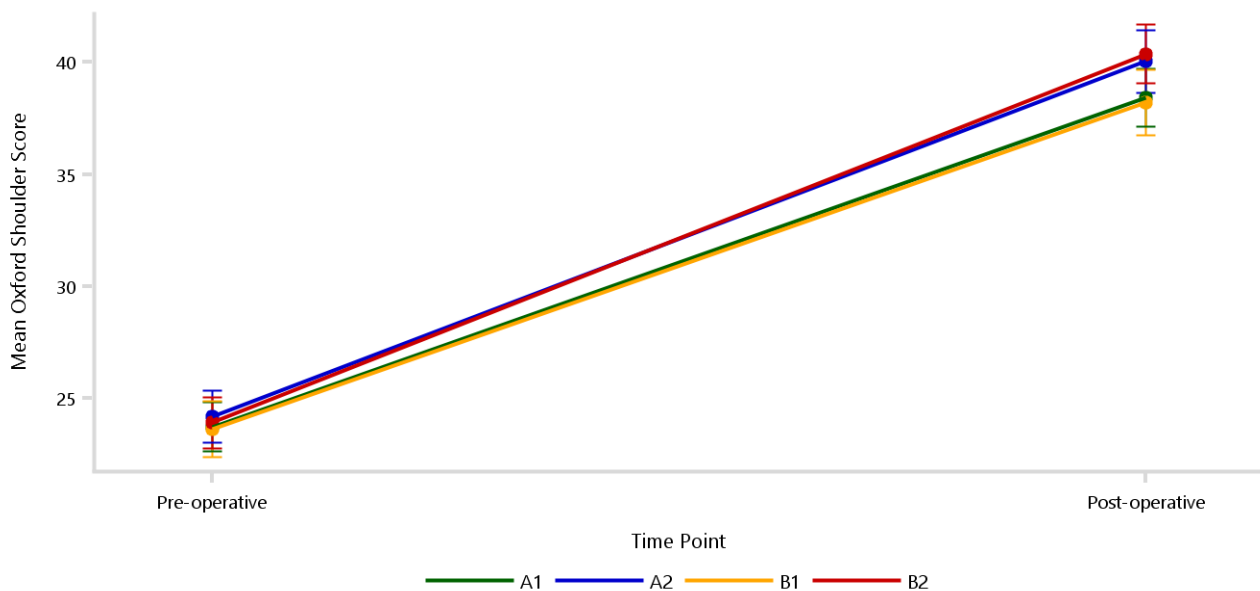
Glenoid Morphology	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
A1	231	23.75 (22.64, 24.85)	138	38.41 (37.13, 39.70)	14.67 (13.19, 16.15)
A2	206	24.19 (23.03, 25.35)	118	40.03 (38.64, 41.42)	15.84 (14.25, 17.43)
B1	179	23.63 (22.39, 24.87)	104	38.20 (36.74, 39.67)	14.57 (12.87, 16.27)
B2	212	23.94 (22.80, 25.07)	128	40.36 (39.05, 41.68)	16.43 (14.89, 17.96)

Note: Restricted to modern prostheses

Adjusted for age and gender

Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Figure SPR63 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Adjusted for age and gender

Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Satisfaction and Change

Patients were surveyed at 6 months post-operatively on how satisfied they were with their total stemmed reverse shoulder replacement for osteoarthritis, and on their perceived change in their shoulder after surgery.

Patient-reported change is much better in 83.9% of total stemmed reverse shoulders (Table SPR59 and Figure SPR67). Patient-reported change by age and gender are presented in Table SPR60, Figure SPR68, Table SPR61 and Figure SPR69.

After total stemmed reverse shoulder replacement, 86.8% of patients are very satisfied or satisfied (Table SPR56 and Figure SPR64).

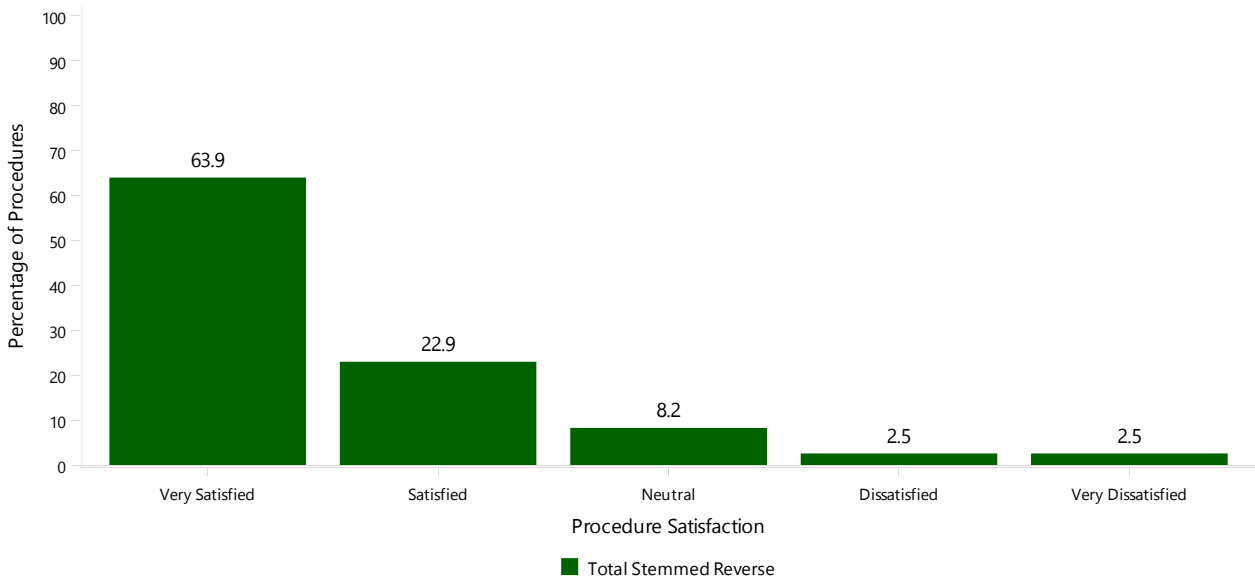
Procedure satisfaction by age and gender are presented in Table SPR57, Figure SPR65, Table SPR58 and Figure SPR66.

Table SPR56 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)

Class	Very Satisfied		Satisfied		Neutral		Dissatisfied		Very Dissatisfied		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Stemmed Reverse	382	63.9	137	22.9	49	8.2	15	2.5	15	2.5	598	100.0

Note: Restricted to modern prostheses

Figure SPR64 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)



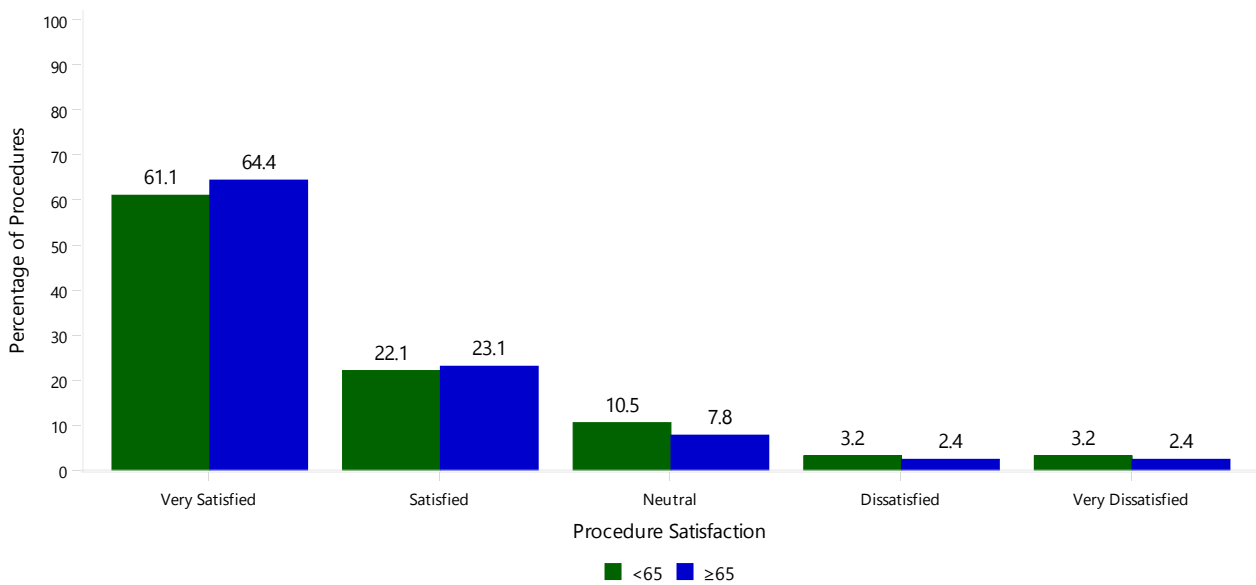
Note: Restricted to modern prostheses

Table SPR57 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)

Age	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
<65	58	61.1	15.2	21	22.1	15.3	10	10.5	20.4	3	3.2	20.0	3	3.2	20.0	95	100.0	15.9
≥65	324	64.4	84.8	116	23.1	84.7	39	7.8	79.6	12	2.4	80.0	12	2.4	80.0	503	100.0	84.1
TOTAL	382	63.9	100.0	137	22.9	100.0	49	8.2	100.0	15	2.5	100.0	15	2.5	100.0	598	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR65 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)



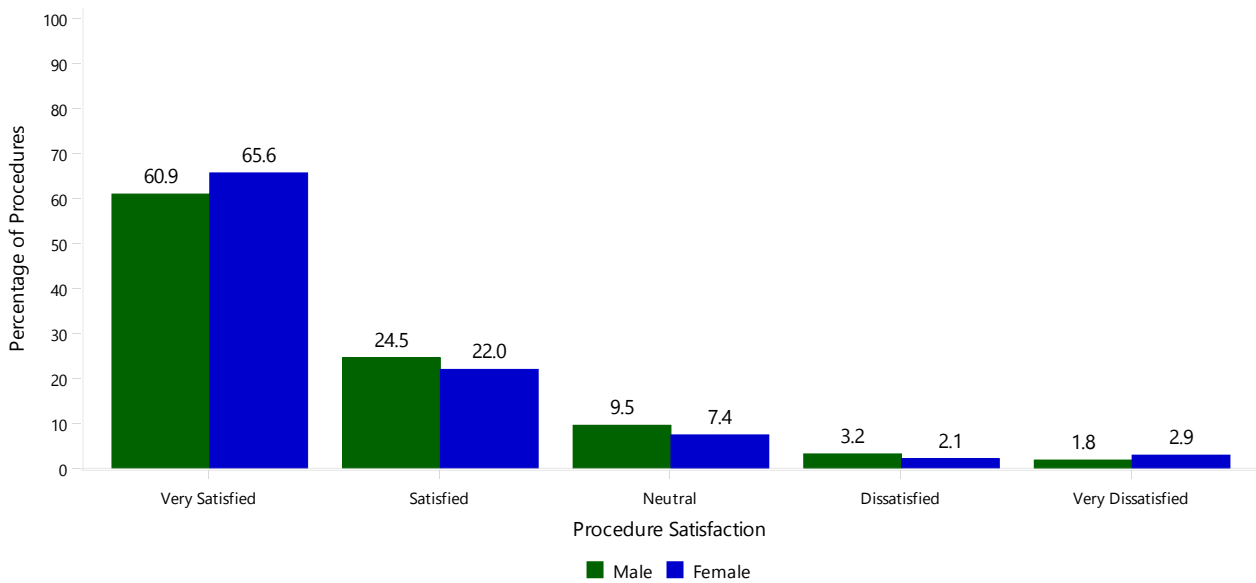
Note: Restricted to modern prostheses

Table SPR58 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)

Gender	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Male	134	60.9	35.1	54	24.5	39.4	21	9.5	42.9	7	3.2	46.7	4	1.8	26.7	220	100.0	36.8
Female	248	65.6	64.9	83	22.0	60.6	28	7.4	57.1	8	2.1	53.3	11	2.9	73.3	378	100.0	63.2
TOTAL	382	63.9	100.0	137	22.9	100.0	49	8.2	100.0	15	2.5	100.0	15	2.5	100.0	598	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR66 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)



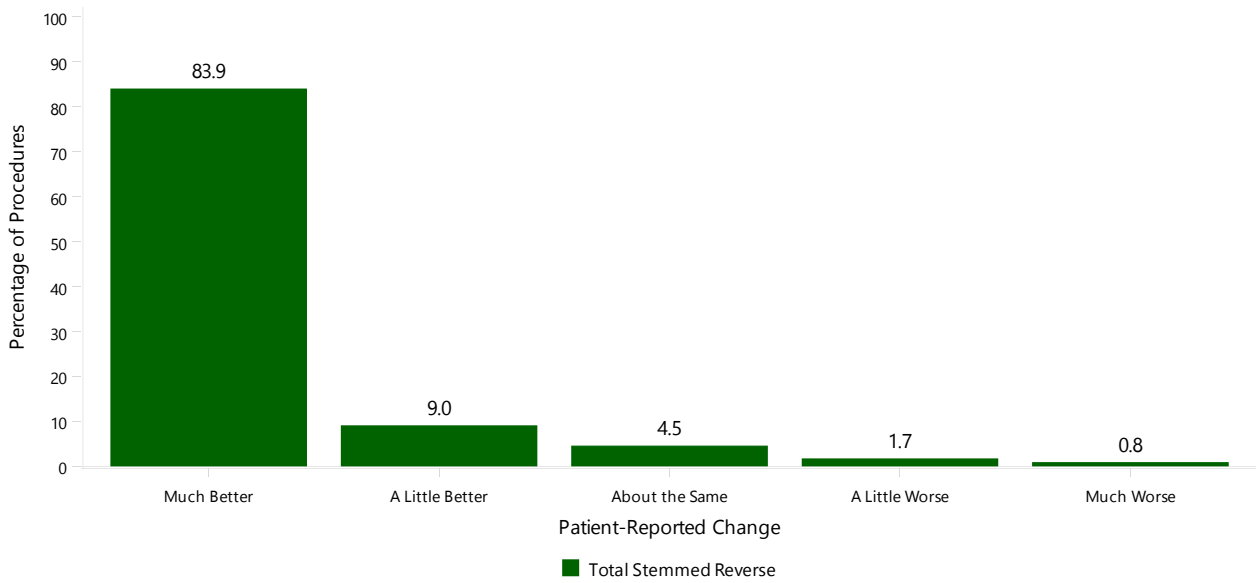
Note: Restricted to modern prostheses

Table SPR59 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)

Class	Much Better		A Little Better		About the Same		A Little Worse		Much Worse		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Stemmed Reverse	502	83.9	54	9.0	27	4.5	10	1.7	5	0.8	598	100.0

Note: Restricted to modern prostheses

Figure SPR67 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis OA)



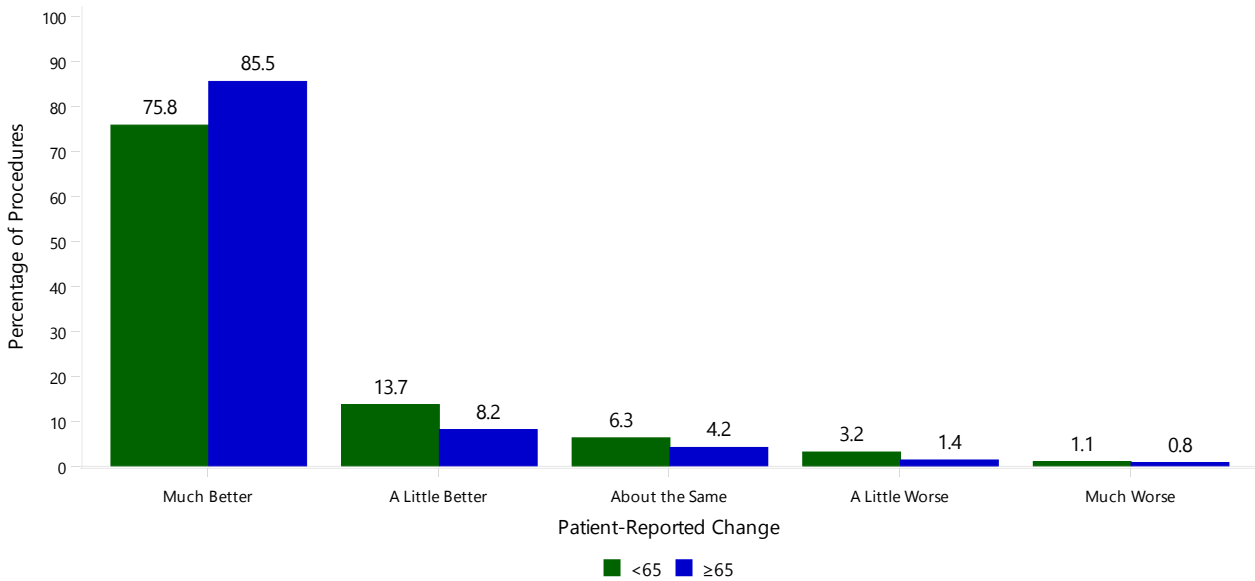
Note: Restricted to modern prostheses

Table SPR60 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)

Age	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
<65	72	75.8	14.3	13	13.7	24.1	6	6.3	22.2	3	3.2	30.0	1	1.1	20.0	95	100.0	15.9
≥65	430	85.5	85.7	41	8.2	75.9	21	4.2	77.8	7	1.4	70.0	4	0.8	80.0	503	100.0	84.1
TOTAL	502	83.9	100.0	54	9.0	100.0	27	4.5	100.0	10	1.7	100.0	5	0.8	100.0	598	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR68 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis OA)



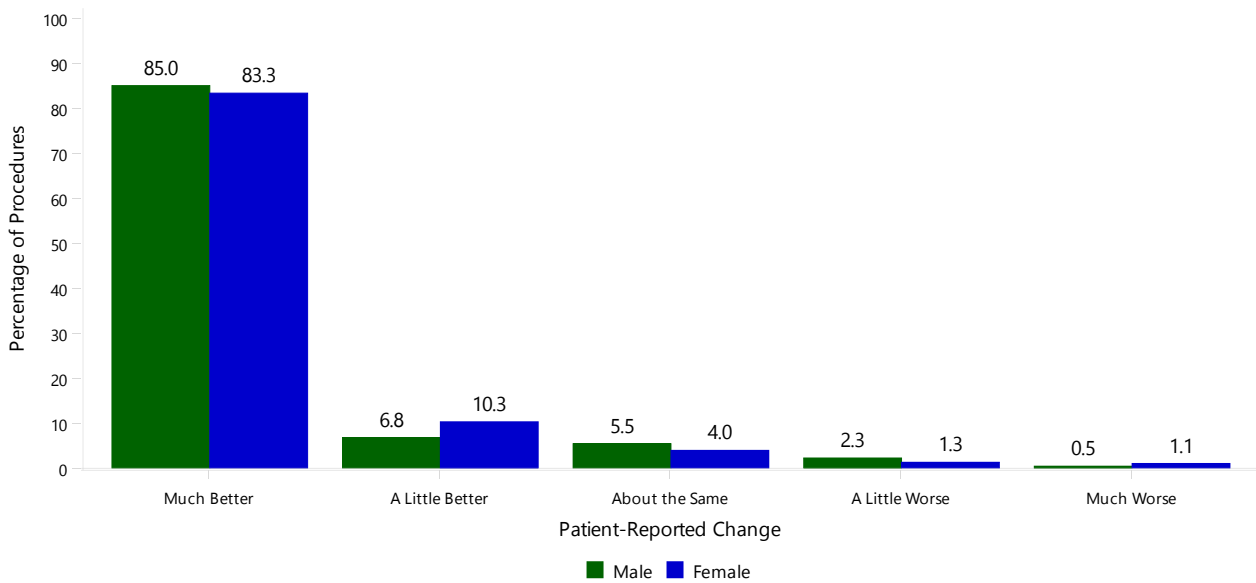
Note: Restricted to modern prostheses

Table SPR61 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)

Gender	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Male	187	85.0	37.3	15	6.8	27.8	12	5.5	44.4	5	2.3	50.0	1	0.5	20.0	220	100.0	36.8
Female	315	83.3	62.7	39	10.3	72.2	15	4.0	55.6	5	1.3	50.0	4	1.1	80.0	378	100.0	63.2
TOTAL	502	83.9	100.0	54	9.0	100.0	27	4.5	100.0	10	1.7	100.0	5	0.8	100.0	598	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR69 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis OA)



Note: Restricted to modern prostheses

PRIMARY TOTAL STEMMED REVERSE SHOULDER REPLACEMENT FOR ROTATOR CUFF ARTHROPATHY

PATIENT CHARACTERISTICS

EQ-VAS and EQ-5D-5L

The mean EQ-VAS score increased by just over 5 points following reverse shoulder replacement for rotator cuff arthropathy (Table SPR62). Scores before and 6 months after surgery are shown in Figure SPR70. The percentage of patients who reported being better, worse, or no different post-operatively compared to their pre-operative response for each of the EQ-5D domains and the EQ-VAS is shown in Figure SPR71.

The EQ-VAS score for gender is shown in Table SPR63 and Figure SPR72 and for age in Table SPR64 and Figure SPR73.

Pre-operative mean EQ-VAS decreases with increasing ASA score. The mean change in score was similar for ASA 2 and 3 (Table SPR65 and Figure SPR74).

The mean EQ-VAS assessment before surgery is lower in obese class 2 and 3 patients compared to pre-obese and obese class 1 patients. Obese class 2 and 3 patients also have a smaller change following surgery (Table SPR66 and Figure SPR75).

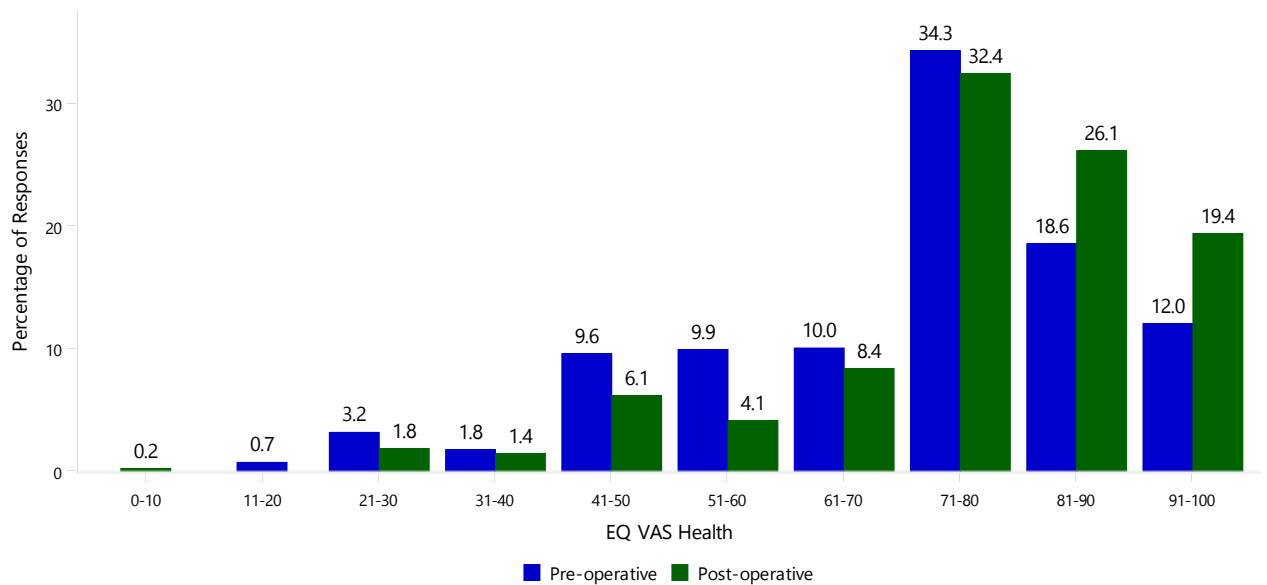
Glenoid morphology does not impact on pre- or post-operative EQ-VAS (Table SPR67 and Figure SPR76).

Table SPR62 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Stemmed Reverse	857	71.79±17.72	75.00 (60.00, 85.00)	490	77.45±16.01	80.00 (74.00, 90.00)

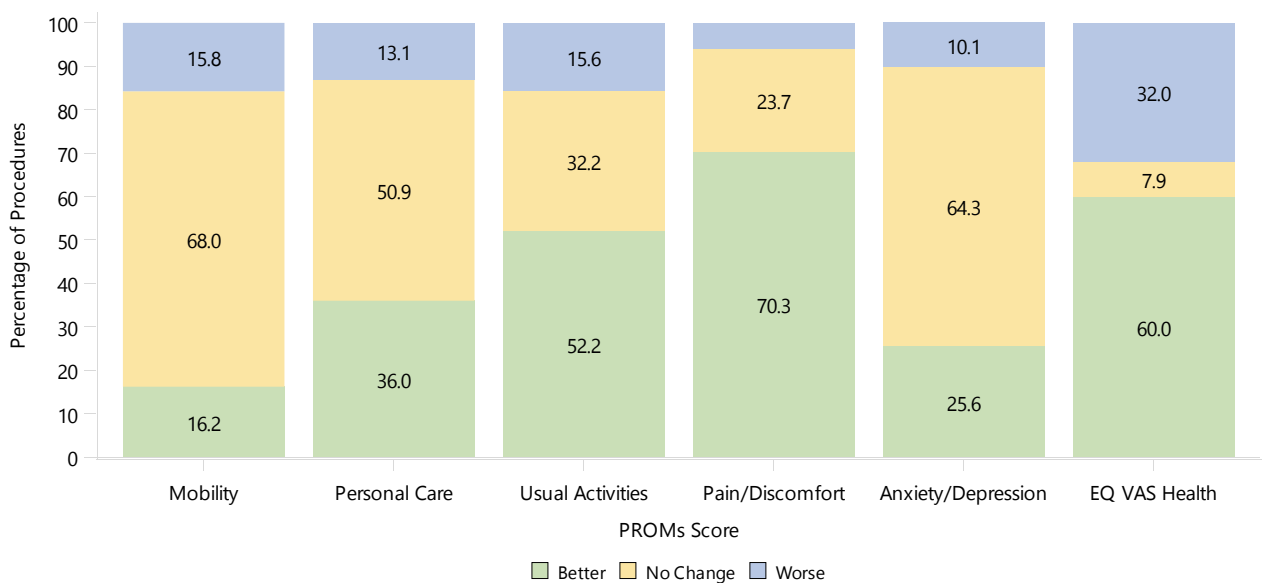
Note: Restricted to modern prostheses

Figure SPR70 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses

Figure SPR71 Change in EQ-5D-5L Domain Score and EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)



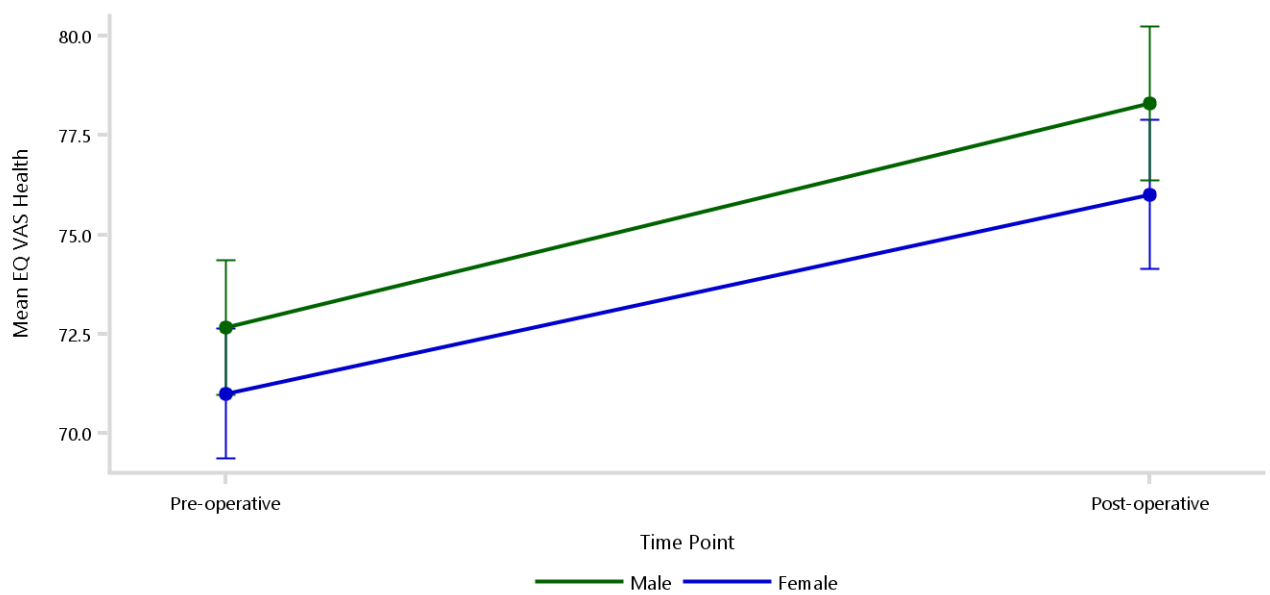
Note: Restricted to modern prostheses

Table SPR63 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)

Gender	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Male	411	72.66 (70.96, 74.36)	236	78.31 (76.36, 80.25)	5.64 (3.57, 7.72)
Female	446	71.00 (69.36, 72.63)	254	76.02 (74.15, 77.89)	5.02 (3.03, 7.01)

Note: Restricted to modern prostheses
Adjusted for age

Figure SPR72 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)



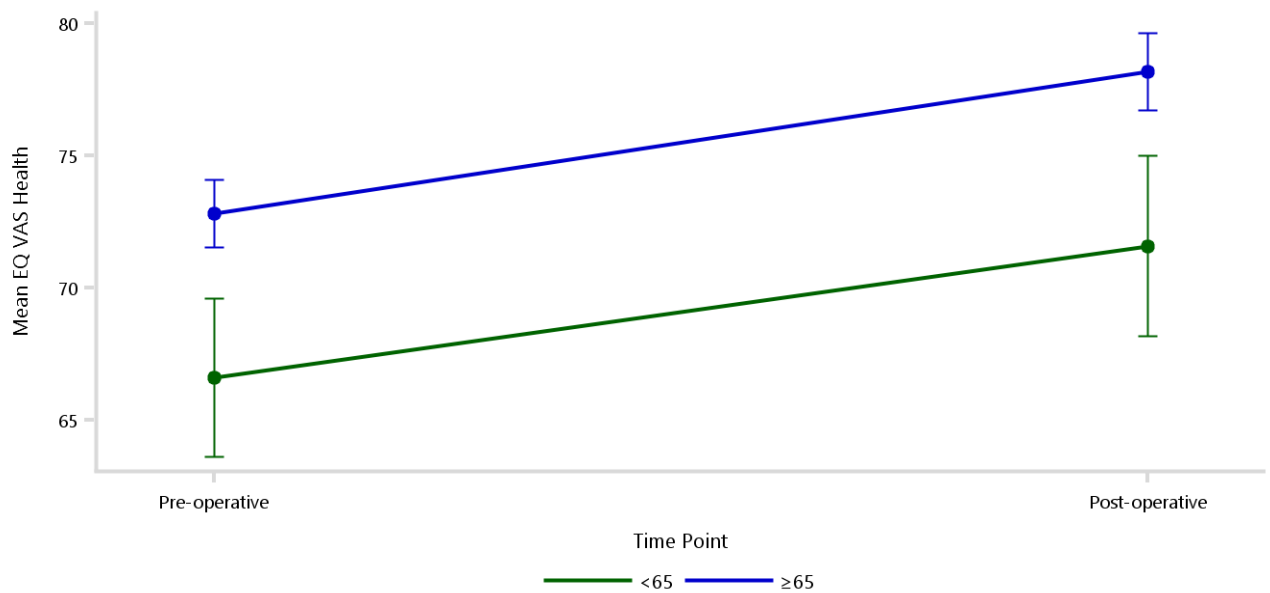
Note: Restricted to modern prostheses
Adjusted for age

Table SPR64 Mean Pre-operative and Post-operative EQ VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)

Age	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
<65	132	66.60 (63.61, 69.58)	76	71.58 (68.17, 74.98)	4.98 (1.34, 8.62)
≥65	725	72.80 (71.53, 74.07)	414	78.19 (76.73, 79.64)	5.39 (3.82, 6.95)

Note: Restricted to modern prostheses
Adjusted for gender

Figure SPR73 Mean Pre-operative and Post-operative EQ VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)



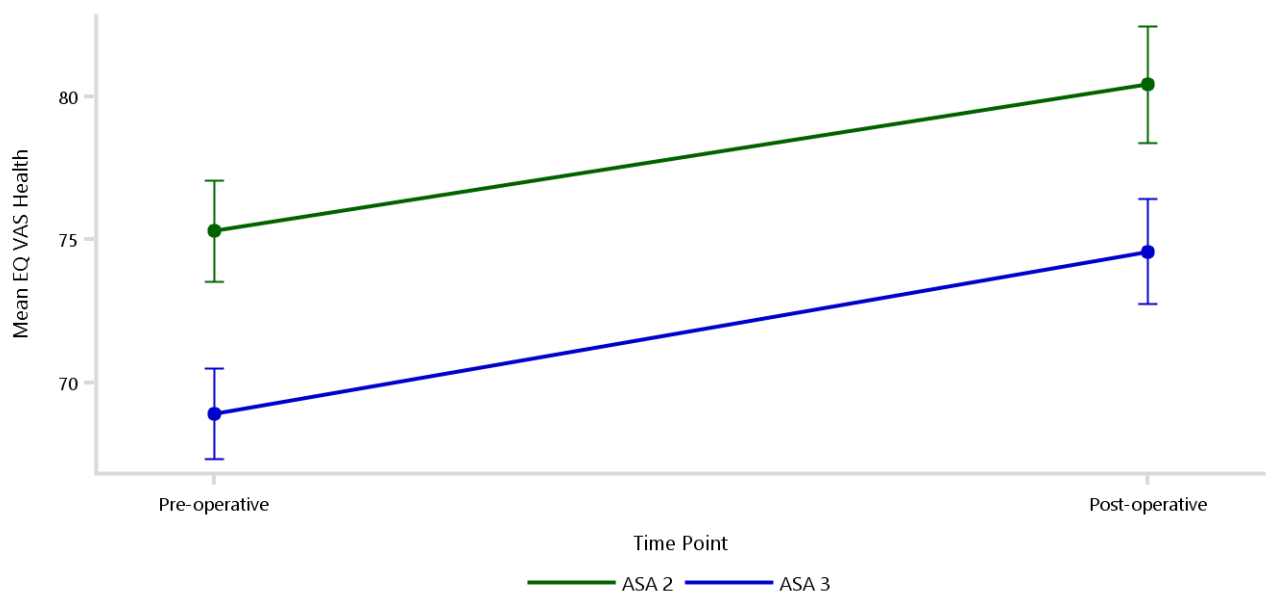
Note: Restricted to modern prostheses
Adjusted for gender

Table SPR65 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis Rotator Cuff Arthropathy)

ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 2	363	75.31 (73.55, 77.08)	207	80.44 (78.40, 82.47)	5.12 (2.94, 7.31)
ASA 3	450	68.90 (67.31, 70.49)	249	74.59 (72.74, 76.44)	5.69 (3.70, 7.68)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Figure SPR74 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Table SPR66 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis Rotator Cuff Arthropathy)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Normal (18.50-24.99)	141	73.65 (70.74, 76.55)	81	77.84 (74.54, 81.13)	4.19 (0.67, 7.71)
Pre Obese (25.00-29.99)	283	72.91 (70.85, 74.97)	156	79.09 (76.71, 81.48)	6.18 (3.65, 8.72)
Obese Class 1 (30.00-34.99)	239	71.51 (69.29, 73.74)	136	77.67 (75.13, 80.21)	6.16 (3.43, 8.88)
Obese Class 2 or 3 (≥ 35.00)	183	69.15 (66.56, 71.73)	112	72.92 (70.07, 75.78)	3.78 (0.76, 6.80)

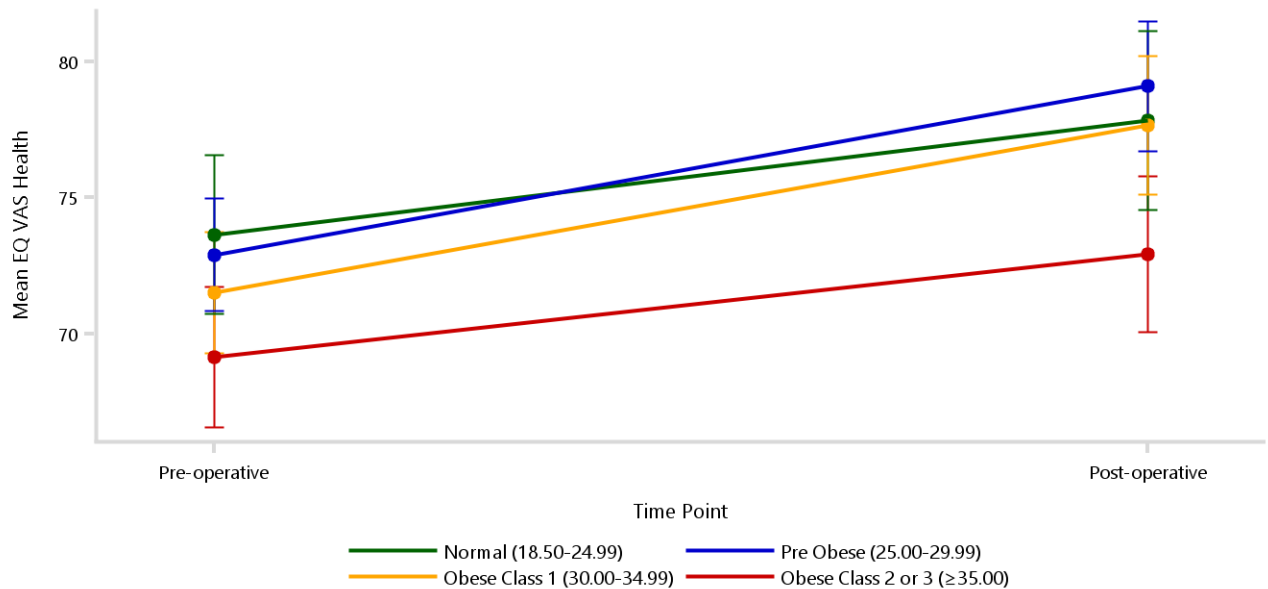
Note: Restricted to modern prostheses

Adjusted for age and gender

Due to a small number of procedures, the BMI categories obese class 2 and obese class 3 have been combined

Only BMI categories with >40 pre-operative and post-operative responses have been included

Figure SPR75 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses

Adjusted for age and gender

Due to a small number of procedures, the BMI categories obese class 2 and obese class 3 have been combined

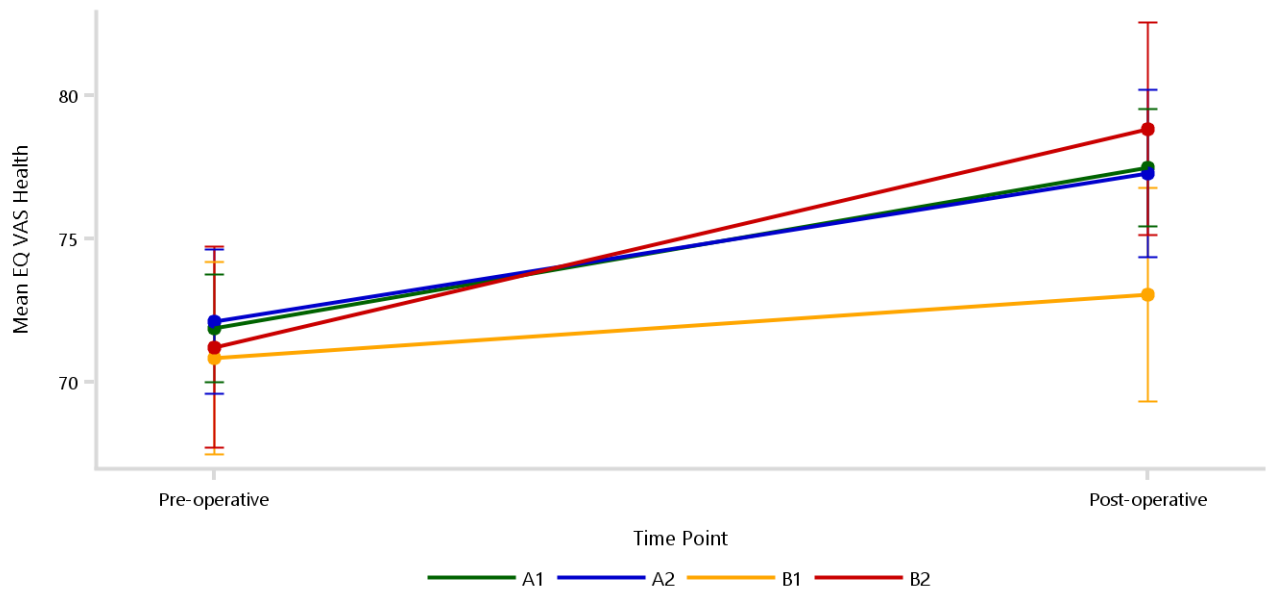
Only BMI categories with >40 pre-operative and post-operative responses have been included

Table SPR67 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis Rotator Cuff Arthropathy)

Glenoid Morphology	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
A1	352	71.86 (69.99, 73.73)	212	77.47 (75.44, 79.51)	5.61 (3.44, 7.78)
A2	193	72.10 (69.58, 74.62)	101	77.29 (74.37, 80.21)	5.19 (2.08, 8.30)
B1	108	70.82 (67.46, 74.18)	63	73.04 (69.32, 76.76)	2.22 (-1.76, 6.21)
B2	100	71.21 (67.71, 74.71)	64	78.83 (75.12, 82.55)	7.63 (3.68, 11.58)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Figure SPR76 Mean Pre-operative and Post-operative EQ-VAS Health in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Oxford Score

The Oxford Should scores (OSS) before and after reverse shoulder replacement undertaken for rotator cuff arthropathy are provided in Table SPR68.

The mean pre-operative and post-operative OSS by gender is shown in Table SPR69 and Figure SPR77 and by age in Table SPR70 and Figure SPR78.

Pre-operative mean Oxford scores decrease with each increase in ASA score. Post-operative improvement is similar (Table SPR71 and Figure SPR79).

Pre-operative mean Oxford score decreases with increasing BMI category. Pre-obese and obese patients have similar changes in score post-operatively (Table SPR72 and Figure SPR80).

Glenoid morphology does not affect the preoperative OSS although currently there are too few procedures with glenoid morphology C for analysis. The post-operative improvement is similar for all glenoid morphologies (Table SPR73 and Figure SPR81).

Table SPR68 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)

Class	N	Pre-operative		N	Post-operative	
		Mean±SD	Median (Q1, Q3)		Mean±SD	Median (Q1, Q3)
Total Stemmed Reverse	851	23.91±9.02	24.00 (18.00, 30.00)	486	37.50±8.64	39.00 (34.00, 44.00)

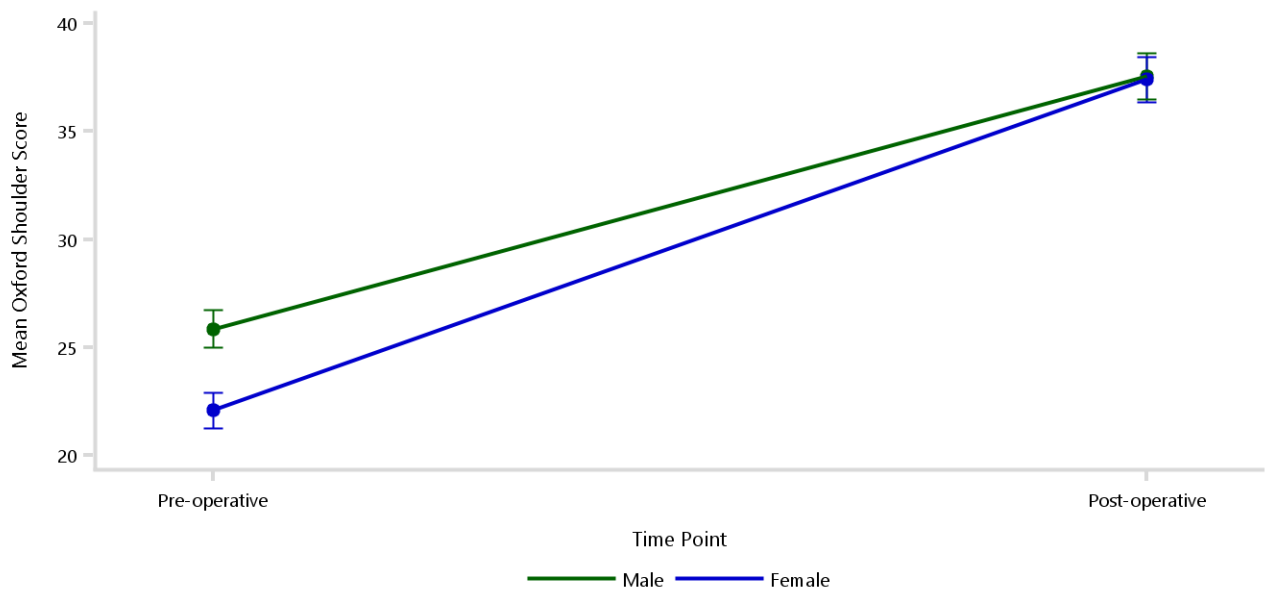
Note: Restricted to modern prostheses

Table SPR69 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)

Gender	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Male	408	25.86 (25.00, 26.72)	236	37.54 (36.46, 38.61)	11.68 (10.49, 12.87)
Female	443	22.09 (21.26, 22.91)	250	37.40 (36.36, 38.45)	15.32 (14.17, 16.47)

Note: Restricted to modern prostheses
Adjusted for age

Figure SPR77 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)



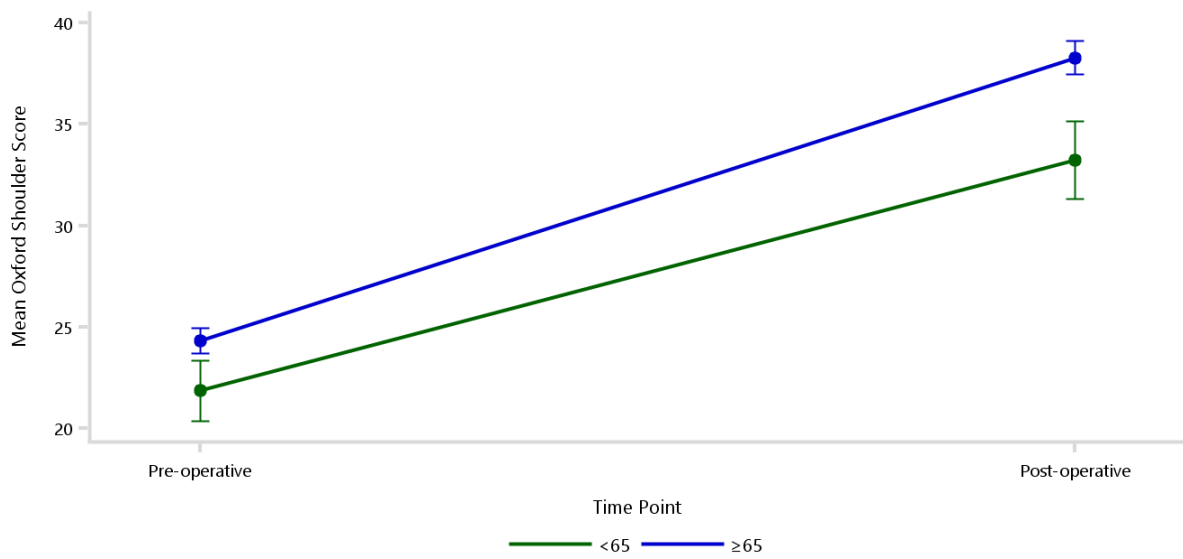
Note: Restricted to modern prostheses
Adjusted for age

Table SPR70 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)

Age	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
<65	132	21.86 (20.36, 23.36)	74	33.24 (31.32, 35.16)	11.38 (9.25, 13.51)
≥65	719	24.33 (23.69, 24.97)	412	38.28 (37.47, 39.09)	13.95 (13.04, 14.86)

Note: Restricted to modern prostheses
Adjusted for gender

Figure SPR78 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)



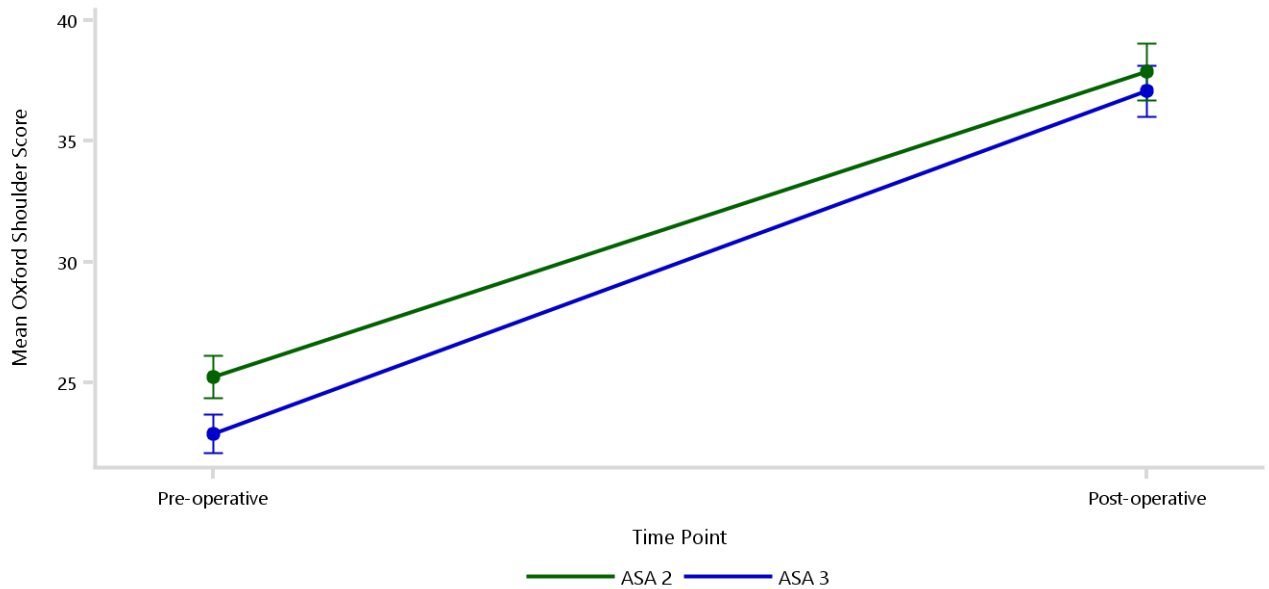
Note: Restricted to modern prostheses
Adjusted for gender

Table SPR71 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis Rotator Cuff Arthropathy)

ASA Score	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
ASA 2	363	25.23 (24.34, 26.13)	204	37.87 (36.69, 39.05)	12.63 (11.35, 13.92)
ASA 3	443	22.88 (22.07, 23.69)	248	37.07 (36.00, 38.14)	14.19 (13.03, 15.36)

Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Figure SPR79 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by ASA Score (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses
 Adjusted for age and gender
 Only ASA categories with >40 pre-operative and post-operative responses have been included

Table SPR72 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis Rotator Cuff Arthropathy)

BMI Category	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
Normal (18.50-24.99)	140	24.59 (23.13, 26.06)	82	36.93 (35.10, 38.77)	12.34 (10.31, 14.37)
Pre Obese (25.00-29.99)	283	24.83 (23.80, 25.87)	153	38.53 (37.19, 39.88)	13.70 (12.22, 15.18)
Obese Class 1 (30.00-34.99)	238	23.86 (22.73, 24.98)	134	36.44 (35.00, 37.87)	12.58 (10.99, 14.16)
Obese Class 2 or 3 (≥ 35.00)	179	22.20 (20.89, 23.51)	112	37.83 (36.24, 39.42)	15.63 (13.87, 17.39)

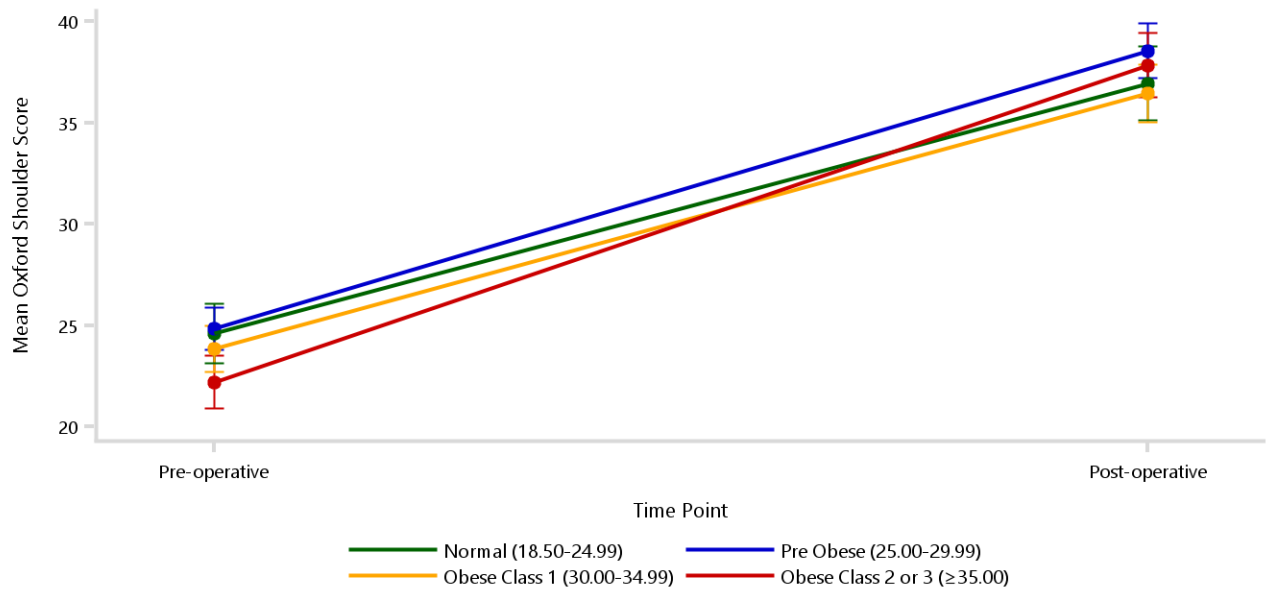
Note: Restricted to modern prostheses

Adjusted for age and gender

Due to a small number of procedures, the BMI categories obese class 2 and obese class 3 have been combined

Only BMI categories with >40 pre-operative and post-operative responses have been included

Figure SPR80 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by BMI Category (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses

Adjusted for age and gender

Due to a small number of procedures, the BMI categories obese class 2 and obese class 3 have been combined

Only BMI categories with >40 pre-operative and post-operative responses have been included

Table SPR73 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis Rotator Cuff Arthropathy)

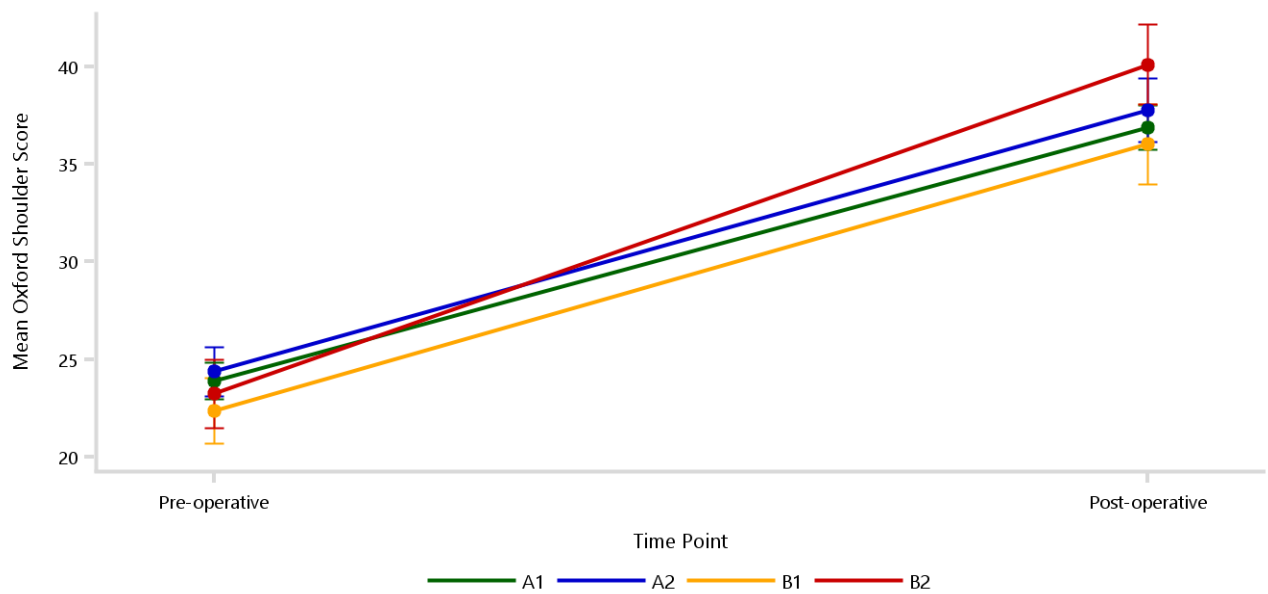
Glenoid Morphology	Pre-operative		Post-operative		Change in Score
	N	Mean (95% CI)	N	Mean (95% CI)	
A1	347	23.89 (22.95, 24.83)	209	36.87 (35.73, 38.01)	12.98 (11.72, 14.24)
A2	193	24.39 (23.13, 25.64)	100	37.74 (36.11, 39.38)	13.36 (11.56, 15.16)
B1	107	22.38 (20.69, 24.07)	63	36.02 (33.95, 38.08)	13.63 (11.34, 15.93)
B2	100	23.26 (21.51, 25.01)	64	40.10 (38.04, 42.15)	16.84 (14.56, 19.12)

Note: Restricted to modern prostheses

Adjusted for age and gender

Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Figure SPR81 Mean Pre-operative and Post-operative Oxford Shoulder Score in Primary Total Stemmed Reverse Shoulder Replacement by Glenoid Morphology (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses

Adjusted for age and gender

Only glenoid morphologies with >40 pre-operative and post-operative responses have been included

Patient Satisfaction and Change

Patients were surveyed at 6 months post-operatively on how satisfied they were with their primary total stemmed reverse shoulder replacement for rotator cuff arthropathy, and on their perceived change in their shoulder after surgery.

After this procedure, 58.5% of patients are very satisfied and a further 26.7% are satisfied (Table SPR74 and Figure SPR82).

Procedure satisfaction by age and gender are presented in Table SPR75, Figure SPR83, Table SPR76 and Figure SPR84.

There was a high percentage (90.7%) of patients who rated their shoulder as much better and a little better (Table SPR77 and Figure SPR85).

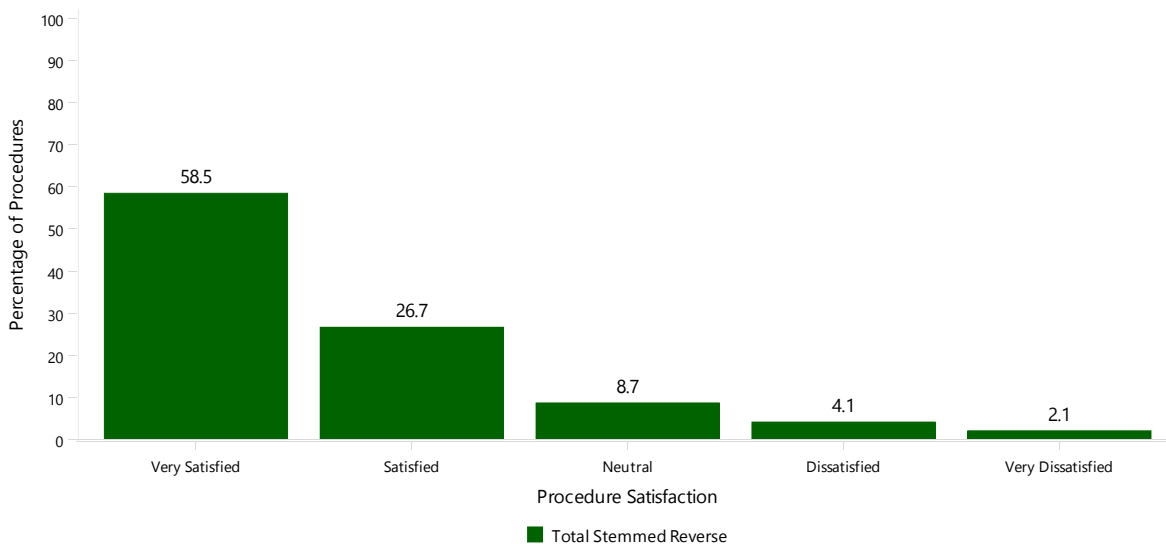
Patient-reported change by age and gender are presented in Table SPR78, Figure SPR86, Table SPR79, Figure SPR87.

Table SPR74 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)

Class	Very Satisfied		Satisfied		Neutral		Dissatisfied		Very Dissatisfied		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Stemmed Reverse	283	58.5	129	26.7	42	8.7	20	4.1	10	2.1	484	100.0

Note: Restricted to modern prostheses

Figure SPR82 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)



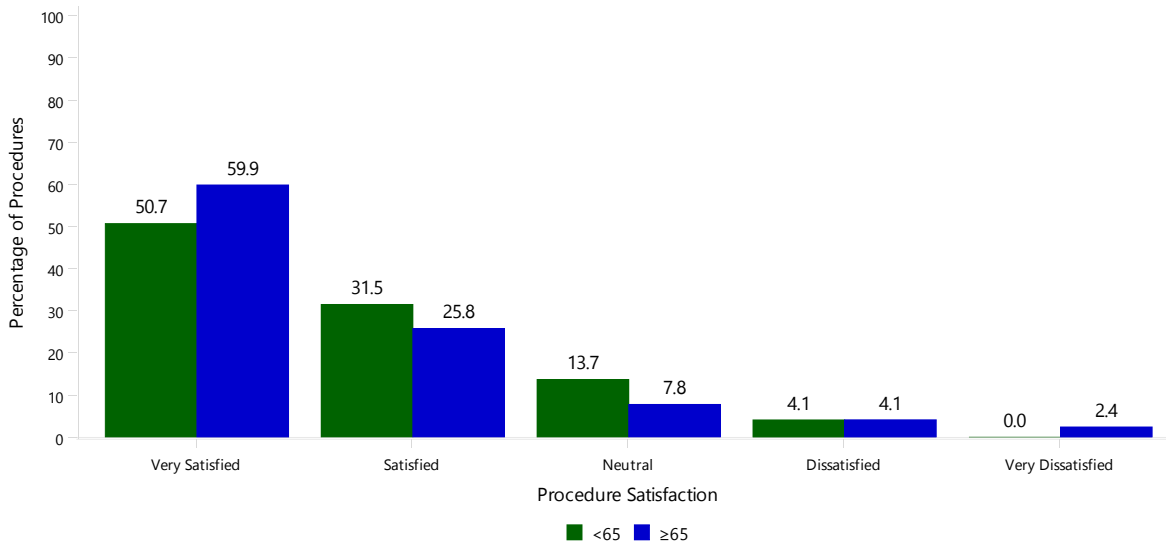
Note: Restricted to modern prostheses

Table SPR75 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)

Age	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row %	Col%	N	Row%	Col%
<65	37	50.7	13.1	23	31.5	17.8	10	13.7	23.8	3	4.1	15.0	.	.	.	73	100.0	15.1
≥65	246	59.9	86.9	106	25.8	82.2	32	7.8	76.2	17	4.1	85.0	10	2.4	100.0	411	100.0	84.9
TOTAL	283	58.5	100.0	129	26.7	100.0	42	8.7	100.0	20	4.1	100.0	10	2.1	100.0	484	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR83 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)



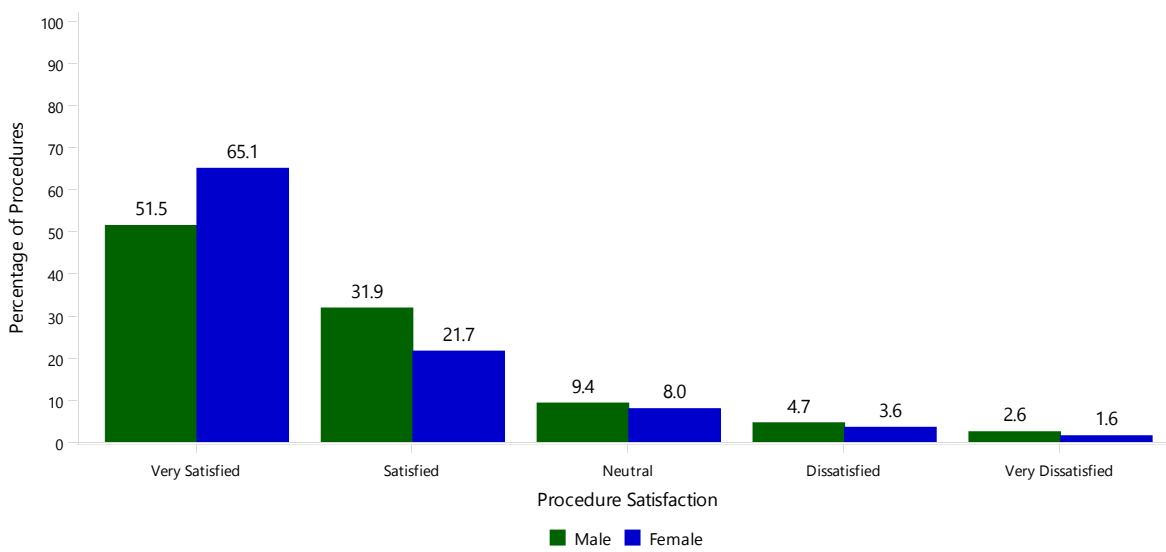
Note: Restricted to modern prostheses

Table SPR76 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)

Gender	Very Satisfied			Satisfied			Neutral			Dissatisfied			Very Dissatisfied			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Male	121	51.5	42.8	75	31.9	58.1	22	9.4	52.4	11	4.7	55.0	6	2.6	60.0	235	100.0	48.6
Female	162	65.1	57.2	54	21.7	41.9	20	8.0	47.6	9	3.6	45.0	4	1.6	40.0	249	100.0	51.4
TOTAL	283	58.5	100.0	129	26.7	100.0	42	8.7	100.0	20	4.1	100.0	10	2.1	100.0	484	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR84 Procedure Satisfaction in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)



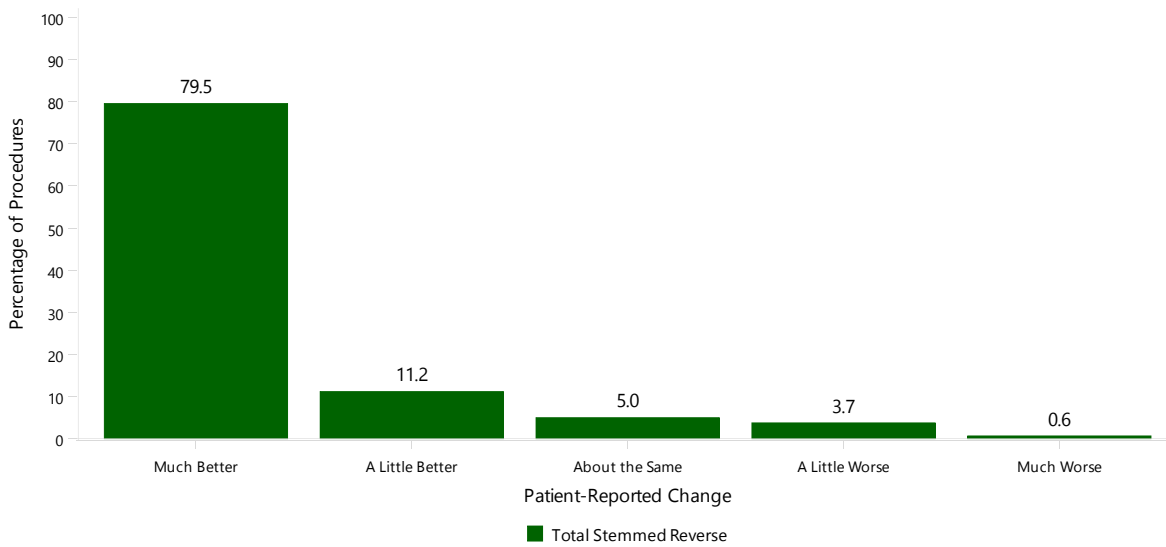
Note: Restricted to modern prostheses

Table SPR77 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)

Class	Much Better		A Little Better		About the Same		A Little Worse		Much Worse		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Total Stemmed Reverse	385	79.5	54	11.2	24	5.0	18	3.7	3	0.6	484	100.0

Note: Restricted to modern prostheses

Figure SPR85 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement (Primary Diagnosis Rotator Cuff Arthropathy)



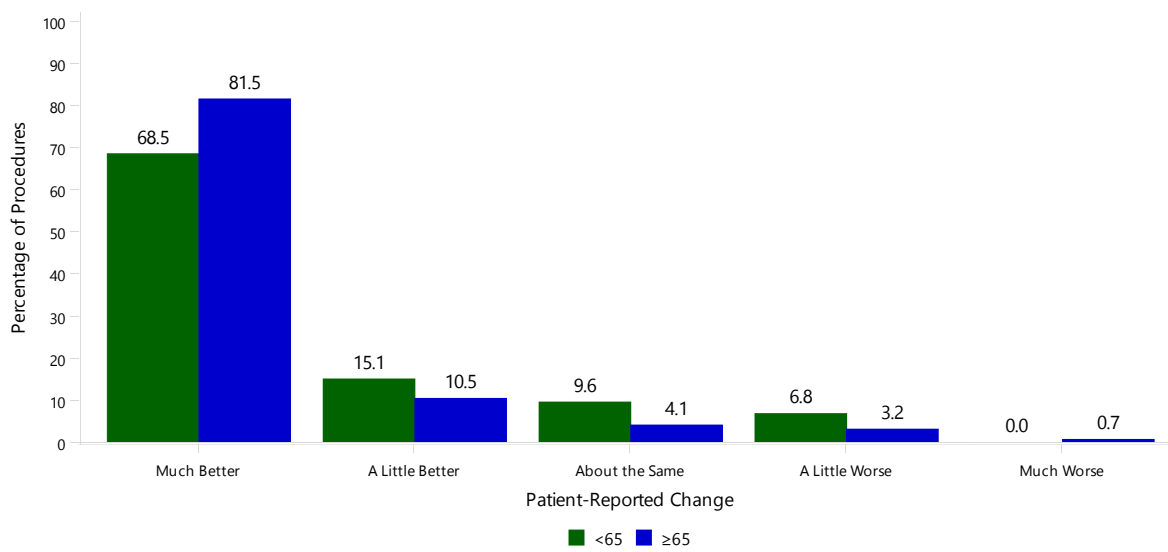
Note: Restricted to modern prostheses

Table SPR78 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)

Age	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
<65	50	68.5	13.0	11	15.1	20.4	7	9.6	29.2	5	6.8	27.8	.	.	.	73	100.0	15.1
≥65	335	81.5	87.0	43	10.5	79.6	17	4.1	70.8	13	3.2	72.2	3	0.7	100.0	411	100.0	84.9
TOTAL	385	79.5	100.0	54	11.2	100.0	24	5.0	100.0	18	3.7	100.0	3	0.6	100.0	484	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR86 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Age (Primary Diagnosis Rotator Cuff Arthropathy)



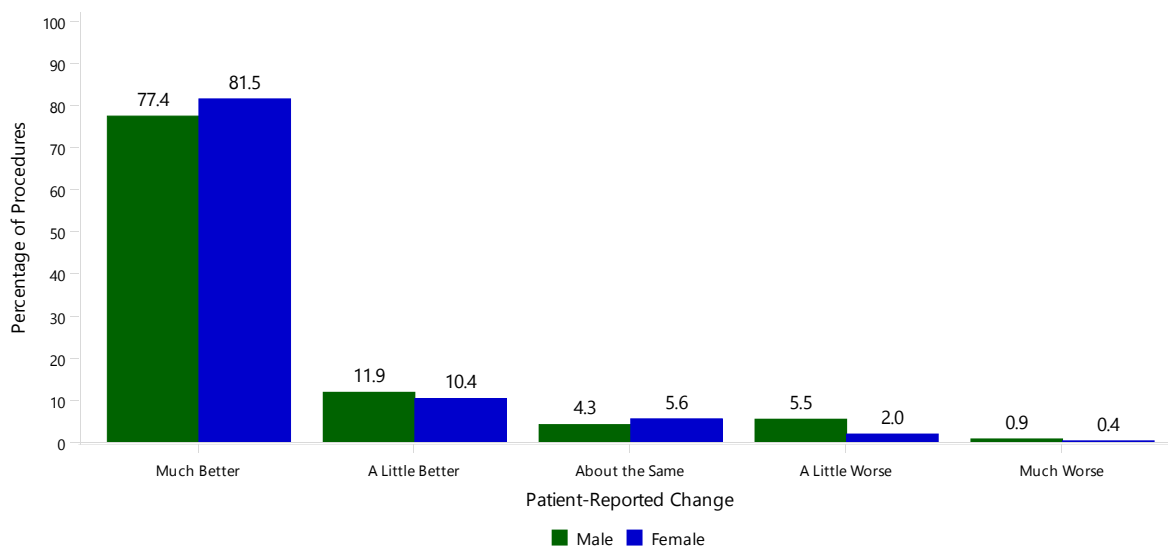
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Table SPR79 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)

Gender	Much Better			A Little Better			About the Same			A Little Worse			Much Worse			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Male	182	77.4	47.3	28	11.9	51.9	10	4.3	41.7	13	5.5	72.2	2	0.9	66.7	235	100.0	48.6
Female	203	81.5	52.7	26	10.4	48.1	14	5.6	58.3	5	2.0	27.8	1	0.4	33.3	249	100.0	51.4
TOTAL	385	79.5	100.0	54	11.2	100.0	24	5.0	100.0	18	3.7	100.0	3	0.6	100.0	484	100.0	100.0

Note: Restricted to modern prostheses

Figure SPR87 Patient-Reported Change in Primary Total Stemmed Reverse Shoulder Replacement by Gender (Primary Diagnosis Rotator Cuff Arthropathy)



Note: Restricted to modern prostheses

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