Supplementary data

Table 1. List of medications for the management of diabetes mellitus reported by research nurse at preoperative clinic assessment

Exenatide
Gliclazide
Glucophage ®
Humulin ®
Insulatard ®
Metformin
Mixtard ® (or Human Mixtard ®)
Novorapid ®

Table 3. Outcomes by diabetic status

	Nondiabetic patients n = 523		Diabetic patients n = 64		Unadjusted model p-value	Adjusted model [a] p-value	Adjusted model [b] p-value
	n	Summary	n	Summary			
Inpatient period:							
Length of hospitalization (days), median (IQR)	523	4 (4–6)	64	5 (4–7)	0.004 [c]	0.02 [d]	0.3 [d]
VAS Pain [e] on movement in operated joint, mean (SD)	515	44 (19)	62	50 (20)	0.03	0.06	0.4
VAS Pain at rest in operated joint, mean (SD)	509	32 (20)	62	40 (20)	0.004	0.01	0.2
At 3-month assessment:							
Infection since surgery, n (%)	6	(1.2)	1	(1.6)	0.6		
Dislocation since surgery, n (%)	2	(0.4)	0	(0.0)	–		
Deep vein thrombosis since surgery, n (%)	1	(0.2)	1	(0.2)	0.2		
Pulmonary embolism since surgery, n (%)	4	(0.8)	0	(0.0)	0.9		
Sciatic nerve damage since surgery, n (%)	0	(0.0)	0	(0.0)	–		
Femoral nerve damage since surgery, n (%)	0	(0.0)	0	(0.0)	–		
Obturator nerve damage since surgery, n (%)	0	(0.0)	0	(0.0)	–		
Hospital readmission because of operated joint, n (%)	11	(2.1)	1	(1.6)	0.8		
Further surgery on operated joint, n (%)	10	(1.9)	1	(1.6)	0.9		
WOMAC [f] Pain, mean (SD)	470	79 (20)	57	76 (20)	0.3		
WOMAC Function, mean (SD)	438	77 (19)	52	77 (18)	0.9		
WOMAC Stiffness, mean (SD)	442	70 (20)	53	69 (24)	0.7		
WOMAC Total, mean (SD)	425	77 (18)	51	76 (18)	0.8		
At 6-month assessment:							
WOMAC Pain, mean (SD)	469	83 (19)	59	80 (21)	0.2		
WOMAC Function, median (IQR)	429	88 (71–96)	52	82 (67–94)	0.1		
WOMAC Stiffness, mean (SD)	423	76 (21)	51	73 (20)	0.5		
WOMAC Total, mean (SD)	416	82 (18)	49	77 (20)	0.08	0.2	0.9
At 12-month assessment:							
Infection since surgery, n (%)	11	(2.1)	1	(1.6)	0.8		
Dislocation since surgery, n (%)	2	(0.4)	0	(0.0)	–		
Deep vein thrombosis since surgery, n (%)	12	(2.3)	2	(3.1)	0.6		
Pulmonary embolism since surgery, n (%)	10	(1.9)	1	(1.6)	1.0		
Sciatic nerve damage since surgery, n (%)	5	(1.0)	1	(1.6)	0.5		
Femoral nerve damage since surgery, n (%)	5	(1.0)	1	(1.6)	0.5		
Obturator nerve damage since surgery, n (%)	4	(0.8)	1	(1.6)	0.4		
Hospital readmission because of operated joint, n (%)	34	(6.5)	5	(7.8)	0.6		
Further surgery on operated joint, n (%)	22	(4.2)	4	(6.2)	0.3		
Number of inpatient stays, median (IQR)	493	0 (0–0)	58	0 (0–0)	0.2 [c]		
Number of day case visits, median (IQR)	493	0 (0–0)	58	0 (0–0)	0.4 [c]		
Number of outpatient visits, median (IQR)	493	2 (1–3)	58	2 (1–3)	0.8 [c]		
WOMAC Pain, median (IQR)	493	95 (75–100)	58	85 (70–95)	0.01 [c]	0.03 [d]	0.5 [d]
WOMAC Function, median (IQR)	468	90 (73–97)	55	79 (58–93)	0.02 [c]	0.08 [d]	0.8 [d]
WOMAC Stiffness, median (IQR)	467	88 (75–100)	54	75 (50–100)	0.02 [c]	0.07 [d]	0.5 [d]
WOMAC Total, median (IQR)	456	90 (75–97)	51	81 (60–93)	0.01 [c]	0.05 [d]	0.7 [d]

IQR: interquartile range
[a] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention.
[b] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention, BMI, and number of comorbidities (FCI).
[c] Mann–Whitney test, otherwise Student's t-test or Fisher's exact test.
[d] Ordered logistic regression model.
[e] Pain Visual Analogue Scale (0–100 best to worst).
[f] Western Ontario and McMaster Universities Osteoarthritis Index (0–100 worst to best pain, function, stiffness, or total score).

Table 4. Multiple imputation-outcomes by diabetic status

	Nondiabetic patients n = 523	Diabetic patients n = 64	Unadjusted model p-value	Adjusted model [a] p-value	Adjusted model [b] p-value
Inpatient period:					
VAS Pain [e] on movement in operated joint, mean (SD)	44 (19)	50 (20)	0.02	0.04	0.4
VAS Pain at rest in operated joint, mean (SD)	32 (20)	40 (20)	0.002	0.008	0.1
At 3-month assessment:					
WOMAC [f] Pain, mean (SD)	78 (20)	75 (20)	0.3		
WOMAC Function, mean (SD)	76 (19)	75 (19)	0.7		
WOMAC Stiffness, mean (SD)	69 (21)	68 (24)	0.6		
WOMAC Total, mean (SD)	76 (18)	75 (18)	0.6		
At 6-month assessment:					
WOMAC Pain, mean (SD)	83 (19)	79 (21)	0.1		
WOMAC Function, median (IQR)	86 (68–95)	78 (59–93)	0.07 [c]	0.2 [c]	0.9 [c]
WOMAC Stiffness, mean (SD)	75 (21)	73 (21)	0.5		
WOMAC Total, mean (SD)	80 (18)	75 (21)	0.03	0.08	0.8
At 12-month assessment:					
Number of inpatient stays, median (IQR)	0 (0–0)	0 (0,0)	0.1 [d]		
Number of day case visits, median (IQR)	0 (0–0)	0 (0,0)	0.4 [d]		
Number of outpatient visits, median (IQR)	2 (1–3)	2 (1–3)	0.8 [d]		
WOMAC Pain, median (IQR)	95 (75–100)	85 (70–96)	0.02 [c]	0.02 [d]	0.5 [d]
WOMAC Function, median (IQR)	89 (71–97)	79 (58–92)	0.02 [c]	0.06 [d]	0.8 [d]
WOMAC Stiffness, median (IQR)	79 (75–100)	75 (50–96)	0.06 [c]	0.1 [d]	0.7 [d]
WOMAC Total, median (IQR)	89 (74–97)	80 (59–93)	0.01 [c]	0.04 [d]	0.6 [d]

[a] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention.
[b] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention, BMI, and number of comorbidities (FCI).
[c] Ordered logistic regression model.
[d] Poisson regression model.
[e] Pain Visual Analogue Scale (0–100 best to worst).
[f] Western Ontario and McMaster Universities Osteoarthritis Index (0–100 worst to best pain, function, stiffness or total score).

Table 5. Preoperative characteristics of diabetics patients (n = 64) by HbA1c status

	HbA1c ≤ 7% n = 39	HbA1c > 7% n = 25
Trial intervention, n		
Injection	18	13
Standard care	21	12
Primary total joint replacement, n		
Hip	17	7
Knee	22	18
Age, mean, SD	70 (8)	70 (7)
Sex, n		
Female	17	13
Male	22	12
BMI, mean, SD	34 (6)	34 (7)
≤ 30, n	12	9
> 30, n	27	16
EQ VAS [a], n	36	25
mean (SD)	62 (20)	67 (18)
EQ-5D Score [b], n	35	25
mean, SD	34 (0.31)	41 (0.31)
FCI [c] (number of comorbidities), n		
< 2	8	6
2	7	5
3	7	6
> 3	17	8
HADS [d] Total, n	37	25
mean (SD)	13 (6)	13 (6)
WOMAC [e] Pain, n	39	25
mean (SD)	41 (14)	41 (17)
WOMAC Function, n	35	24
mean (SD)	42 (16)	45 (18)
WOMAC Stiffness, n	36	25
mean (SD)	42 (14)	48 (23)
WOMAC Total, n	34	24
mean (SD)	43 (13)	45 (16)
HbA1c mmol/mol, n	39	25
mean (SD)	45 (5)	66 (10)
mean % (SD)	6 (0.4)	8.2 (1)
Treated for diabetes, n		
None	21	5
Treated	18	20
If treated, type of management, n		
Tablets	17	14
Tablets + insulin	1	5
Tablets + exenatide	0	1

[a] EQ visual analogue scale (0–100, worst to best health state).
[b] EQ-5D 3L descriptive system.
[c] Modified Functional Co-morbidity Index without BMI and diabetes diagnoses (categorized sum of the 16 remaining diagnoses).
[d] Hospital Anxiety and Depression Scale with anxiety and depression scores combined (0–42, best to worst distress state).
[e] Western Ontario and McMaster Universities Osteoarthritis Index (0–100 worst to best pain, function, stiffness or total score).

Table 6. Outcomes by HbA1c status (≤ 7% vs. > 7%) for diabetic patients (n = 64)

	HbA1c ≤ 7% n = 39		HbA1c > 7% n = 25		Unadjusted model p-value	Adjusted model [a] p-value	Adjusted model [b] p-value
	n	Summary	n	Summary			
Inpatient period:							
Length of hospitalization (days), median (IQR)	39	5 (4–8)	25	5 (4–6)	0.3 [c]		
VAS [d] Pain on movement in operated join, mean (SD)	38	5 (2)	24	5 (2)	0.4		
VAS Pain at rest in operated join, mean (SD)	38	4 (2)	24	4 (2)	0.5		
Postoperative HbA1c (mmol/mol), mean (SD)	37	45 (7.0)	24	70 (17.1)	< 0.001	< 0.001	< 0.001
Postoperative HbA1c (%), mean (SD)	37	6.2 (0.6)	24	8.5 (1.6)	< 0.001	< 0.001	< 0.001
At 3-month assessment:							
WOMAC [e] Pain, mean (SD)	34	80 (18)	23	69 (22)	0.04	0.2	0.1
WOMAC Function, mean (SD)	32	79 (17)	20	74 (20)	0.4		
WOMAC Stiffness, mean (SD)	32	73 (22)	21	61 (26)	0.07	0.3	0.2
WOMAC Total, mean (SD)	32	79 (17)	20	73 (19)	0.2		
At 6-month assessment:							
WOMAC Pain, median (IQR)	35	90 (70–100)	24	78 (60–88)	0.01 [c]	0.1 f	0.03 [f]
WOMAC Function, median (IQR)	30	88 (72–94)	22	77 (47–83)	0.1 [c]		
WOMAC Stiffness, mean (SD)	29	78 (18)	22	68 (21)	0.07	0.3	0.05
WOMAC Total, median (IQR))	27	89 (71–94)	22	78 (53–86)	0.1 [c]		
At 12-month assessment:							
Number of complications, median (IQR)	34	0 (0–0)	24	0 (0–0)	0.9 [c]		
Number of inpatient stays, median (IQR)	34	0 (0–0)	24	0 (0–0)	0.8 [c]		
Number of day case visits, median (IQR)	34	0 (0–0)	24	0 (0–0)	0.4 [c]		
Number of outpatient visits, median (IQR)	34	2 (1–3)	24	2 (1–3)	0.8 [c]		
WOMAC Pain, median (IQR)	34	90 (70–100)	24	80 (58–95)	0.1 [c]		
WOMAC Function, median (IQR)	33	81 (58–94)	22	78 (58–91)	0.6 [c]		
WOMAC Stiffness, mean (SD)	33	78 (21)	21	61 (21)	0.005	0.01	0.004
WOMAC Total, median (IQR)h	32	83 (63–93)	20	74 (55–83)	0.2 [c]		

[a] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention.
[b] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention, BMI, and number of comorbidities (FCI).
[c] Mann–Whitney test, otherwise Student's t-test.
[d] Pain Visual Analogue Scale (0–100 best to worst).
[e] Western Ontario and McMaster Universities Osteoarthritis Index (0–100 worst to best pain, function, stiffness, or total score).
[f] Ordered logistic regression model.

Table 7. Multiple imputation-outcomes by HbA1c status (≤ 7% vs. > 7%) for diabetic patients (n = 64)

	HbA1c ≤ 7% n = 39	HbA1c > 7% n = 25	Unadjusted model p-value	Adjusted model [a] p-value	Adjusted model [b] p-value
Inpatient period:					
VAS [e] Pain on movement in operated join, mean (SD)	5 (2)	5 (2)	0.5		
VAS Pain at rest in operated join, mean (SD)	4 (2)	4 (2)	0.7		
Postoperative HbA1c (mmol/mol), mean (SD)	45 (7)	69 (17)	< 0.001	< 0.001	< 0.001
Postoperative HbA1c (%), mean (SD)	6.2 (0.7)	8.5 (1.6)	< 0.001	< 0.001	< 0.001
At 3-month assessment:					
WOMAC [f] Pain, mean (SD)	80 (17)	69 (22)	0.05	0.1	0.08
WOMAC Function, mean (SD)	77 (17)	72 (21)	0.3		
WOMAC Stiffness, mean (SD)	71 (22)	62 (26)	0.2		
WOMAC Total, mean (SD)	77 (17)	71 (20)	0.2		
At 6-month assessment:					
WOMAC Pain, median (IQR)	90 (69–100)	80 (65–88)	0.07 [c]	0.1 [c]	0.05 [c]
WOMAC Function, median (IQR)	82 (61–94)	76 (47–83)	0.5 [c]		
WOMAC Stiffness, mean (SD)	76 (20)	67 (22)	0.1		
WOMAC Total, median (IQR)	85 (65–94)	76 (53–85)	0.3 [c]		
At 12-month assessment:					
Number of inpatient stays, median (IQR)	0 (0–0)	0 (0–0)	0.8 [d]		
Number of day case visits, median (IQR)	0 (0–0)	0 (0–0)	1.0 [d]		
Number of outpatient visits, median (IQR)	2 (1–3)	2 (1–3)	1.0 [d]		
WOMAC Pain, median (IQR)	88 (70–100)	80 (60–95)	0.2 [c]		
WOMAC Function, median (IQR)	81 (59–94)	76 (55–88)	0.5 [c]		
WOMAC Stiffness, mean (SD)	77 (22)	65 (22)	0.03	0.04	0.02
WOMAC Total, median (IQR)	85 (61–93)	75 (56, 86)	0.1 [c]		

[a] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention.
[b] Linear regression model included adjustments for age, sex, site of surgery, and trial intervention, BMI, and number of comorbidities (FCI).
[c] Ordered logistic regression model.
[d] Poisson regression model.
[e] Pain Visual Analogue Scale (0–100 best to worst).
[f] Western Ontario and McMaster Universities Osteoarthritis Index (0–100 worst to best pain, function, stiffness or total score).