Patterns of recovery following knee and hip replacement in an Australian cohort

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Abstract

Most literature reporting the impressive results from knee and hip replacement derives from international data. Few Australian studies have comprehensively compared outcomes after joint replacement up to 1 year. This paper compares the patterns of recovery across physical and patient-centred outcomes following knee or hip replacement in an Australian cohort. One hundred and twenty-two consecutive patients undergoing knee or hip replacement were prospectively followed. Serial assessments were conducted (pre-operatively, and 2, 6, 12, 26 and 52 weeks post-surgery). Joint pain, patient's global improvement, timed mobility, and complications were monitored. English-proficient patients completed WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index) and SF-36v2 (Medical Outcomes Short-Form 36 version 2) questionnaires.

At 1 year, 81% (55 knee, 44 hip) were available for follow-up. Significant, large improvements (up to 254%) were evident for most outcomes. Global improvement was reported by 97%. Recovery for both surgical groups was greatest within the first 26 weeks, but hip patients improved more quickly in most outcomes. Wound disturbances were the most common complication (23 in total, 23%) and 13 patients (13%) were readmitted for complications. Recovery patterns were similar to that observed elsewhere. The physical and patient-centred outcomes provide a useful Australian reference for clinicians of the temporal aspects of recovery as well the differences between hip and knee surgeries. Complication and readmission rates appeared high, possibly partly explained by the rigorous capture method.

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What is known about the topic?

Recovery after knee or hip replacement is generally impressive, with recovery in the first year often more rapid after hip surgery. Following either intervention, however, large improvements are realised across symptom, mobility, function, and health-related quality of life domains, lasting many years after surgery. Consequently, surgery is considered a very cost-effective option for managing severe knee and hip arthritis. Most of the outcome-based literature pertaining to knee and hip replacement surgery is derived from international cohorts.

What does this paper add?

This paper, using an Australian cohort and a battery of outcomes, demonstrates that recovery after knee or hip replacement within the first year is both time and surgery dependent. Thus, the paper not only complements the few local studies that report outcomes after total knee replacement (TKR) or total hip replacement (THR), it provides a useful reference for a range of outcomes for practitioners within the Australian health care system.

What are the implications for practitioners?

The recovery patterns observed reinforce the notion that practitioner — as well as patient — expectations from surgery should be guided by the type of surgery (hip or knee) and time since surgery. This knowledge, in turn, is useful for informing local rehabilitation strategies and benchmarking activities.

MANY LONGITUDINAL cohort studies have been undertaken to describe recovery after total knee replacement (TKR) and total hip replacement

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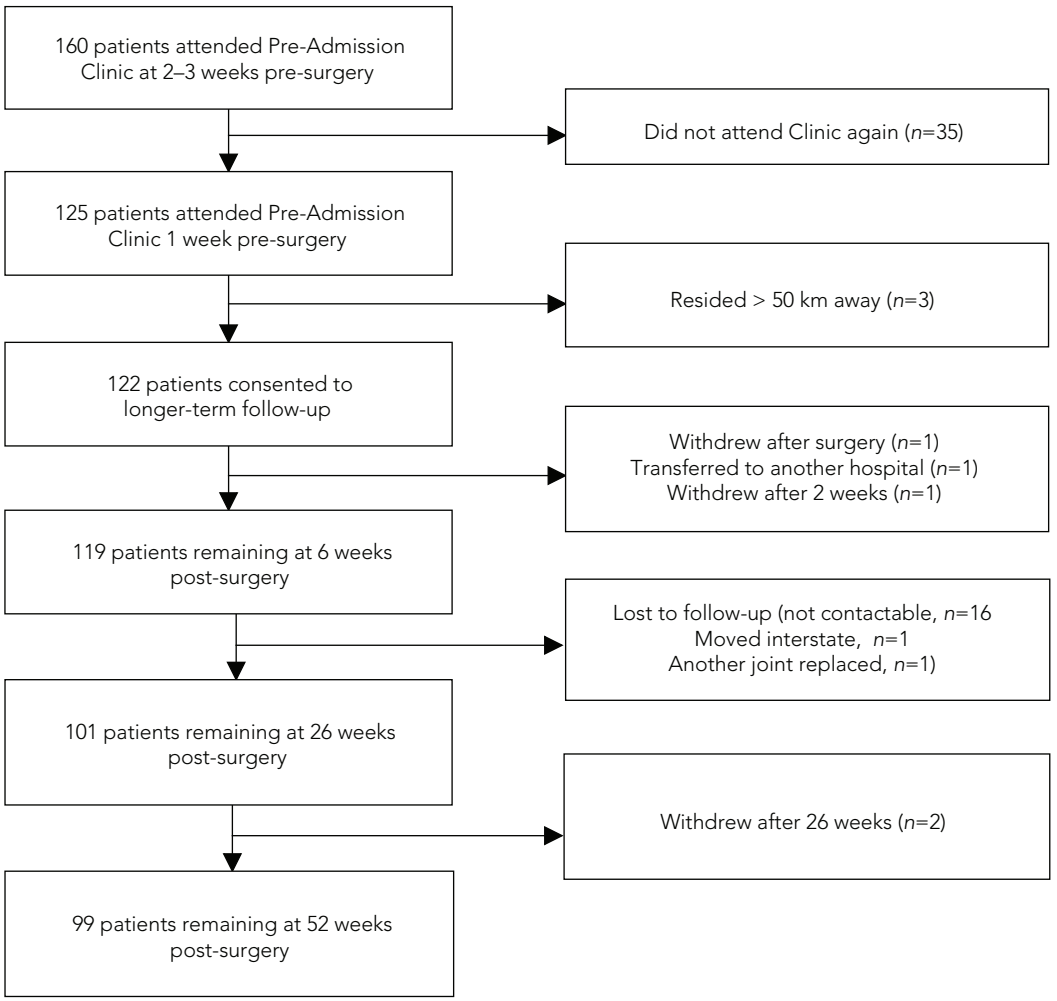
1 Cohort attainment and follow-up



Two patients had another joint replacement after 9 months. Their 9-month data were extrapolated to their 12-month review.

(THR), with most reports pertaining to international cohorts. Consistent observations have included: large and significant improvements across clinical, physical and quality of life domains;[1-16] that hip replacement tends to be associated with greater or faster improvements than knee replacement in the first post-operative year;[1,4,7-10,13] that recovery following either procedure is most marked in the first six months;[1,4,6-8,15,16] that improvement in various domains is influenced by patient factors including socioeconomics, obesity, and comorbidities;[1,16-18] and that significant complications, such as death, pulmonary emboli, deep infection, dislocation, and revision surgery, are uncommon.[19-28]

Comparatively few Australian studies have reported outcomes up to one year post TKR and THR.[1-5,16] Knowledge of outcomes achieved within the local health care environment is desirable given that different health care systems are exposed to different resource and budgetary restraints and care practices, which, in turn, affect

2 Cohort characteristics

	TKR (*n*=55)	THR (*n*=44)
Age (years), mean (SD)	70 (8)	65 (9)
Female	58%	55%
BMI ($kg.m^{-2}$), mean (SD)	32 (6)	29 (5)
Primary diagnosis osteoarthritis	95%	70%*
Number of comorbidities, mean (SD)	2 (1)	2 (1)
3 or more comorbidities	31%	34%
American Society of Anesthesiology score (mode)	3	2
Comorbidities		
Severe other lower limb or lumbar spine	35%	52%
Hypertension	65%	56%
Gastrointestinal	36%	20%
Respiratory	20%	34%
Cardiac	18%	27%
Diabetes (1,2)	29%	16%
Non-English speaking	25%	16%
Born overseas	64%	43%
Fairfield/Liverpool/Campbelltown Health Service (Sydney South West)	93%	93%
Education (years), mean (SD)	9 (3)	9 (2)
Completed secondary school	20%	18%
Paid employment	4%	11%
Current or past skilled labour	15%	16%

TKR = total knee replacement. THR = total hip replacement. * Significantly different ($P < 0.05$) to TKR group.

the level of care. Thus, compilation of local data is contextually useful. We have previously published a related paper reporting the relationship between specific comorbidities and various outcomes after joint replacement surgery in an Australian cohort.[16]

This paper aims to compare recovery patterns after TKR and THR in terms of joint pain, mobility, global improvement, function and health-related quality of life (HRQoL). Complications, in terms of type and rate, are also reported.

Methods

Design, participants and setting

A prospective, observational study was undertaken. Consecutive patients who underwent primary unilateral TKR or THR at Fairfield Hospital over a 9-month period (August 2003 to June 2004) were recruited. Fairfield Hospital, located within the Sydney South West Area Health Service (SSWAHS), performs about 350 joint replacement procedures per year. It lies within the local government area with the highest level of relative socioeconomic disadvantage in Sydney,[29,30] and Fairfield itself has the highest proportion of non-English speaking residents in Australia.[30]

A sample of about 125 patients, allowing for a 20% loss-to-follow-up, provided an 80% chance of detecting a small main effect (time since surgery) (0.28 SDs) and a moderate between-group effect (0.57 SDs) in any variable. Exclusion criteria included patients living beyond a 50 km radius from the hospital, those booked for further joint replacement surgery within the year, and

3 Surgical and discharge profiles

	TKR (*n*=55)	THR (*n*=44)
Predominant approach	100% medial para-patella	57% posterior
Cemented component(s)	64% femoral and/or tibial	40% acetabular or femoral
Patella resurfaced	89%	Not applicable
Surgical time (mins), mean (SD)	120 (22)	136 (29)*
Tourniquet time (mins), mean (SD)	100 (20)	Not applicable
Predominant anaesthetic type	51% general + regional	77% spinal or epidural + other
Anaesthetic duration (min), mean (SD)	146 (23)	163 (32)*
Transfusion, donor red blood cells	40%	52%
Length of stay (days), median (range)	5 (3–27)	4 (2–24)
Discharged to inpatient rehabilitation	13%	7%

* Significantly different ($P < 0.05$) to TKR group. Regional anaesthetic includes femoral or sciatic nerve block or both. "Other" anaesthetic includes general anaesthetic or sedation. TKR = total knee replacement. THR = total hip replacement.

patients unable to comprehend the nature of the study. The study was approved by the SSWAHS Human Research Ethics Committee and all patients provided written, informed consent.

Data collection and outcomes

Baseline assessments were conducted 1 to 2 weeks before surgery in the pre-admission clinic. Subsequent assessments were undertaken at 2, 6, 12, 26 and 52 weeks post-surgery. Interpreters were used when required. Contextual data, including demographic, surgical, and discharge outcome, were collected. Outcome variables included "today" joint pain (10 cm visual analogue scale [VAS]),[6,7] the timed up-and-go (TUG) test,[8,15,31] and a 5-level Likert scale global assessment of self-perceived improvement after surgery. The global scale, available in seven languages and pertaining to joint status since surgery, comprised the following: much worse; worse; same; better; and much better. Additionally, in order to more fully capture dimensions of health-related quality of life (HRQoL), patients proficient in English completed generic (the Medical Outcomes Short-Form 36 version 2 [SF-36v2[32]]) and disease-specific (the Western Ontario and McMaster Universities [WOMAC] Osteoarthritis Index[33]) quality of life surveys at baseline, and at 26 and 52 weeks. Post-surgical complications and readmission data were monitored following a comprehensive pro-forma. Data were obtained via review of medical records, patient interview at each assessment period, and follow-up with local and specialist doctors if required.

Statistical analysis

Descriptive statistics were computed for demographic and contextual data; between-group (TKR versus THR) differences were analysed using independent *t*-tests and the chi square (χ^2) tests. The effects of time, and time-group interactions were analysed using repeated measures planned orthogonal contrasts[34] (SPSS, version 14: SPSS Inc, Chicago, Ill, USA) for VAS pain, TUG, WOMAC and SF-36v2. The six times at which measures were taken were tested with five contrasts; baseline compared with all post-surgery measures combined; the 2-week post-surgery assessment compared with the last four assessments; the 6-week assessment compared with the last three assessments, and so on. These contrasts permitted assessment of the time period where change stabilised and also revealed between-group differences in terms of recovery patterns. The WOMAC scores remained untransformed (pain 0–20; stiffness 0–8; function (difficulty) 0–68), while the SF-36v2 scores were transformed to 0–100 scale according to the SF-36v2 algorithm developed for Australian populations.[35] The

Cochran Q Test, with subsequent testing using the McNemar Test, was used to determine significant differences in global improvement across time for the cohort, and the χ^2 test was used to compare between-group differences at each post-surgery time period. For all analyses, a P value < 0.05 was deemed significant. For complication data, the frequencies of different complications in the two groups were reported.

Results

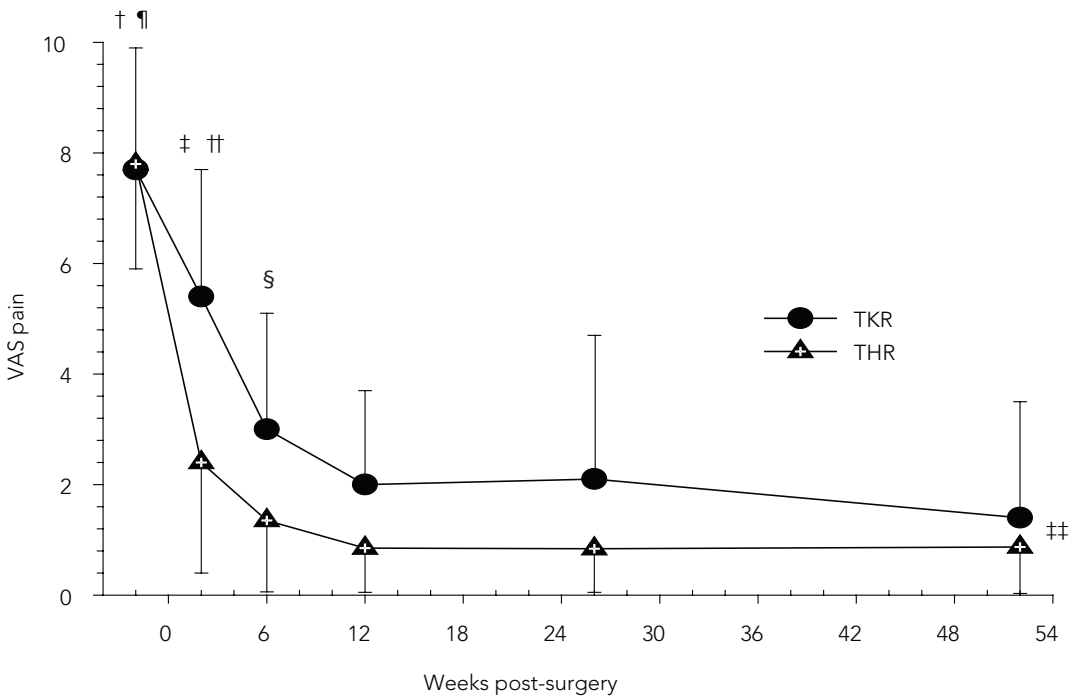
Of the 125 patients attending the pre-surgery visit, 122 (98%) consented to long-term follow-up. By 1 year, 99 patients ($n = 55$ knee; $n = 44$ hip) (81%) were available for follow-up (Box 1).

Demographic, surgical and discharge profiles

The demographic and health characteristics of the two surgical groups are listed in Box 2. About one third of patients in both groups reported three or more important comorbidities. Many patients (42%) reported severe other joint disease (other lower limb or lumbar spine) pre-operatively. The majority of patients were born overseas. About one-fifth did not speak English. A minority (20%) had completed secondary schooling and had engaged in skilled employment.

Surgical details and discharge destination are summarised in Box 3. Choice of prosthesis, use of cement, and type of anaesthetic were clinician dependent (surgeons, $n = 6$; anaesthetists, $n = 4$). Routine care included thromboembolism prophylaxes (low molecular weight heparin for 10 days post-operatively, antiembolism stockings, early ambulation), intravenous antimicrobial cover commencing intraoperatively and continuing for 48 hours, patient-controlled analgesia for 48 hours, and ward-based postoperative physiotherapy. Cry-

4 Visual analogue scale (VAS) for pain



† Pre-surgery v remaining scores (whole cohort), $P < 0.01$. ‡ 2 weeks v remaining scores (whole cohort), $P < 0.01$. § 6 weeks v remaining scores (whole cohort), $P < 0.01$. ¶ Pre-surgery v remaining scores (between-group interacton), $P < 0.01$. †† 2 weeks v remaining scores (between-group interaction), $P < 0.01$. ‡‡ Overall between-group difference, $P < 0.01$. TKR = total knee replacement. THR = total hip replacement.

otherapy and continuous passive motion were applied occasionally in TKR patients. A minority of patients ($n = 10$) were discharged to an inpatient rehabilitation facility; the remainder were referred for ongoing outpatient rehabilitation.

Pain

By 12 weeks, large (> 70%) improvements ($P < 0.001$) in 10cm VAS pain scores were observed in both groups, with the improvement significantly faster in the THR group (Box 4). These improvements were sustained 1 year after surgery. Overall, the reduction in VAS pain scores was greater in the THR group compared with the TKR group ($P < 0.001$).

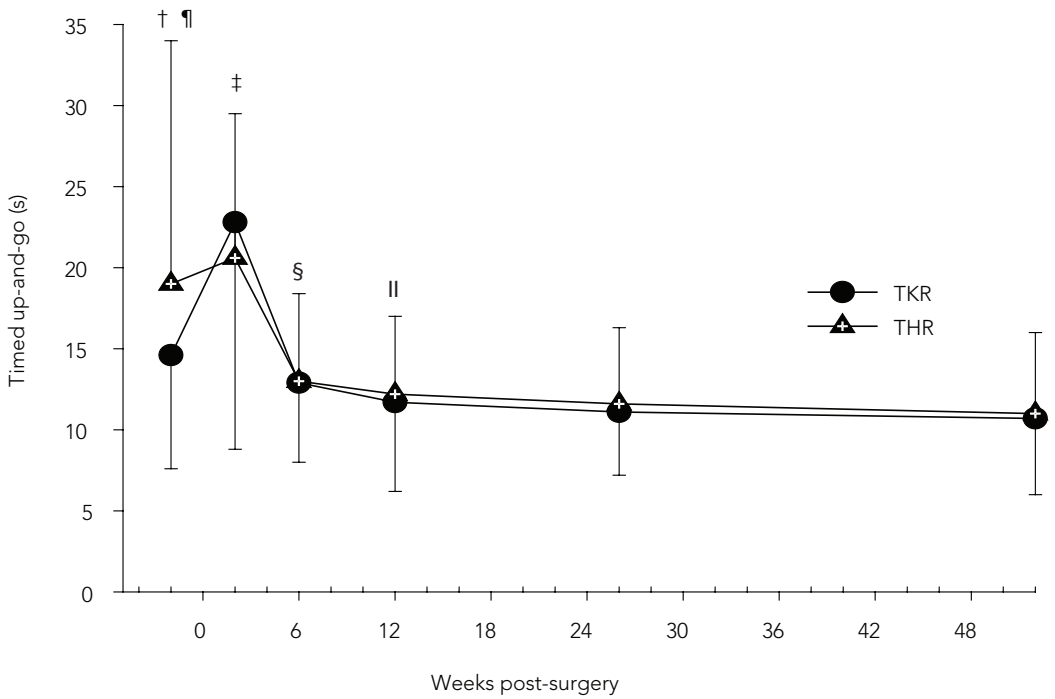
Timed up-and-go

After an initial slowing in the first 2 postoperative weeks — particularly in the TKR group ($P = 0.03$) — significant improvements ($P < 0.02$) in the TUG test were observed up to 26 weeks (mean change TKR, 3.6 [6.3] seconds [24%]; THR, 7.4 [14.4] seconds [36%]) (Box 5). Most of the improvements occurred within the first 12 weeks, and this pattern was similar for THR and TKR patients.

Global assessment

The cohort demonstrated an increasing proportion of patients reporting "better"/"much better" across time (Cochran Q, 37.9; $P < 0.01$) (Box 6); most of this change in reporting occurred between weeks 2 and 6 ($P = 0.01$), and then between weeks 6 and 12 ($P = 0.04$). Individual χ^2 tests identified significant between-group differences at 2 ($\chi^2 = 7.9$; $P = 0.02$) and 6 weeks ($\chi^2 = 6.2$; $P = 0.045$), with a greater proportion of the THR group reporting "better"/

5 Timed up-and-go test



† Pre-surgery v remaining scores (whole cohort), $P < 0.01$. ‡ 2 weeks v remaining scores (whole cohort), $P < 0.01$. § 6 weeks v remaining scores (whole cohort), $P < 0.01$. ll 12 weeks v remaining scores (whole cohort), $P = 0.02$. ¶ Pre-surgery v remaining scores (between-group interacton), $P = 0.03$. TKR = total knee replacement. THR = total hip replacement.

"much better" at these time points. Too few cases reporting "same"/"worse"/"much worse" at the subsequent time periods rendered further between-group testing using χ^2 tests after 6 weeks invalid. At 1 year, 3 TKR patients (5%) and 1 THR patient (2%) reported their operated joint was "much worse", "worse" or "the same" compared with before surgery.

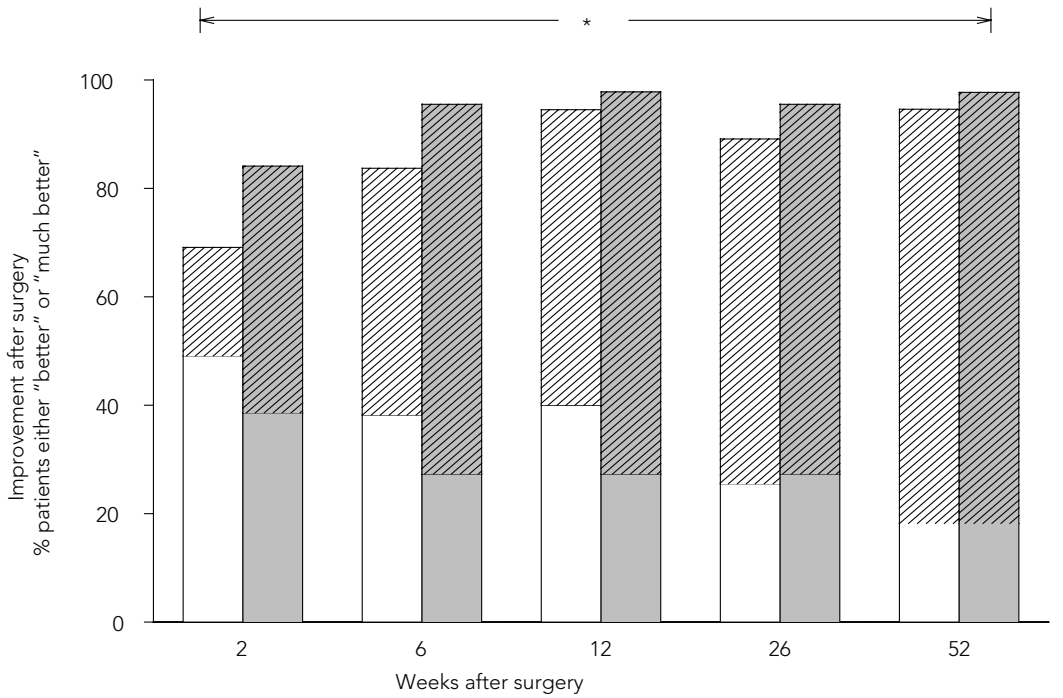
Patient-perceived function and health-related quality of life

Of the 76 patients who received surveys, 53 (70%) and 52 (68%) patients provided complete sets of SF-36v2 and WOMAC data respectively. All SF-36v2 domains demonstrated significant improvements (10%–254%) by 26 weeks (Box 7). Only "role physical" significantly improved beyond 26 weeks ($P = 0.007$). Time-surgery interactions ($P < 0.04$) were evident for "role physical", "social function", "role emotional" and "mental health", with the THR group achieving greater improvements compared with the TKR group. Both groups reported significant, large (> 40%) improvements in the WOMAC subscales by 26 weeks, with further improvements (> 50%) evident at 52 weeks (Box 7). A time–surgery interaction was evident for the pain subscale, with the THR group reporting greater improvements in the first 26 weeks ($P = 0.04$).

Complications and readmissions

No deaths, revision surgeries, or manipulations under anaesthetic were reported in the first post-operative year (Box 8). Thirty-two TKR patients and 28 THR patients experienced complications across the year (37 and 32 complications, respectively); most were within the first 6 weeks (TKR, 33/37; THR, 28/32); and most were minor with no

6 Perceived global improvement after surgeryfor patients with total hip or knee replacement (THR, TKR)



Percentage of patients selecting either "better" (unhatched bar) or "much better" (hatched bar) joint status (stacked bars: white background = TKR, $n = 55$; grey background = THR, $n = 44$). Both patient groups reported significant improvement post-surgery, * $P < 0.001$; THR > TKR, $P < 0.05$.

7 Mean (SD) SF-36v2 and WOMAC. Australian Norm data (mean [SE] 65–74 yrs) shown for comparison

	Total knee replacement (SF-36v2, *n*=28; WOMAC *n*=27)				Total hip replacement (*n*=25)				*P* value				
	Pre	26 W	52 W	Delta %	Pre	26 W	52 W	Delta %	Time 1	Time 2	Time-Group 1	Time-Group 2	Norm value
SF-36v2 (Medical Outcomes Short-Form 36 version 2)													
Physical function	26.6 (23)	50.4 (20)	48.6 (27)	+83	15.4 (17)	47.4 (26)	54.6 (25)	+254	< 0.01	0.28	0.05	0.07	66.2 (0.9)
Bodily pain	30.3 (16)	50.1 (25)	59.5 (33)	+96	25.6 (20)	61.9 (24)	63.4 (26)	+148	< 0.01	0.07	0.14	0.18	68.9 (0.9)
Role physical	35.5 (23)	45.3 (26)	52.9 (30)	+49	25.8 (25)	56.3 (29)	63.8 (28)	+147	<0.01	<0.01	0.04	0.99	62.7 (1.4)
Vitality	41.1 (19)	48.0 (21)	50.2 (24)	+22	42.8 (19)	53.8 (21)	56.0 (22)	+31	<0.01	0.35	0.49	1	60.8 (0.8)
General health	56.2 (22)	61.5 (23)	62.0 (26)	+10	58.6 (20)	63.2 (23)	64.4 (17)	+10	0.04	0.69	0.94	0.88	62.7 (0.8)
Role emotional	60.7 (31)	64.0 (32)	70.2 (28)	+16	46.7 (32)	72.0 (26)	77.0 (25)	+30	<0.01	0.07	0.02	0.84	76.4 (1.3)
Mental health	68.9 (17)	71.3 (25)	70.5 (23)	+2	60.4 (22)	74.0 (15)	79.0 (15)	+31	<0.01	0.32	0.02	0.18	76.7 (0.6)
Social function	61.6 (27)	70.5 (31)	70.5 (31)	+14	39 (24)	71.5 (28)	76.0 (23)	+95	<0.01	0.31	0.01	0.31	81.9 (0.9)
WOMAC (Western Ontario and McMaster Universities) Osteoarthritis Index													
Pain (0-20)	11.8 (2.9)	5.7 (5.1)	4.7 (5.3)	–60	13.1 (3.0)	4.4 (3.8)	3.6 (3.0)	–73	<0.01	0.01	0.04	0.91	NA
Physical function (0–68)	39.9 (9.7)	22.3(16.9)	19.0 (18.4)	–52	45.4 (10.5)	19.2 (13.0)	17.6 (13.3)	–61	<0.01	0.01	0.07	0.56	NA
Stiffness (0–8)	5.1 (1.6)	3.3 (1.9)	2.4 (1.8)	–53	5.5 (1.5)	2.4 (1.7)	2.2 (1.8)	–60	<0.01	0.01	0.12	0.09	NA

SF-36 v 2 scores standardised 0–100, higher scores better; WOMAC – lower scores better. Time 1: Pre-surgery versus 26, 52 weeks. Time 2: 26 weeks versus 52 weeks. Time-Group 1: between-group interaction at Time 1. Time-Group 2: between-group interaction at Time 2. Pre, 6W, 52W = pre-operative, 6 weeks, 52 weeks. Delta % = change from preoperative score to 52 weeks. NA = not available. No overall group differences were observed. Data from Australian Bureau of Statistics National Health Survey 1995,[35] reproduced with permission.

long-term management required. Five TKR (9%) and eight THR (18%) patients were readmitted (any hospital) within the first post-operative year, most (69%) occurring within the first 6 weeks. Precipitants for readmission in the TKR group included: superficial ($n = 2$) and deep ($n = 1$) surgical site infections (SSIs); unstable angina ($n = 1$); myositis ossificans and deep venous thrombosis ($n = 1$). Precipitants for readmission in the THR group included: dislocation ($n = 4$); superficial SSI ($n = 2$); stitch abscess ($n = 1$); and electrolyte disturbance (n=1). Wound-related problems were the most common post-operative complications. Notably, inclusion of suspected SSI diagnosed by general practitioners and rehabilitation physicians increased the reported rate of SSI (15% to 24% for TKR, 11% to 14% for THR patients).

Discussion

Overall, the recovery patterns observed across a range of outcomes in this Australian cohort are

8 Complications during the first postoperative year

	Total knee replacement (*n*=55)			Total hip replacement (*n*=44)		
	Acute (*n*)	6 weeks (*n*)	1 year (*n* [%])	Acute (*n*)	6 weeks (*n*)	1 year (*n* [%])
Wound-related						
Confirmed or suspected surgical site infection*	2	8	8 (15%)	2	5	5 (11%)
— proportion deep	0	1	1 (2%)	0	1	1 (2%)
Other wound disturbances	9	14	15 (27%)	2	8	8 (18%)
Thrombo-emboli (symptomatic)						
Deep venous thrombosis	0	3	4 (7%)	0	0	0
Pulmonary emboli	1	1	1 (2%)	1	2	2 (5%)
Dislocation	0	0	0	1	5	5 (11%)
Suspected prosthesis loosening	0	0	0	0	0	1 (2%)
Neuropraxia	0	0	0	1	1	1 (2%)
Myositis ossificans	0	0	1 (2%)	0	0	1 (2%)
Urinary	2	5	5 (9%)	4	6	6 (14%)
Cardiovascular	1	1	2 (4%)	1	2	2 (5%)
Other	1	1	1 (2%)	1	1	1 (2%)

* Only includes those diagnosed by surgeon or host hospital staff (suspected and confirmed).

consistent with what is reported generally after TKR and THR. The complication profiles may be an exception, in part due to the robustness with which complications were captured.

The considerable improvement in joint pain within three months of surgery is consistent with earlier reports that used the VAS pain scale,[6,7] as was the greater improvement overall in THR compared with TKR patients.[6,7] Importantly, the greater improvement observed in the THR group using the VAS for pain in the current study was also reflected in the WOMAC pain subscale even though the scales measure different dimensions of pain. This has also been observed previously,[7] suggesting that the use of two pain scales is potentially unnecessary. Both were adopted here, however, in order to capture the symptom relief of the entire cohort which was only possible through the less language-dependent VAS scale.

In terms of mobility, improvements in TUG were greatest within 3 months of surgery, and thereafter tended to plateau. This pattern has been observed elsewhere for TUG and the six-minute walk test (6MWT),[8-10,15] although others have observed no improvement in TUG up to 2 months post TKR.[36] A time–surgery interaction was observed here with the initial reduction in performance in the first postoperative weeks being greater in TKR patients. An initial slowing in TUG has previously been observed in TKR patients.[15] No further time–surgery interactions were observed in the current study, although others have reported that THR patients recover more slowly initially and then demonstrate a faster rate of recovery than TKR patients in TUG and 6MWT, typically around 9–10 weeks post surgery.[8-10] The authors attributed the slower initial rate to weight-bearing restrictions in the THR group.[10] In contrast, no such restrictions were imposed upon the current THR or TKR groups. Considered together, these studies highlight the potential influence of care protocols on outcome. Interestingly, in the current study TUG performance at 1 year remained slower than age-matched norm values[31] and those reported in other joint replacement cohorts (TUG, 7–8

seconds[8,15]). We have shown, in a related paper, that the high incidence of severe other lower limb or lumbar dysfunction in this cohort partly explains the comparatively slow mobility times at one year.[16]

Similar to previous Australian[4] and international cohorts,[1,12] at 1 year or more post-surgery, SF-36v2 outcomes approached (but did not always meet) age-matched norms (Box 7). The greater improvements in THR compared with TKR patients have also been shown elsewhere both quantitatively[4,7] and qualitatively.[1,13] As for previous Australian data,[4] relative changes in most domains were impressive for both TKR and THR patients, and most improvements occurred within the first 6 months.

Each of the WOMAC subscales demonstrated large improvements in the first 6 months with only small further improvements evident at 1 year in the current cohort. Again, these patterns are comparable to elsewhere.[1,4,7] Others have observed greater improvements in all WOMAC subscales in THR patients compared with TKR patients;[4,6,7] whereas here, the pain subscale was significantly different between the two surgical groups, while the difference in the function scale was of borderline significance ($P = 0.07$).

Despite the majority of patients reporting positive global improvements, about 2%–5% reported a lack of improvement at 1 year. Non-responsiveness, however it is measured, remains a clinical concern for patients and clinicians alike.[14,37] There are no other published Australian data reporting the rate of non-responsiveness, but it is encouraging that the rate observed here (as assessed by global outcomes) does not appear excessive compared with international estimates. Roder et al[14] reported that about 15% of TKR patients complained of moderate to severe pain 1 year after surgery, while Brander et al[37] reported that 10% of THR patients were not satisfied with their outcome at 1 year.

Complication data were collected prospectively across the year through rigorous follow-up. This approach, together with the inclusion of all surgical and medical disturbances occurring within the year, regardless of severity, contributed to the observed rates reported. The rates of wound disturbance, hip dislocation and readmission appear high in comparison to elsewhere;[24,25,38] however, the identification of wound disturbance and readmissions is particularly sensitive to method of capture. The rates of symptomatic deep venous thrombosis appear favourable,[26,27] although the current rates exclude subclinical thromboses. It is likely that differences in care practices between facilities will influence complication outcomes as will differences in innate risk due to comorbidity profiles. Accounting for such differences between studies is difficult. The observation that the majority of post-operative complications occurred after discharge and within the first 6 weeks has been observed elsewhere,[28] reinforcing the need for complication surveillance to include this period, both for patient safety and for comprehensive monitoring of clinical performance.

Finally, it is of interest that this cohort derived from a region of relatively high socioeconomic disadvantage. Socioeconomic factors are emerging as an important consideration for health outcomes and also study design.[39] Recent Australian data indicate that education and income profiles within the same cohort correlate with baseline HRQoL and psychological distress in patients awaiting TKR and THR surgery.[40] International studies attest to the importance of socioeconomic variables on preoperative pain and function;[17,18] and education level has been observed to account for some of the variance in pain and function up to 2 years post surgery,[1] though this is not a consistent finding.[18] The few local studies that report outcomes after TKR or THR[1-5,16] predominantly derive from cohorts from regions of relatively low socioeconomic disadvantage (Sydney's north-eastern regions).[1-4] The current cohort manifested educational, employment and language characteristics consistent with features of socioeconomic disadvantage and consistent with the known profile of the region. Despite potential disadvantages owing to these features, the cohort achieved substantial post-surgical gains in symptom relief, mobility, function and quality of life. Thus, this paper not

only complements existing Australian reports, it extends the literature by providing outcome data from a cohort derived almost exclusively (93%) from an area of relatively high socioeconomic disadvantage. Further, our observations lend support to those of a recent study which concluded that functional recovery 2 years after TKR was comparable in patients of both high and low socioeconomic status, despite poorer baseline function in the latter.[18] Whether characteristics associated with high socioeconomic disadvantage (low socioeconomic status) contribute to post-surgical complication profiles cannot be determined here.

Limitations

The lack of survey data from non-English-speaking patients is a potential limitation, but one which is not easily overcome in a region manifesting vast ethnic diversity. Nevertheless, patients with and without proficiency in English reported global improvements and decreased joint pain, and demonstrated improved mobility. The loss to follow-up by 1 year rendered the estimates for event rates (in terms of complications) somewhat weak. Thus, interpretation of the complication profiles is limited.

Conclusion

Total knee or hip replacement surgery provided marked symptom relief, generated significant improvement in mobility, and yielded large gains in patient-perceived function and HRQoL in this Australian cohort. Recovery in patients with THR generally preceded that in patients with TKR, mirroring patterns evident in the literature. Major complications were few while minor complications were common. The significance of the latter is unclear given the difficulties with comparing complication rates between studies with different methods and possibly different thresholds for reporting, and potentially different patient health profiles and care pathways. This notwithstanding, this study provides a useful reference for clinicians working in the Australian health care system in terms of the temporal and surgery-specific aspects of recovery.

Competing interests

The authors declare that they have no competing interests.

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