

Waiting times and patient perspectives for total hip and knee arthroplasty in rural and urban Ontario

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Background: The demand for total hip and total knee arthroplasties is increasing as are the waiting times for these procedures. Because of the differences between rural and urban areas in terms of the provision of arthroplasty services and between the 2 patient groups, patient perspectives of waiting times may also be different. **Methods:** To compare waiting times for initial orthopedic consultation and total hip and knee arthroplasties in rural Ontario (Stratford) and in urban Ontario (London), and to compare patient perspectives of these waiting times, we mailed a survey to all 260 patients who underwent total hip or total knee arthroplasty between June 1, 2000, and June 1, 2001. The survey asked for the length of wait for consultation and for surgery, acceptability of waiting time for surgery, the effect of waiting on health and what an acceptable waiting time would be. Of the 260 surveys mailed 202 (78%) were returned. We reviewed the charts of the respondents to determine the actual waiting times. **Results:** The actual waiting times (mean [and standard deviation]) for initial consultation were significantly ($p < 0.001$) shorter in the rural (RUR) group (1.10 [0.53] mo) than the urban (URB) group (3.40 [1.34] mo). There was no significant difference in waiting times for surgery between RUR (8.45 [3.32] mo) and URB (9.32 [3.61] mo) groups. Surgical waiting times for both groups showed that 56% of all the patients had to wait longer than 9 months from the date surgery was recommended. Perceived waiting times for consultation were found to be 56.9% longer ($p < 0.001$) than the actual waiting times, but there was no significant difference between perceived and actual waiting times for surgery ($p = 0.40$). Fifty percent of the patients stated they were unhappy with the wait for surgery or found the wait unacceptable (56% of URB and 44% of RUR patients). There was no significant difference between RUR and URB in patients' acceptance of their wait for surgery ($p = 0.09$), but URB patients believed their wait for surgery made a greater contribution to health deterioration ($p = 0.003$). Thirty-eight percent of RUR and 54% of URB patients believed their surgical wait contributed to "a lot" or a "moderate" amount of deterioration in their health. **Conclusions:** Waiting times for hip or knee replacement surgery have increased to the point at which over 50% of surgical patients in 2000–2001 in RUR and URB orthopedic practices had waited longer than 9 months for surgery. In comparing these practices, there was a significantly longer wait in urban than rural practices for the initial consultation but no significant difference in waiting times for surgery.

Contexte : La demande d'arthroplasties totales de la hanche et du genou est à la hausse et il faut attendre plus longtemps pour subir ces interventions. À cause des différences entre les régions rurales et urbaines sur le plan des services d'arthroplastie et entre les deux groupes de patients, l'opinion des patients au sujet des temps d'attente peut aussi différer. **Méthodes :** Afin de comparer les temps d'attente pour une première consultation en orthopédie et une arthroplastie totale de la hanche et du genou en milieu rural (Stratford) et urbain (London) en Ontario, et de comparer les points de vue des patients sur ces temps d'attente, nous avons envoyé par la poste un questionnaire aux 260 patients qui ont subi une arthroplastie totale de la hanche ou du genou entre le 1^{er} juin 2000 et le 1^{er} juin 2001. On demandait aux répondants de préciser pendant combien de temps ils ont attendu pour obtenir une consultation et subir l'intervention chirurgicale, dans quelle mesure les temps d'attente pour la chirurgie sont accepta-

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bles, l'effet de l'attente sur leur état de santé et ce que serait une période d'attente acceptable. Sur les 260 questionnaires envoyés, 202 (78 %) sont revenus. Nous avons étudié les dossiers des répondants pour déterminer les périodes d'attente réelles. **Résultats :** Les temps d'attente réels (moyens [et écart type]) pour une première consultation étaient beaucoup ($p < 0,001$) plus courts chez les sujets ruraux (RUR) (1,10 [0,53] mo.) que chez les sujets urbains (URB) (3,40 [1,34] mo.). Il n'y avait pas de différences importantes au niveau des temps d'attente pour la chirurgie entre les groupes RUR (8,45 [3,32] mo.) et URB (9,32 [3,61] mo.). Les temps d'attente pour la chirurgie dans le cas des deux groupes ont montré que 56 % des patients ont dû attendre plus de neuf mois à compter de la date à laquelle on a recommandé une chirurgie. On a constaté que les temps d'attente perçus pour la consultation dépassaient de 56,9 % ($p < 0,001$) les temps d'attente réels, mais qu'il n'y avait pas de différence importante entre les temps d'attente perçus et réels dans le cas de la chirurgie ($p = 0,40$). Cinquante pour cent des patients ont déclaré qu'ils étaient insatisfaits de l'attente pour la chirurgie ou ont jugé inacceptable la durée de l'attente (56 % des patients URB et 44 % de ceux du groupe RUR). Il n'y avait pas de différence importante entre les groupes RUR et URB au niveau de l'acceptation par les patients de la période pendant laquelle ils ont dû attendre pour subir la chirurgie ($p = 0,09$), mais les patients URB croyaient que la période pendant laquelle ils ont dû attendre pour subir la chirurgie a contribué davantage à la dégradation de leur état de santé ($p = 0,003$). Trente-huit pour cent des patients RUR et 54 % de ceux du groupe URB croyaient que la période pendant laquelle ils ont dû attendre pour subir la chirurgie a contribué «beaucoup» ou «moyennement» à la dégradation de leur état de santé. **Conclusions :** Les périodes pendant lesquelles il faut attendre pour subir une arthroplastie de la hanche ou du genou ont augmenté au point où plus de 50 % des patients en chirurgie des pratiques orthopédiques en milieu RUR et URB avaient attendu plus de neuf mois pour subir une intervention chirurgicale en 2000–2001. Lorsque l'on compare ces pratiques, il fallait attendre beaucoup plus longtemps en milieu urbain qu'en milieu rural pour obtenir la consultation initiale, mais il n'y avait pas de différence importante au niveau des temps d'attente pour la chirurgie.

A relatively high prevalence of degenerative arthritis of the hip and knee, combined with the success of surgical procedures, has resulted in a high demand for total hip and total knee arthroplasties (THA and TKA), which has been manifested through increasing waiting times for these procedures, especially in Ontario. Studies have shown mean waiting times for an initial orthopedic consultation of 5.4 weeks¹ and 8.5² weeks for THA, and 13.5 weeks¹ and 15.6 weeks² for TKA. More recent data showed mean waiting times in Ontario of 17 weeks for THA and 22 weeks for TKA.³ Reported mean waiting times in London, Ont., for THA were 6.5 months based on data collected between 1993 and 1998.⁴ Data from other provinces have shown mean waiting times for THA and TKA in the Edmonton, Alta., of 3.8 months, based on data from 1995 to 1997,⁵ and 8.7 months for THA and TKA in Saskatchewan in 1996.⁶ The Fraser Institute reported that in 2000–2001 the median wait in Canada was 11.4 weeks for an initial orthopedic consultation and 16.0 weeks for major joint arthroplasty.⁷

There has been conflicting re-

search regarding the resulting effects of these waiting times on patients. Mahon and colleagues⁴ found that health-related quality of life and mobility decreased in patients waiting longer than 6 months for THA. Kelly and associates⁸ showed that overall pain and functional disability did not worsen while patients were waiting for their arthroplasty procedures, but they noted that the patients were already in a great deal of pain and dysfunction when they were put on the waiting list. A study that assessed patients at the preoperative clinic, retrospectively determined that they had not deteriorated physically or mentally from the time they were put on the waiting list.⁹ (It should be noted that the mean waiting times in these studies were 4.5 months⁷ [median 6.0 months⁸], so they were perhaps of insufficient length to show health deterioration.)

There has been some indication of differences between rural (RUR) and urban (URB) patients awaiting arthroplasty. Visuri and Honkanen¹⁰ found that RUR patients waiting for THA preoperatively had poorer walking ability, poorer functional status (based on the activities of daily

living) and greater disability than URB patients. In Ontario between 1985 and 1990, it was determined that waiting times differed between teaching hospitals and nonteaching hospitals: the mean wait for TKA in teaching hospitals was 16.3 weeks compared with 10.4 weeks in nonteaching hospitals.¹ Thus, it is possible that patient perspectives of waiting times for arthroplasty may also be different.

Methods

We mailed surveys to all patients who underwent primary total hip or knee replacement between June 1, 2000, and June 1, 2001, in an RUR orthopedic practice (Stratford, Ont.) and an URB orthopedic practice (London, Ont.). The 2 practices are about 60 km apart. Information collected included patients' perceived length of wait for initial consultation and for arthroplasty, ranking of the degree of acceptability of their waiting time for surgery, ranking of the effect of waiting time on their health and what would be an acceptable waiting time (Box 1). Chart reviews were conducted for all patients who

returned the surveys to determine actual waiting times for initial consultation (from date of referral to date of consultation) and for joint replacement surgery (from date of surgery recommendation or put on a waiting list to the date of surgery). Patients were excluded if they did not return the survey, the required survey was incomplete or the required chart information could not be accurately determined. In addition, information regarding consultation waiting times was excluded for patients whose consultation occurred before 1999 so we could compare consultation waiting times within the same period.

Statistical analysis was performed using the SPSS 9.0 for Windows software package. The majority of analysis consisted of independent sample *t* tests to assess for statistical differences between groups. Paired sample *t* tests were used for analysis of the accuracy of perceived waiting times. Analysis of acceptability of waiting times and deterioration of health in comparison to waiting times for surgery was conducted using Spearman's rank correlation.

Results

We mailed 260 surveys, and 202 (77.7%) were returned. In the London group (URB), 115 (73%) of 157 surveys were returned; 11 were excluded. In the Stratford group (RUR), 87 (84%) of 103 surveys were returned; 9 were excluded.

Waiting times for consultation and surgery

Actual mean (and standard deviation [SD]) consultation waiting times (based on chart review) were significantly shorter ($p < 0.001$) in the RUR group (1.10 [0.53] mo) compared with the URB group (3.40 [1.34] mo). There was no significant difference ($p = 0.10$) between waiting times for arthroplasty in the RUR (8.45 [3.32] mo) group compared with the URB (9.32 [3.61]

mo) group (Table 1). Fifty-three percent of patients in the RUR group and 59% of patients in the URB group waited longer than 9 months for surgery, and 7% in the RUR group and 24% of patients in the URB group waited longer than 12 months.

Patient perspectives of waiting times

Overall, patients' perceived waiting times were quite accurate. Patients overestimated the waiting time for consultation by approximately 3 weeks (mean [and SD] perceived wait = 3.55 [3.19] mo, actual wait =

2.64 [1.57] mo, $p < 0.001$). There were no significant differences between perceived wait and actual wait for surgery (perceived wait = 8.74 mo, actual wait = 8.93 mo, $p = 0.40$), and there were no significant differences between the RUR and URB groups.

The length of wait for surgery was ranked as "acceptable" or as "acceptable given the current problems with the health care system" by 56% of patients in the RUR group and by 44% of the patients in the URB (50% combined) group (Table 2). In comparison, 18% of the RUR group and 25% of the URB group described the length of this wait as being "unac-

Box 1: Survey questions for patients who underwent total hip or knee arthroplasty between June 1, 2000, and June 1, 2001	
1.	How long did you have to wait for the first appointment with this surgeon?
2.	How long did you have to wait for your surgery (from the time you and your surgeon decided on surgery)?
3.	Was your surgery booking: <ul style="list-style-type: none"> <input type="checkbox"/> as a result of a cancellation <input type="checkbox"/> at the earliest appointment available on the waiting list <input type="checkbox"/> delayed by your choice (e.g., at a more convenient time) <input type="checkbox"/> due to an emergency appointment
4.	Please check the most appropriate box below that describes how you felt about the length of your wait for surgery? <ul style="list-style-type: none"> <input type="checkbox"/> it was acceptable and I had no problems with it <input type="checkbox"/> it was acceptable given the current problems with the health care system <input type="checkbox"/> I didn't like it but I could live with it <input type="checkbox"/> I didn't like it and I became increasingly frustrated <input type="checkbox"/> it was unacceptable
5.	Did the wait for your surgery contribute to a deterioration of your health? <ul style="list-style-type: none"> <input type="checkbox"/> no not at all <input type="checkbox"/> a small amount <input type="checkbox"/> moderately <input type="checkbox"/> a lot
6.	What do you think would have been an acceptable time to wait for your surgery?

Table 1 Actual waiting times in months for primary total hip arthroplasty or total knee arthroplasty (based on chart review)				
Group	Wait for consultation, mo		Wait for surgery, mo	
	Mean (and SD)	Median	Mean (and SD)	Median
Rural	1.10 (0.53)	1.13	8.45 (3.32)	9.39
Urban	3.40 (1.34)	3.47	9.32 (3.61)	10.50
All	2.62 (1.57)	2.47	8.93 (3.50)	9.77

ceptable” or “didn’t like it and became increasingly frustrated” (22% combined). There was no significant relationship between the actual wait for surgery and the rankings of acceptability ($r = -0.049, p = 0.52$) and only a weak correlation ($r = 0.16, p = 0.036$) associating longer perceived waiting times for surgery with less acceptance. There was also no significant difference between the 2 groups ($p = 0.092$), although a trend existed to greater acceptability of the waiting times in the RUR group compared with the URB group (Table 2).

In regard to the effect on health, 38% of the RUR group and 54% of the URB group said that their wait for surgery contributed to “a lot” or a “moderate” amount to deterioration in their health (47% combined) (Table 3). There was no significant

relationship between the degree of perceived health deterioration and actual ($r = -0.077, p = 0.31$) or perceived waiting times for surgery ($r = 0.023, p = 0.75$). URB patients ranked their waiting times as having a significantly greater ($p = 0.003$) contribution toward deterioration in their health than RUR patients (Table 3).

Patient perspectives on what would be an acceptable waiting time for surgery showed that there was no significant difference ($p = 0.92$) between RUR (3.55 [2.00] mo) and URB (3.59 [2.10] mo) groups. When patients were compared on the basis of waiting time for surgery, it was found that acceptable times ranged from a mean of 3.36–4.34 months for all patients who waited longer than 3 months. Reported mean acceptable waiting times for

surgery were 3.36 months for patients who waited 3–6 months for surgery, 3.40 months for those waiting 6–9 months, 3.70 months for those waiting 9–12 months, and 4.34 months for those who waited longer than 12 months.

Discussion

The results from this study support other reports of the recent trend toward longer waiting times, especially for THA and TKA. The combined data for the 2 groups shows mean waiting times of 2.62 months for initial consultation and 8.93 months for surgery. Overall, 57% of patients waited longer than 9 months for surgery, and 17% waited longer than 12 months. The most recent Ontario waiting time data from ICES³ was from 1996 to 1997, when waiting

Table 2

Percentage of patients ranking each acceptability survey response based on their actual waiting time for surgery

Survey response*	Patient group; wait for surgery, mo; % (and no.)											
	Rural				Urban				All patients			
	<6	6-12	>12	All	<6	6-12	>12	All	<6	6-12	>12	All
It was acceptable and I had no problems with it	25 (5)	27 (14)	67 (4)	29 (23)	38 (6)	10 (6)	13 (3)	15 (15)	31 (11)	18 (20)	23 (7)	22 (38)
It was acceptable given the current problems with the health care system	35 (7)	25 (13)	17 (1)	27 (21)	25 (4)	24 (14)	42 (10)	29 (28)	31 (11)	25 (27)	37 (11)	28 (49)
I didn't like it but I could live with it	15 (3)	31 (16)	17 (1)	26 (20)	0 (0)	41 (24)	25 (6)	31 (30)	8 (3)	36 (40)	23 (7)	28 (50)
I didn't like it and I became increasingly frustrated	20 (4)	12 (6)	0 (0)	13 (10)	19 (3)	19 (11)	8 (2)	16 (16)	19 (7)	15 (17)	7 (2)	15 (26)
It was unacceptable	5 (1)	6 (3)	0 (0)	5 (4)	19 (3)	5 (3)	13 (3)	9 (9)	11 (4)	5 (6)	10 (3)	7 (13)

*Available survey responses (n = 176) to the question "Please check the most appropriate box below that describes how you felt about the length of your wait for surgery?"

Table 3

Percentage of patients ranking each health deterioration survey response based on their actual waiting time for surgery

Survey response*	Patient group; wait for surgery, mo; % (and no.)											
	Rural				Urban				All patients			
	<6	6-12	>12	All	<6	6-12	>12	All	<6	6-12	>12	All
No not at all	30 (6)	37 (19)	50 (3)	36 (28)	19 (3)	9 (5)	25 (6)	14 (14)	25 (9)	22 (24)	30 (9)	24 (42)
A small amount	40 (8)	17 (9)	50 (3)	26 (20)	38 (6)	29 (17)	33 (8)	32 (31)	39 (14)	24 (26)	37 (11)	29 (51)
Moderately	20 (4)	37 (19)	0 (0)	29 (23)	13 (2)	34 (20)	25 (6)	29 (28)	17 (6)	35 (39)	20 (6)	29 (51)
A lot	10 (2)	10 (5)	0 (0)	9 (7)	31 (5)	28 (16)	17 (4)	26 (25)	19 (7)	19 (21)	13 (4)	18 (32)

*Available survey responses (n = 176) to the question "Did the wait for your surgery contribute to a deterioration of your health?"

times were only 17 weeks for THA and 22 weeks for TKA.

Assessing the accuracy of patients' perceived waiting times compared with the actual waiting times as determined from a chart review showed that patients overestimated their wait for the initial consultation but not for surgery. The initial consultations occurred at least 1–2 years before the survey, so patient recall was considered quite reliable. Since our data were collected by a mailed survey, we do not know whether patients answered these questions from memory or had documentation. The latter could partially explain why the perceived waits for surgery were quite accurate, while the perceived waiting times for the initial consultation were not as accurate since these dates may not have been written down or as easily remembered. The accuracy of patient reported waiting times is an important issue because some studies depend on them to measure waiting times. Hawker¹¹ found that TKA patients could accurately recall details about perioperative care and proposed that recalled waiting times would also likely be accurate. The findings of the our study support reasonable patient recall.

Patient acceptance of waiting times for arthroplasty has not been well documented. Ho and associates² evaluated waiting time acceptance in TKA patients in Ontario between 1985 and 1990 when mean waiting times were 8.5 weeks for initial consultation and 15.6 weeks for surgery. They found acceptance levels of 93.2% for the wait for consultation and 88.1% for the wait for surgery when patients had a choice of 2 response options (acceptable or not acceptable). They noted that the duration of the wait was highly important in determining patients' acceptability. We found much less acceptance, with 50% of patients being dissatisfied with the waiting period. This suggests that with the increasing waiting times for THA and TKA, patient acceptance is decreasing, and

that earlier data from periods of shorter waiting times may no longer be applicable.

Additionally, we assessed patient perspectives of their waiting times in relation to the effect on health. We found that overall 47% of patients ranked their wait as contributing "a lot" or "moderately" to deterioration in their health. Since objective functional measures were not performed as part of this study, it is impossible to declare if health deterioration is actually occurring. However, previous research has examined this question. Mahon and colleagues⁴ found that patients waiting longer than 6 months for THA showed decreases in health-related quality of life and mobility while waiting for surgery. Two other studies^{7,8} found that patients' health did not deteriorate while waiting for arthroplasty, but these studies had a mean wait of 4.5 months⁷ and a median wait of 6.0 months⁸ for surgery. Therefore, it is possible that neither of these studies had waiting times long enough to show a significant deterioration in health that might have presented itself.

There were several significant differences between the RUR and URB groups. The wait for initial consultation was significantly shorter for the RUR group than the URB group (1.10 v. 3.40 mo), but there were no significant differences with respect to waiting times for surgery (8.45 v. 9.32 mo). Patients in the URB group ranked their waiting times as having a significantly greater contribution to deterioration in their health than those in the RUR group, but there was no significant difference in acceptability.

Many factors must be taken into account before drawing conclusions from this study, particularly in comparing RUR and URB groups. It should be remembered that only 2 orthopedic practices were analyzed and that these practices are in close proximity (60 km apart). To assess whether significant numbers of pa-

tients were travelling between the 2 areas (i.e., RUR to URB or URB to RUR), a post-hoc postal code analysis was conducted. The results showed 43.9% of the URB group were from the London area whereas only 1.9% the RUR group were from the London area; 28.2% were from the Stratford area. The differences in the types of practices also could influence the results. The URB practice is devoted solely to hip and knee adult reconstructive surgery with primary and revision arthroplasty comprising the majority of the workload, whereas the RUR practice is a general orthopedic practice, providing a wide range of surgical services including THA and TKA. It is also likely that the URB practice sees patients that are generally in poorer condition than those in the RUR practice, since it is a larger referral centre for a greater geographic area.

A limitation of this study is the variable time postoperatively when patients filled out the survey. Since the survey was mailed to all patients at the same time, the actual elapsed time since surgery varied from approximately 1 to 13 months. Patient recall could be variably affected and thus affect the results that depend upon recall. Additionally, patient perceptions of their waiting times could change the further they are from their surgery date. As far as we know, both orthopedic practices would be affected by this bias, since the surgery dates ranged fairly consistently throughout the year. To eliminate this possible bias, an alternative study design could have patients complete the survey either at the same postoperative time or just before operation.

Taking the limitations into account, this study suggests that waiting times for THA and TKA are increasing, and that with these longer waiting times, patient acceptance levels are decreasing and a substantial number of patients are perceiving a deterioration in their health and attributing it to their waiting times for surgery.

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**CLINICAL PRACTICE GUIDELINES
FOR THE CARE AND TREATMENT OF
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In February 1998 *CMAJ* and Health Canada published 10 clinical practice guidelines for the care and treatment of breast cancer, along with a lay version designed to help patients understand more about this disease and the recommended treatments. These guidelines are being revised and updated as new evidence becomes available, and the series is being extended to cover new topics. The complete text of the new and updated guidelines is available at:

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- Guideline 3: Mastectomy or lumpectomy? The choice of operation for clinical stages I and II breast cancer [July 23, 2002]
- Guideline 5: The management of ductal carcinoma in situ [Oct. 2, 2001]
- Guideline 6: Breast radiotherapy after breast-conserving surgery [Feb. 18, 2003]
- Guideline 7: Adjuvant systemic therapy for women with node-negative breast cancer [Jan. 23, 2001]
- Guideline 8: Adjuvant systemic therapy for women with node-positive breast cancer [Mar. 6, 2001]
- Guideline 9: Follow-up after treatment for breast cancer [May 10, 2005]
- Guideline 10: The management of chronic pain in patients with breast cancer [Oct. 30, 2001]

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- Guideline 11: Lymphedema [Jan. 23, 2001]
- Guideline 12: Chemoprevention [June 12, 2001]
- Guideline 13: Sentinel node biopsy [July 24, 2001]
- Guideline 14: The role of hormone replacement therapy in women with a previous diagnosis of breast cancer [Apr. 16, 2002]
- Guideline 15: Treatment for women with stage III or locally advanced breast cancer [Mar. 16, 2004]
- Guideline 16: Locoregional post-mastectomy radiotherapy [Apr. 13, 2004]