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Return to driving after total knee arthroplasty

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Objective: The aim of this study was to ascertain the duration from time of surgery to resumption of driving after total knee arthroplasty (TKA) and to examine recommendations in the literature.

Methods: All patients who underwent primary unilateral TKA and were driving within 6 months preceding the arthroplasty were included. The patients' age, gender and side of the TKA were noted. The time taken to resume driving by each patient as well as the type of vehicle were noted.

Results: Ninety-eight patients were included in our survey. Fifty-five patients (56%) underwent TKA on their left knee and 94 (96%) were manual car drivers. Seventy-seven patients (79%) were able to resume driving within 6 weeks of TKA; 18 patients (18%) were able to do so at Week 12 postoperatively. The remaining 3 patients (3%) did not feel confident enough to drive at Week 12 postoperatively. No patient reported deterioration in driving ability, whereas 27 patients (27%) felt a subjective improvement in their driving ability.

Conclusion: The vast majority of patient resumed driving by 6 weeks postoperatively. Only a small number did not return to regular driving. Patients are advised to resume driving after 6 weeks but should wait until they feel comfortable and confident enough to do so.

Keywords: Driving; total knee arthroplasty.

Level of Evidence: Level IV Therapeutic Study

Total knee arthroplasty (TKA) has been implemented for over 40 years. The results of TKA are reliable and long lasting, with its primary goals being pain relief and restoration of function.[1] Consequently, the number of TKA surgeries performed has continued to increase.[2] By 2030, TKAs are projected to increase by 673% in the USA, which is significantly higher than the 174% projected increase in total hip arthroplasty (THA).[3]

Patients often wish to return to work and other social activities as soon as possible following TKA. The ability to drive is often essential to enable such activities. Being able to do so can reduce the patients' dependence on others and social isolation, particularly in a sparsely populated rural setting. Inability to drive, especially in the elderly population, is associated with reduced mobility, loneliness, and depression.[4,5]

In the present study, the time taken by patients to return to driving after unilateral TKA was assessed.

Patients and methods

All patients who underwent a unilateral primary TKA between 2009 and 2010 for osteoarthritis were included in the study. Patients who did not drive or ceased to drive more than 6 months prior to their surgery for any reason were excluded. All patients underwent cemented cruciate-retaining TKA under spinal anesthetic. TKA was

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Table 1. Return to driving post-TKA in weeks. The majority of patients resumed driving activity within 6 weeks following TKA.

Weeks post-TKA	6		8		12		>12	
	n	%	n	%	n	%	n	%
Patients returned to driving (n=98)	77	79	12	12	6	6	3	3

TKA: Total knee arthroplasty.

preformed via midline incision and medial parapatellar approach. No patients had patellar resurfacing. All were mobilized with full weight-bearing on the first postoperative day and underwent standard physiotherapy rehabilitation. Patients were followed up in the outpatient department at 6 weeks, 6 months, and 1 year postoperatively. A questionnaire was used at the 6-month and 1-year follow-up when possible; the questionnaire was sent to the vast majority of patients at least 3 months post-TKA. The side of the procedure, length of stay, time taken to return to driving, and driving ability pre- and postoperatively were recorded. The transmission type of the vehicle (automatic or manual) was recorded. Data were compiled in Microsoft Excel (Microsoft, Redmond, WA, USA) and t-test was used for statistical analysis. A total of 150 patients were surveyed, of which 130 responded. Ninety-eight patients met the inclusion criteria. Forty-four (45%) were males, and 54 (55%) were females, with a mean age of 59.5 years (range: 51–81.5 years); 55 patients (56%) underwent left TKA, while the remaining 43 (44%) underwent right TKA.

Results

Of the 98 patients, 4 (4%) drove an automatic transmission car, while 94 (96%) drove a manual. Seventy-seven patients (79%) were able to resume driving by 6 weeks postoperatively, and a further 18 (18%) returned to driving by 12 weeks postoperatively (Table 1). All patients practiced driving in a stationary vehicle prior to resumption of driving in traffic.

Three patients (3%) required more than 12 weeks to drive. These 3 patients felt they were not confident to drive on a regular basis, while residual pain and stiffness was cited as another reason by 1 patient. The mean age in this group was 78 years (75–81.5 years).

Twenty-seven patients (27%) reported a subjective improvement, and none reported deterioration in their driving ability. Those who underwent left TKA returned to driving earlier (mean: 7.3 weeks) than those who underwent right TKA (mean: 7.9 weeks). Patients who stopped driving more than 12 weeks prior to TKA required more time to return to driving than those who stopped driving less than 12 weeks prior to TKA (Table 2). The patients' age, gender, and postoperative length of stay did not affect the return to driving time ($p>0.05$).

Table 2. The majority of patients drove until the day of surgery. Patients who ceased driving for a longer period prior to TKA took longer to return to driving.

Number of weeks driving was stopped prior to TKA	Number of patients	Number of weeks taken to resume driving post-TKA
0	60	6.1 (2–12)
≤6 weeks	18	6.8 (4–12)
>6 weeks	14	7.3 (3–14)
>12 weeks	6	9 (4–14)

TKA: Total knee arthroplasty.

Eleven (11%) patients complained of minimal residual pain in the operated knee at the time of the survey. Three (3%) patients were treated with a short course of intravenous antibiotics postoperatively for superficial wound infections. The average length of hospital stay was 5 days (range: 3–14 days). There were no deep infections in this series.

Discussion

Advice given to patients regarding return to driving after TKA is varied and dependent on the side of the operated limb and the transmission type of their car. There is little information available in the literature regarding this topic. In a recent review by Alviar et al., it was noted that of the 8 frequently used outcome scores, only 1 included driving as a parameter, highlighting the fact that an important aspect of function and outcome has been thus far neglected.[6]

Recommended return to driving time varies from 4 to 8 weeks following TKA.[7–9] The American Academy of Orthopaedic Surgeons (AAOS) and the American Association of Hip and Knee Surgeons (AAHKS) recommend that patients who undergo right TKA not drive for 6 to 8 weeks postoperatively and those who undergo left TKA not drive for at least 1 week, providing the patient is no longer on narcotic analgesia.[10] The Royal College of Surgeons of England advises that patients avoid driving for the first 8 weeks following TKA.[11]

Spalding et al. measured driver reactions times with a custom jig at 4, 6, 8, and 10 weeks after TKA. The time taken to depress the brake pedal with 100 N of pressure in order to perform an emergency stop after a visual stimulus was measured. They recommended that those who underwent left TKA may start driving as soon as they are able to depress the brake pedal; however, for those who underwent right TKA, they recommended abstaining from driving for at least 8 weeks postoperatively.[7] Pierson et al. analyzed the brake response times (BRT) using a custom jig prior to TKA and at 3, 6, and 9 weeks after TKA. Although they found that some patients returned to their preoperative BRT by 3 weeks after TKA, all had done so by 6 weeks postoperatively, regardless of the operated side. Considering this finding, they concluded that patients can safely drive 6 weeks after undergoing TKA.[8] Marques et al. measured BRT in TKA patients preoperatively and at 10 and 30 days postoperatively. They recommended that it is safe to drive 30 days following right TKA. Additionally, they concluded that an increase in the task complexity resulted in an increase in BRT and reaction time. In another study involving left TKA patients, Spalding et al. concluded that they may return to driving 10 days after the procedure, as long as they drove a vehicle with automatic transmission. A more recent study of BRT after TKA by Liebensteiner et al. recommended return to driving after 2 weeks, regardless of the operated side.[12]

Spalding et al. used a complex method to measure BRT in their study, which may have contributed to their recommendation of an 8-week period of abstinence from driving following left TKA.[7] Pierson et al. included patients who had undergone bilateral TKA, which is not performed routinely and has a longer recovery period than unilateral TKA; this may have influenced their recommendation that patients abstain from driving for at least 6 weeks after TKA.

Most patients in our study resumed driving within 6 weeks of undergoing TKA. Those that underwent left side TKA resumed driving earlier, as did patients who continued to drive until the day of surgery. The longer one had ceased driving prior to TKA, the longer it took to resume driving. The majority of the patients in our study drove a manual transmission; however, the available literature suggests that they could resume driving earlier, especially if left TKA had been performed. There was no significant correlation between age, gender and length of stay with time taken to return to driving.

Our study did not capture data regarding functional outcome or knee range of motion (ROM). This survey was conducted 3–6 months after TKA in the majority of patients, which is early in the recovery process after surgery. It is worth noting that in a trauma setting, Egol et al. concluded that functional outcome had no significant bearing on the normalization of braking time after operative treatment of ankle fractures. Currently, there is little data available in the literature to demonstrate the impact of functional outcome on BRT after TKA.[13]

The vast majority of patients in our study resumed driving by 6 weeks following TKA. Only a small number did not return to regular driving. The longer patients ceased driving prior to TKA, the longer it took them to return to driving post-TKA. In accordance with their surgeon's advice, patients may resume driving at 6 weeks after TKA but should wait until they feel comfortable and confident enough to do so.

Conflics of Interest: No conflicts declared.

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