



Editor's Spotlight/Take 5

Editor's Spotlight/Take 5: When Can I Drive After Orthopaedic Surgery? A Systematic Review

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One of the most-common questions patients ask in advance of elective surgery is “when can I drive?” Sadly, though, the gaps in our knowledge on this topic seem wider than our knowledge is tall.

Here is (some of) what we do not know:

- The number of people who are injured or killed in motor-vehicle accidents involving patients

Note from the Editor-In-Chief: In “Editor’s Spotlight,” one of our editors provides brief commentary on a paper we believe is especially important and worthy of general interest. Following the explanation of our choice, we present “Take Five,” in which the editor goes behind the discovery with a one-on-one interview with an author of the article featured in “Editor’s Spotlight.”

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driving a vehicle in the days or weeks following major surgery,

- when patients can drive safely after commonly performed orthopaedic procedures,
- whether the National Highway Transportation Safety Administration’s (NHTSA) recommendation to wait 3 weeks to 6 weeks or longer after typical orthopaedic procedures is based on sound evidence, and if it is, why the NHTSA’s guide on the topic then suggests that patients can be allowed to drive when their reaction times have not yet returned to baseline [2],
- to what degree the various surrogate measures we use (like brake-response time) and patient or physician perceptions correlate with a patient’s ability to drive safely, and

The opinions expressed are those of the writers, and do not reflect the opinion or policy of *CORR*® or The Association of Bone and Joint Surgeons®. This comment refers to the article available at: DOI: [10.1007/s11999-016-5007-9](https://doi.org/10.1007/s11999-016-5007-9).

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ceptions correlate with a patient’s ability to drive safely, and

- the extent of a surgeon’s legal exposure if (s)he advises a patient about returning to driving after an operation.

And here is what we know:

- Nearly three-quarters of orthopaedic patients surveyed described the inability to drive as a difficulty; more than a third resumed driving after injury or surgery while still on narcotic analgesics (which is known to be unsafe [5]), and 19% of orthopaedic patients felt unsafe driving after surgery or injury but did it anyway [3].
- Medical impairment, defined as acute medical illnesses that might impair driving ability, is a serious risk factor—with an odds ratio of more than five after adjusting for relevant confounders—for accidents among individuals older than the age of 65 [8].
- According to the state governments that regulate driving privileges, certain medical diagnoses result in reportable levels of impairment; residual disability following

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surgery might be considered such an impairment if it is expected to last more than 6 months [7].

- Physicians are considered “mandatory reporters”; this means that in some states, physicians are obliged to report patients to the state as being unsafe to drive if the patient’s level of impairment meets the state’s definition [7].
- Despite physicians being thus obligated, there are no specific measurement standards for physicians to use; moreover, the NHTSA (as well as the American Association of Motor Vehicle Administrators) rates the evidence on a number of common orthopaedic procedures—including THA and TKA—as “highly inconclusive or non-existent” [1].
- Physicians have been sued successfully for driving-related mishaps following surgery [4].

Clearly, we need to begin to fill in the gaps. With that in mind, we are proud to present in this month’s *Clinical Orthopaedics and Related Research*® the most-definitive systematic review yet published on the topic. In this study from the Rothman Institute in Philadelphia, PA, USA, Kevin B. Freedman and colleagues summarize the universe of relevant work on upper-extremity surgery, lower-extremity surgery, and spine surgery, and the findings are in many ways disconcerting.

They found that patients who underwent THA returned to driving as early as 6 days after the procedure; likewise, many patients who underwent TKA return to driving in the first month, even though the objective data Freedman and colleagues identified (as well as the recommendations of the NHTSA [1]) suggest that is premature and potentially dangerous. The same discordance between some patient-survey data reported by Dr. Freedman’s group and objective measurements (in this case, presented elsewhere [2]) was observed among patients who underwent rotator-cuff and other major shoulder surgery. And Freedman et al. appropriately point out that even when patients perform satisfactorily on our most-objective assessments—such as brake-response time and even driving simulators—the safe waiting periods after surgery probably represent minimums or “best-case scenarios” given the idealized conditions in those kinds of tests, which are much easier to navigate than are the challenges of real-world driving.

What is the orthopaedic surgeon to do?

Join me to find out, as I go behind the discovery—or in this case, the synthesis—with Senior Author Kevin B. Freedman MD, MSCE, in this month’s Take-5 Interview, and share your views on this important topic in a



Kevin B. Freedman MD, MSCE

letter to the editor to EIC@clinorthop.org

Take Five Interview with Kevin B. Freedman MD, MSCE, Senior Author of “When Can I Drive After Orthopaedic Surgery? A Systematic Review”

Seth S. Leopold MD: *Congratulations on publishing the most-definitive systematic review on this “real-world important” topic: Driving after orthopaedic surgery. Skeptics, though, might say the topic is not*

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important, since there are no statistics on the frequency of injuries caused by surgery-related driving impairment. Why do you believe they would be wrong?

Kevin B. Freedman MD, MSCE:

Despite the lack of current data on the frequency of accidents after surgery, it is still an important discussion to have with our patients. We can begin with what we do know: Patients have an impaired ability to operate a vehicle after surgery for many reasons: Pain, the use of narcotics, immobilization, weakness, and perhaps others. It is important to stay ahead of this issue and find ways to prevent accidents from happening, rather than waiting for the accidents to occur and analyzing the data afterwards.

Dr. Leopold: *Whose responsibility is it to decide when a patient is safe to drive, and why do you think so?*

Dr. Freedman: I believe that patients ultimately are responsible to decide when to resume driving. They are most aware of their limitations and how they are feeling postoperatively. It is their health and safety at risk when they get behind the wheel, although the safety of other drivers and pedestrians must also be considered. It is our responsibility as physicians to advise these patients and provide them with information about when measures such as brake response time typically

normalize after surgery as well as absolute contraindications to driving such as the use of narcotics (Fig. 1).

Dr. Leopold: *In certain instances, state departments of motor vehicles appear to put considerable responsibility on the physician [7] to decide when a patient's physical impairment is sufficient to preclude safe driving (indeed, physicians are considered "mandatory reporters" to the state), though there seem not to be adequate tools with which to do the job. How might we begin to remedy that seemingly important problem?*

Dr. Freedman: If physicians ultimately are deemed responsible, they need to be provided with more tools and data in order to make accurate assessments of driving abilities. Measures such as brake-response time and the use of driving simulators need to be correlated with important outcome measures such as motor vehicle accidents and driving infractions. Another remedy would be to increase access for referrals to official driving evaluations by someone formally trained to make these assessments.

Dr. Leopold: *What do you perceive to be the most-important remaining gaps in our knowledge on this topic, and how might we begin to fill these gaps?*

Dr. Freedman: One of the most-important gaps is the lack of studies

analyzing the correlation between brake-response time and more meaningful variables such as motor vehicle accidents and driving infractions. One study [6] included in our article analyzed the sensitivity of driving simulators, but this has not been analyzed with brake-response time data. This gap could be filled with a prospective study that obtains a baseline brake-response time and follows patients to acquire data on motor vehicle accidents. Another gap is the correlation of clinical tests that can easily be performed in the office with other outcome variables such as accidents. This gap has begun to be filled with the step test for some lower-extremity procedures, but there is much room for further research.

Dr. Leopold: *One finding of your report that surprised me was how quickly patients who underwent spine-surgery seemed to recover. How do you account for this? Do you really think these patients are safe to drive at the time of hospital discharge?*

Dr. Freedman: I think this finding highlights some of the limitations using brake-response time as the only variable in assessing driving ability. Although the ability to press the brake in a timely manner in response to something in the road is vital to avoiding accidents, it is not the only variable that needs to be considered. The use of narcotics,

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extreme pain, and limitations in strength and ROM all need to be evaluated for driving safety. Brake-response time may not be the best measure for patients having spine surgery, just as it is not useful when evaluating patients with upper-extremity immobilization. Therefore, the measures demonstrated in the study are likely not accurately measuring true safety for return to driving after spine surgery.

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