Patient Safety
Driving After Foot and Ankle Surgery

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KEYWORDS

• Driving • Surgery • Braking • Lower extremity • Foot and ankle • Patient safety

KEY POINTS

- It is important for orthopedic surgeons to inform their foot and ankle postsurgical patients when it is unsafe to return to driving. Several studies have examined the impact of surgery and immobilization on braking time.
- Orthopedic surgeons should not inform patients that it is definitely safe to return to driving after surgery. The return to driving is multifactorial, depending on the particular procedure performed, the timing of that procedure, immobilization, comorbidities, medications, and personal driving capabilities and habits.
- The decision to return should be informed by clinical considerations as well as state laws and insurance policy limitations.

BACKGROUND

Driving after surgery is regularly associated with the ability to stop the vehicle. Brake reaction time (BRT) is the amount of time necessary to react to a stimulus and depress the brake pedal. BRT is an important component of driving behavior and is of interest in research and in litigation with accidents. In 2000, Green[1] described a series of steps that constituted the process of emergency braking, from stimulation or situation to result (car braking). The first one is mental processing time, which includes sensation, perception, and response selection and programming. For example, one must sense an object in the road, determine the meaning of the sensation, choose which response to make, and then mentally program the movement. The second step is movement time. The final step is device response time, or the time is takes for the physical device (vehicle) to respond to the driver's input.[1] The US Federal Highway Administration defines the threshold for safe total brake response time (TBRT) as 700 milliseconds (ms).[2] TBRT is the sum of the reaction time, movement time, and device response time. It is sometimes difficult to compare and contrast studies because there is variability regarding terms and measures of time that are used to evaluate braking time and reaction. Situation-type and driver-related variables are key when evaluating BRT.[3] These driver-related variables are particularly important in the postoperative period when age, overall health, immobilization, and procedure performed play a role in a patient's mental processing and movement time.

Foot and ankle surgeons are interested in the answer to the common question of when a patient can return to driving following surgery; patients are no less interested. Although many articles are devoted to the impact of orthopedic surgery on driving, the purpose of this article is

Disclosure Statement: No disclosures.
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Orthop Clin N Am 49 (2018) 527–539
https://doi.org/10.1016/j.ocl.2018.06.002
0030-5898/18/Published by Elsevier Inc.

to specifically review the available evidence regarding driving and foot and ankle surgery.[4–8]

MEDICOLEGAL

It is important for physicians to be aware of their medical and legal responsibilities as perceived in the court of law. In the United States, most states do not have regulations about driving in a lower extremity cast, removable lower extremity immobilization device, or after foot and ankle surgery. Sansosti and colleagues[9] reviewed the US driving laws relative to foot and ankle patients for all 50 states. In their study, the District of Columbia, Connecticut, Maine, and Vermont were the only states identified with any information about driving with a lower extremity cast or immobilization device. Even within these 3 sets of state regulations, the information and wording were vague. Maine was the most specific and included the wording "driving may need to be temporarily prohibited due to an immobilizing cast…if it impedes safe operation of a motor vehicle." The words "may" and "if" still left much to the interpretation of the driver. Other states indicated that "any health problems can affect your driving," and that the "foot should be able to pivot smoothly from brake to accelerator while the heel is kept on the floor." Pennsylvania was the only state that required a medical evaluation and clearance to apply for a driver's permit.

Even though no states have laws specifically referring to cast, brace, or postoperative period, all states have offenses for carelessness, recklessness, and negligence. The definitions for these 3 offenses are not specific and can be interpreted to mean different things by law enforcement officials. One might argue that driving with a lower extremity cast or brace on or driving in the postoperative period falls under carelessness, recklessness, or negligence. Driving while using narcotic pain medications will result in "driving under the influence charge" in most states.

Very few states require physicians to report patients with impaired driving function, but other states do have ways for physicians to do so if they wish. Oregon and Pennsylvania specifically require physicians to report patients with impaired driving ability. In Oregon, physicians "must report patients if cognitive and functional impairments become severe and uncontrollable." In Pennsylvania, physicians must report any patient 15 and older who has a condition that could "impair his/her ability to safely operate a motor vehicle." Most states grant immunity to physicians with respect to reporting potentially impaired drivers, but Alaska, Arkansas, the District of Columbia, Nevada, New Hampshire, New Jersey, New Mexico, New York, South Dakota, Texas, Virginia, and Washington do not.[9] Physicians may have liability if they fail to correctly advise patients not to drive.[10]

Several studies have looked into the medical and legal implications of returning to drive in the United Kingdom. Although the specific rules and laws may differ from the United States, the review papers offer useful advice for physicians to provide patients on returning to drive.[11,12] When a patient is likely fit to return to driving, he or she should first practice with the pedals and hand controls in a stationary car. Next, he or she should take the car for a short drive while accompanied by another driver who could take over should the patient feel unable to continue. Finally, the patient may then progress to driving unaccompanied. The important thing is to slowly build up to a full return to driving alone.

INSURANCE

Insurance companies typically do not publically detail when a patient can or cannot return to driving after surgery, and there have been no studies up until this point surveying insurance companies in the United States. Several studies from the United Kingdom have surveyed insurance companies for their recommendations following orthopedic surgery, and the consensus from these studies is that the ability to return to driving depends on the patient even though the physician's opinion plays a role.[13] The patient is ultimately responsible, and the key is that the patient is in control of the vehicle. If stopped by the police, the patient needs to demonstrate that he or she was in control of the vehicle.[12] A 1996 study from the United Kingdom sought the opinion of major insurance companies for returning to drive after orthopedic surgery. This study indicated that insurers could refuse insurance coverage when a driver had an accident while still recovering from an earlier injury or operation, but insurers did say that coverage typically would be maintained if patients followed the physician's advice.[11] In 2003, Von Arx and colleagues[14] had a poor survey response of the insurance companies in the United Kingdom, but the consensus was that patients should follow the advice of the physicians even though all cases would be evaluated individually.