Evaluation of Brake Response Time Following Primary Bunionectomy Surgery

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Introduction/Purpose: Although primary bunionectomies are among the most common procedures performed by Foot and Ankle surgeons, there are currently no studies investigating postoperative driving safety in this group of patients. The purpose of this study was to evaluate postoperative brake response time (BRT) in primary right-sided bunionectomy patients as a means to determine driving preparedness. Brake response time is defined as the time, in milliseconds, between presentation of a perceived hazardous stimulus and the application of pressure to the brake pedal. We hypothesized that primary bunionectmomy patients would demonstrate BRTs comparable to control subjects at their 6-week follow-up appointment.

Methods: Following IRB approval, 45 primary right-sided bunionectomy patients were prospectively identified and enrolled. All patients were managed with the same postoperative protocols. Patients were excluded if they were under the age of 18, were not in possession of a current driver's license, had undergone a revision surgery for recurrent hallux valgus, or opted not to partake in the study. All patients were tested for their BRT utilizing a validated driving simulator at their 6-week postoperative follow-up appointment. Those patients that failed to achieve a safe brake response time less than 0.850 seconds were re-tested at weekly intervals until a safe braking time was achieved. The passing brake response time of 0.850 seconds was determined from the published control data and from testing 20 healthy volunteers in the same simulator. At each BRT test, patients were also asked to fill out an AOFAS Hallux Metatarsophalangeal-Interphalangeal Scale and a Driving Preparedness survey.

Results: Each subject underwent 3 sequential drive-braking simulation tests, with their BRT being calculated as an average of the 3 times. At six weeks, the overall average BRT for all 45 patients was 0.769 seconds. 40 out of 45 patients (89%) demonstrated safe average BRT at their 6-week appointment of equal to or less than 0.850 seconds. 4 out of 45 patients (9%) were cleared to drive at their 7-week re-test, and 1 out of 45 patients (2%) was cleared to drive at an 8-week re-test. 37 of the 40 patients whose test demonstrated a safe BRT at 6 weeks responded in their survey that they "Agreed" or "Strongly Agreed" they were ready to drive at the time of testing. The average AOFAS-MT-IP score was 65.2/100.

Conclusion: The present study revealed that approximately 90% of primary right-sided bunionectomy patients were able to demonstrate a BRT comparable to those of healthy control subjects at their 6-week post-op appointment. 37 of these 40 patients (93%) also reported that after completing the test, they felt ready to return to driving. Therefore, we believe that it is reasonable to offer bunionectomy patients an estimate of 6-weeks recovery time before driving.

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