

Previous-day alcohol consumption appears to affect surgical skills on virtual reality simulator

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Excessive alcohol consumption appears to be associated with changes in some surgical skills performed on virtual reality simulator testing the following day, according to a report in the April issue of *Archives of Surgery*, one of the JAMA/Archives journals.

"While surgical performance is certain to be impaired acutely with excessive alcohol consumption, there is little information that defines the persistence of this effect," the authors write as background information in the study. "The potential for both early and late alcohol-related performance problems to emerge during laparoscopic surgery is of particular concern given the intense demands it makes on cognitive, perceptual and visuospatial abilities and the known vulnerability of these human factors to the effects of alcohol."

Using a naturalistic, true-life setting, Anthony G. Gallagher, Ph.D., of the National Surgical Training Centre, Royal College of Surgeons in Ireland, Dublin, and colleagues examined the effects of previous-day alcohol consumption on laparoscopic surgical performance. Sixteen male final-year science students at Queen's University were included in study one and eight laparoscopic experts participated in study two. All participants were trained on the Minimally Invasive Surgical Trainer Virtual Reality (MIST-VR) and baseline scores were recorded on day one.

Eight students were randomly assigned to the alcohol consumption group, and the other eight were randomized to the control group. Students in the alcohol consumption group participated in a group dinner, and were asked to consume alcohol freely. Students in the control group also participated in a group dinner, but no alcohol was served. All eight experts attended a separate dinner and were asked to freely consume alcohol. One or more of the investigators was present for all events, and observed signs of intoxication in both alcohol consumption groups. The participants performed tests of simulated surgical skill performance on the MIST-VR the next day at 9:00 a.m., 1:00 p.m. and 4:00 p.m.

In study one, the control group showed no changes in performance factors from the baseline test through the three test sessions in all three areas tested - time, errors and economy of diathermy (ability to perform technique designed to produce local application of heat). Students in the [alcohol consumption](#) group, however, performed worse on all three measures and showed considerable performance variability. Although differences were seen in the time it took participants to perform the tasks, only the difference at 9:00 a.m. was statistically significant.

In study two, the experts made more errors at 9:00 a.m., 1:00 p.m. and 4:00 p.m., compared with baseline assessments, however only the difference at 1:00 p.m. was statistically significant. The experts performed the tasks faster at 9:00 a.m. when compared with baseline results, however performance was significantly worse during the 1:00 p.m. tests. Performance had returned to baseline levels by 4:00 p.m.

"In the two studies reported herein, we showed persistent detrimental performance effects the day after excessive alcohol had been consumed," the authors conclude. "Given the considerable cognitive, perceptual, visuospatial and psychomotor challenges posed by modern image-guided surgical techniques, abstinence from alcohol the night

before operating may be a sensible consideration for practicing surgeons."

More information: Arch Surg. 2011;146 [4]:419-426.

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