

Outcome of after-hours surgery: Setting, skill and timing may explain the outcome

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We read with interest the single-centre retrospective study by Chiu and colleagues about the outcome of after-hours elective spine surgery. The authors performed a propensity score matching using patients' and surgical characteristics and created two groups according to the time of surgery (08:00–16:59 daytime; 17:00–06:00 after-hours).¹ They did not find any difference in terms of surgical outcome, intraoperative blood loss and length of hospitalization. The authors concluded that this type of surgery performed during after-hours is as safe as during daytime. We believe that these conclusions should be considered in light of the following comments.

First, a recently published study reported prospectively collected data about the association between night-time surgery (elective, urgent or emergency) and intraoperative adverse events in 9861 patients (enrolled in 146 hospitals from 29 countries).^{2,3} The study considered serious adverse event such as episodes of hypotension or arrhythmias, need of vasopressors and intraoperative desaturation.

Daytime was defined as a time of anaesthesia induction between 8 a.m. and 7:59 p.m. and night-time between 8 p.m. and 7:59 a.m. Both unmatched and propensity score matched analyses demonstrated that serious intraoperative adverse events were more frequent in the night-time group than daytime group (43.6% vs. 34.1%, $p < 0.001$; 43.7% vs. 36.8%, $p = 0.029$, respectively). A multivariable regression model demonstrated that night-time surgery was significantly associated with a higher incidence of intraoperative adverse events (odds ratio: 1.44, 95% confidence interval: 1.09–1.90, $p = 0.01$). Notably, joint, bone or trauma surgery accounted for 20% of cases approximately. Based on these data from a large prospectively collected data set, the authors concluded that night-time surgery was associated with a higher incidence of intraoperative adverse events which cannot be explained only with unbalance in patients and surgical characteristics between daytime and night-time.

Second, the authors nicely reported the stratification of operations according to the time of start, which showed that the vast majority of patients in the 'after-hours' group underwent surgery between 17:00 and 19:00. Since the average operation time was around 140 min approximately, it may be argued that most of after-hours surgeries finished before 22:00. As stated by the authors in the discussion, this time slot is unlikely to be association to the detrimental effect of night-time working such as fatigue, worse team-working and reduced alertness. So it can be argued that the 'night-time' effect was not evaluated in that study.

Third, the perioperative and postoperative data are quite similar. This may be explained by an 'attitude' and habit of this surgical team to perform surgery in the (even late) afternoon and evening. This 'skill' in association with the very specific type of surgery (elective and in healthy young patients) and the 'not so late' timing of surgery can explain the study findings.

So, in our opinion, the conclusion of this study should be read taking into account these factors and should not generalize to the whole concept of 'after-hours' and to other centre that may not have the appropriate skill.

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