This retrospective study compares intraoperative blood loss during spinal surgery in patients administered either remifentanil or fentanyl as an opioid adjuvant during general anesthesia for spinal surgery. In addition to intraoperative blood loss, indices of hemodynamic stability, including heart rate and systolic, mean, and diastolic blood pressure were compared over the entire perioperative period.

Intraoperative blood loss was lower in the remifentanil group and this group exhibited significantly lower intraoperative arterial BP than the fentanyl group.

Patient selection was well suited as patients who received induced hypotensive anesthesia were excluded: the AA selected two well matched series of patients and administered intraoperative remi or fentanyl as an opioid adjuvant. Hemodynamic parameters were recorded at several points: before induction of anesthesia; at skin incision; 30, 60 and 90 min after skin incision; and at the end of anesthesia. Laboratory levels of preoperative and postoperative hemoglobin, hematocrit, and platelet count were also obtained and these data confirm well the results displayed. The infusion rate of remifentanil or the dose of fentanyl during maintenance was left to the discretion of the attending anesthesiologist. The primary end point was the estimated intraoperative blood loss, which was calculated from surgical suction volume and the weight of the gauze from the operative field.

There were no significant differences in the demographic variables age, gender ratio, weight, height, body mass index, ASA physical status, and history of hypertension between anesthetic groups (Table 1).

Similarly, there were not significant differences in the intraoperative variables duration of anesthesia, operation time, site of surgery (cervical vs. lumbar spine), or number of decompression segments.

Intraoperative SBP, MBP, and DBP were lower in the remifentanil group at all intraoperative measurement times (P < 0.05 for all hemodynamic parameters), suggesting that remifentanil may decrease intraoperative blood loss by inducing a sustained drop in BP during the...
intraoperative period.

Postoperative Hb and Hct values were in fact significantly reduced only in the Fentanyl group of patients.

In addition, more ephedrine was used in the remifentanil group than in the fentanyl group, and more

nicardipine was used in the fentanyl group than in the remifentanil group, indicating that continuous

infusion of remifentanil cause a greater suppression of the endocrine stress and inflammatory responses

than intermittent boluses of fentanyl.

Although intraoperative hemodynamic stability can be achieved by administration of relatively large doses of any anesthetic agent, such treatment may delay extubation or recovery, particularly the time until patients can response to queries posed by the clinicians. Furthermore, delayed awakening from anesthesia may complicate postoperative neurological assessment after spinal surgery. Times to patient response post-op is crucial and remifentanyl provides a useful alternative management.

This paper is acceptable and well done.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests