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Small-Dose Fentanyl in Intravenous Versus Epidural Preemptive Analgesia

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**Abstract:** In this randomized, double-blinded study, the preemptive effects of intravenous and epidural fentanyl analgesia were compared with post-incisional analgesia in 40 patients undergoing orthopedic surgery of the lower extremities. Patients were randomly allocated to one of two groups; intravenous or epidural analgesia, with twenty patients in each group. General anesthesia was induced with thiopentone 5-6 mg/kg<sup>-1</sup> and maintained with 0.8-1.0% isoflurane and 66% nitrous oxide in 33% O<sub>2</sub>. The trachea was intubated after administration of vecuronium 0.1 mg/kg<sup>-1</sup>. Patients in the epidural analgesia groups then received, by random allocation, 2 µg/kg<sup>-1</sup> fentanyl with 0.9% saline (total volume 0.15 ml/kg<sup>-1</sup>) after epidural catheter replacement 15 minutes before (preemptive epidural analgesia group-PEEA) or 15 minutes after (epidural analgesia group-EA) the surgical incision. Patients in the analgesia groups received, by random allocation, 2 µg/kg<sup>-1</sup> fentanyl intravenously immediately after induction (preemptive intravenous analgesia group-PEIV) or 15 minutes after the surgical incision (intravenous analgesia group-IV). Visual analogue pain scores (VAS) and postoperative morphine consumption in the preemptive groups were consistently lower than in the analgesia groups, although there was no statistical significance. Similarly, the first analgesic requirement time was longer in the PEEA group than in the EA group. Differences in the plasma concentration of glucose and cortisol were neither consistently nor significantly different between the study groups. In regard to these findings, we believe that with the management of patients with 2 µg/kg<sup>-1</sup> fentanyl intravenously or epidurally before painful stimuli lowers the VAS and postoperative analgesic use. Higher doses of fentanyl may be necessary for optimal and significant results.

**Key Words:** Analgesia, preemptive. Analgesics, opioid, fentanyl. Surgery, orthopedic.

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