**Abstract** *(in English – Times New Roman 12 - max. one page)* Deadline for receipt: March 31, 2024

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| Title: Evaluating the Safety and Efficacy of Propofol and Sufentanil Combination for Endoscopic Sedation: A Propensity-matched Cohort Study  Author(s): Loxhay J. 1, Maseri A², Bairy L.².  Hospital/Institute: 1. Cliniques Universitaires Saint-Luc, Department of Anesthesiology, Woluwé-Saint-Lambert, Belgium ; 2. CHU UCL Namur, Department of Anesthesiology, Yvoir, Belgium*)* |
| **Objective:**  A retrospective analysis was conducted on 1326 cases to evaluate the effects of administering 5 mcg sufentanil during colonoscopy procedures, in some cases associated with a gastroscopy. This study aimed to evaluate the influence of sufentanil on procedure duration, total propofol injected, and the patients’ respiratory and hemodynamic parameters.  **Background:**  Colonoscopy and gastroscopy are routine procedures that are often performed under sedation or general anesthesia to improve patient and endoscopist comfort¹ and lesion detection rates². Target-controlled propofol infusion is commonly used for sedation, sometimes supplemented with sufentanil.  **Methods:**  A retrospective, monocentric propensity-matched cohort study was conducted on patients undergoing colonoscopy with or without gastroscopy under sedation between May 2018 and December 2020. The study included patients who received propofol infusion with (SUF group) or without (PRO group) adjunctive 5 mcg sufentanil. A cohort with matched baseline characteristics (age, BMI, ASA score, and associated gastroscopy) was created using 1:2 propensity score matching. Student's t test or Mann-Whitney U tests were used depending on the distribution of the variables. This study was approved by the ethics committee of CHU UCL Namur, ref. 125/2021. The manuscript adheres to the STROBE guidelines.  **Results:**  A total of 5332 patients underwent a colonoscopy either alone or in conjunction with a gastroscopy. There were no differences in age (SUF 58.4±15.1, PRO 59.1±14.9, p=0.408), BMI (SUF 30.6±5.1, PRO 30.5±5.4, p=0.434), or ASA score (SUF 233/140/17/0, PRO 468/276/36/0). No difference in procedure duration was found between the SUF and PRO groups (SUF 31±14, PRO 32±15, p=0.214). In the SUF group, the total propofol administered was significantly lower than in the PRO group (SUF 439.7±191.6, PRO 480.6±247.9, p=0.033). Hemodynamic stability, measured by heart rate variability (SUF 27+/-12 PRO 27+/-13 p=0.505) and mean arterial pressure variability (SUF 31+/-17 PRO 32+/-19, p=0.991), showed no significant differences. There was no clinically significant difference in respiratory rate variability (SUF 28±12, PRO 28±10 p=0.0343). There was no clinically significant difference in mean SpO2 (SUF 98.8±1.3, PRO 98.9±1.9, p=0.044), nor in SpO2 variability (SUF 4.3±5.3, PRO 3.9±5.5, p=0.030).  **Conclusions:**  This study found a significant decrease in propofol consumption in the SUF group compared with the PRO group, but this difference may have limited clinical relevance. Furthermore, the findings suggest no significant differences in hemodynamic and respiratory parameters between the two groups. The addition of sufentanil to propofol sedation can lower the injected propofol while maintaining patient safety in terms of hemodynamic and respiratory stability.  **Declaration of interests:**  The authors declare no conflict of interest.  **Funding:**  This work was not supported by financial support  **References:**  1. Lee, C.K. et al. Balanced propofol sedation for therapeutic GI endoscopic procedures: a prospective, randomized study. *Gastrointest. Endosc.* 73(2), 206-214 (2011).  2. Zhou, J. et al. Influence of Sedation on the Detection Rate of Early Cancer and Precancerous Lesions During Diagnostic Upper Gastrointestinal Endoscopies: A Multicenter Retrospective Study. *Am. J. Gastroenterol.* 116(6), 1230-1237 (2021). |