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Infection Risk Associated with Minimal-Flow Anesthesia: A Randomized Controlled Trial

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## Statistical Analysis

Data was analyzed by using IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk,
NY, USA). All statistical tests were two-tailed, and $p<0.05$ was considered statistically significant.

The distributional properties of continuous variables were assessed using the Kolmogorov-Smirnov test, and homogeneity of variances was evaluated with Levene's test. Continuous variables with a normal distribution are presented as mean ± standard deviation, whereas non-normally distributed continuous variables are expressed as median (min – max). Categorical variables are reported as frequencies (n) and percentages (%).

Comparisons between the minimal-flow and high-flow anesthesia groups were performed according to data distribution. Independent samples Student's t test was used for normally distributed continuous variables, while the Mann-Whitney U test was applied for non-normally distributed variables. Categorical variables were compared using Pearson's $\chi^2$ test. When expected cell counts were < 5 in at least 25% of cells in 2×2 contingency tables, Fisher's exact test was applied; the continuity-corrected $\chi^2$ test was used when expected frequencies ranged between 5 and 25.

Longitudinal changes in hemodynamic parameters, including systolic blood pressure, diastolic blood pressure, heart rate, peripheral oxygen saturation, and end-tidal carbon dioxide, were evaluated
using repeated measures analysis of variance (RM-ANOVA). The effects of time (within-subject factor), group (between-subject factor), and group × time interaction were examined. When the assumption of sphericity was violated, the Greenhouse-Geisser correction was applied. In parameters demonstrating significant main or interaction effects, pairwise comparisons between time points were conducted using Bonferroni-adjusted post-hoc tests. Overall group differences across the entire follow-up period were interpreted based on the between-subject (group) main effect, whereas temporal patterns were evaluated using the group × time interaction term.

Microbial contamination of the anesthesia circuit was analyzed as a categorical outcome. The

presence or absence of contamination in the nasal filter, inspiratory limb, and expiratory limb was

compared between anesthesia groups using $\chi^2$-based tests as appropriate. In secondary analyses, patients were further classified according to the presence or absence of microbial contamination in the inspiratory or expiratory limbs, and clinical and demographic characteristics were compared between these groups using the same statistical approach.