

THE INFLUENCE OF NASAL SPLINTS ON BLOOD OXYGEN SATURATION (SPO₂) DYNAMICS FOLLOWING SEPTOPLASTY

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INTRODUCTION

Arterial blood oxygen saturation (SpO₂) is a simple and reproducible indicator that allows for the objective assessment of ventilation and gas exchange effectiveness in a clinical observation setting. In the early postoperative period and in conditions involving airway restriction or pronounced discomfort, SpO₂ can decrease even in the absence of severe respiratory failure.

This is especially important for patients who, in the first 24 hours, may experience episodes of hypoventilation, impaired nasal breathing, pain, and reduced physical activity. Regular monitoring of SpO₂ helps to promptly identify adverse trends, assess the safety of the chosen treatment strategy, and compare the effectiveness of various patient management approaches.

From a practical standpoint, the most informative measurements are those taken before an intervention (or the start of therapy) and at key follow-up points during recovery, which make it possible to track the rate at which the parameter normalizes and the stability of the achieved effect. The data below show the dynamics of SpO₂ in a control group and two clinical groups at four time points.

Comparing the indicators between the groups allows not only for documenting the presence of deviations but also for quantitatively describing the severity of hypoxemia and the rate of recovery. In a research context, this creates a basis for a statistically sound comparison of results, and in clinical practice, it informs decisions regarding the need for oxygen support, adjustments to pain management, and optimization of the monitoring regimen.

Table 4.1. Blood oxygen saturation

	CONTROL GROUP	GROUP 1	GROUP 2
SpO ₂ (%), 1 day prior	96.0±0.31	94.8±0.22*	97.0±0.23*,**
SpO ₂ (%), day 1	97.1±0.33	89.7±0.2*	93.1±0.19*,**
SpO ₂ (%), day 5	96.4±0.36	93.0±0.19*	95.2±0.22*,**
SpO ₂ (%), day 10	96.8±0.35	94.9±0.22*	98.0±0.19*,**

Note: * denotes a significant difference compared to the control group at $p < 0.05$, $p < 0.01$, $p < 0.001$; ** denotes a significant difference compared to Group 1 at $p < 0.05$, $p < 0.01$, $p < 0.001$.

Study Objective: To assess the dynamics of SpO₂ in patients across three groups at four time points (1 day prior, day 1, day 5, and day 10) and to identify intergroup differences.

Materials and Methods: The study employed a comparative design, forming three observation groups: a control group (20 healthy individuals) and two clinical groups (Group 1 and Group 2, each with 50 patients). In all groups, blood oxygen saturation (SpO₂, %) was measured using pulse oximetry at four time points: 1 day prior, and on day 1, day 5, and day 10 of the observation period.

The results are presented as mean±SEM. Intergroup differences were evaluated, with levels of statistical significance indicated as follows: * denotes a significant difference compared to the control group; ** denotes a significant difference compared to Group 1 ($p < 0.05$; $p < 0.01$; $p < 0.001$).

Results In the control group, SpO₂ values remained stable throughout the observation period (≈96-97%). In Group 1, even before the control event/intervention, SpO₂ was lower than in the control group (94.8±0.22 vs. 96.0±0.31; the difference was significant). On day 1, a pronounced decrease to 89.7±0.2 was recorded, indicating transient hypoxemia in the early period. By day 5, the value increased to 93.0±0.19, and by day 10, it reached 94.9±0.22; however, it remained significantly different from the control. In Group 2, SpO₂ was statistically higher than in Group 1 at all time points (marker **) and did not demonstrate such a profound drop on day 1 (93.1±0.19). By day 10, high values were reached (98.0±0.19), reflecting a more favorable recovery dynamic.

Conclusions

- SpO₂ is a sensitive indicator of early adverse changes on the first day of observation.
- Group 1 showed the most pronounced decrease in SpO₂ on day 1, with incomplete recovery by day 10 relative to the control group.
- In Group 2, SpO₂ values were higher than in Group 1 and were characterized by a faster and more complete recovery.