

Investigation of preoxygenation methods in cesarean surgeries with the oxygen reserve index

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Objectives: To investigate preoxygenation methods that were carried out for 3 minutes (min) at tidal volume and 30 seconds (s) with the 4 deep vital capacity technique using the Oxygen Reserve Index (ORI) among pregnant women.

Methods: This prospective study was carried out between December 2020 and 2021. The patients were randomly divided into 2 groups with the provision of preoxygenation using 100% O₂ at a rate of 10 L.min⁻¹ for 3 min at normal tidal volume (Group 1) and 30 s with the 4 deep vital capacity technique (Group 2). For the pregnant women who underwent routine anesthesia induction, hemodynamic parameters before preoxygenation, as well as their fraction of inspired O₂ (FiO₂), fraction of expired O₂ (FeO₂), and ORI values were recorded after preoxygenation and 0, 3 and 7 minutes after intubation (T1, T2, T3, and T4).

Results: The study was completed with 66 patients. FiO₂ values were found to be low in T1 ($p=0.012$) in Group 1, and high in FeO₂ values in T1 and T2 ($p=0.025$ and 0.009) in Group 2, while no significant differences were found at other times ($p>0.05$). Oxygen Reserve Index values did not show a significant difference in comparisons between groups, but ORI values of Group 1 after intubation were significantly lower than those measured after preoxygenation in in-group comparisons ($p<0.001$). According to the results of the correlation analyses between the mean ORI values and their mean FeO₂ and FiO₂ values, there were weak and positive statistically significant relationships at T3 and T4 ($p<0.05$).

Conclusion: As we obtained greater FiO₂ and FeO₂ values in preoxygenation with the 30 s 4 deep vital capacity method, and because this method did not cause a significant decrease in the post-intubation ORI values, we believe that the usage of this method in cesarean section surgeries may be appropriate.