

Can remimazolam become an alternative agent of propofol in orthognathic surgery?

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Introduction

Postoperative nausea and vomiting (PONV) after general anesthesia is one of the major postoperative complications and a distressing and unpleasant symptom for patients. The incidence of PONV in orthognathic surgery is estimated at approximately 40-67%, because the distinctive population showing the large number of young female patients is undergoing this surgery and the bleeding from the surgical field often runs into the stomach during and after surgery. Especially, the vomiting after an orthognathic surgery may cause serious complications such as an airway obstruction or aspiration pneumonia. Therefore, general anesthesia for orthognathic surgery is commonly maintained with propofol to prevent these risks. Although propofol has an anti-emetic effect, intraoperative hypotension is likely to occur during propofol anesthesia. Remimazolam besilate (remimazolam), a new intravenous anesthetic, has less negative inotropic effect. However, its anti-emetic effect is unknown. The purpose of this study was to evaluate the incidence of PONV and the average blood pressure between remimazolam and propofol in patients who underwent orthognathic surgery.

Methods

This study was approved by the Ethics Committee of Tokyo Dental College (approval number: 1065). Patients who underwent orthognathic surgery under total intravenous anesthesia with either propofol (P group) or remimazolam (R group) from January 2021 to March 2022 were enrolled. The medical, anesthesia, and nursing records were reviewed retrospectively. Primary end point was the incidence of PONV (up to 2 h and 2-24 h after surgery). Secondary end points were the incidence of intraoperative hypotension which consists of average intraoperative systolic blood pressure and the incidence of intraoperative hypotension (mean arterial pressure < 65 mmHg). Statistical analysis was

performed using the chi-square test and the Mann–Whitney U-test. A p-value of less than 0.05 was considered significant. Data were expressed as mean \pm standard deviation.

Results

A total of 125 patients (P group: 84 patients; R group: 41 patients) were included. There were no significant differences between two groups in terms of patient characteristics, surgical procedure, anesthesia time, the amount of the intraoperative bleeding, total remifentanil and fentanyl doses, and postoperative opioid use. The incidence of PONV up to 2 h after surgery was significantly lower in the P group than in the R group. However, there was no difference regarding the incidence of PONV from 2-24 h after surgery. The incidence of intraoperative hypotension was significantly lower in the R group (2.4%) than in the P group (22.6%), though the average intraoperative systolic blood pressure exhibited no significant difference (101.2 ± 7.6 mmHg in the P group vs. 109.1 ± 7.8 mmHg in the R group).

Conclusion

The results demonstrate that intraoperative hypotension occurred less frequently during remimazolam. On the other hand, the incidence of PONV in the early postoperative period was shown to be higher in the remimazolam. The further study will be needed to evaluate the efficacy of the multimodal strategy to reduce PONV after remimazolam anesthesia.