Randomised controlled comparison of monitored anesthesia care using dexmedetomidine-remifentanil vs. propofol-remifentanil during hysteroscopy

J.S. Lee M.D., S. J. Park M.D., Ph.D., S. H. Do M.D., Ph.D.

Department of Anesthesiology and Pain Medicine, Seoul National University Bundang Hospital, Korea

Background

The purpose of this study was to compare the safety of dexmedetomidine-remifentanil and propofol-remifentanil during monitored anesthesia care (MAC) for hysteroscopy.

Materials and Methods

Seventy female patients undergoing hysteroscopy were randomly assigned to either the dexmedetomidine (Group D) or the propofol (Group P) group. In both groups, remifentanil was infused using a target-controlled-infusion system with a target concentration of 2 ng/ml and titrated during the procedure. The study drug (0.6 ml/kg; dexmedetomidine 2 µg/ml or propofol 4 mg/ml) was loaded for 10 min followed by 0.1–0.5 ml/kg/h to maintain a bispectral index of 60–80 during the procedure. Respiratory depression was defined as SpO₂ < 90% or respiratory rate < 8 breaths/min. Intra- and postoperative pain were also evaluated using a numeric rating scale (0–100).

Results

The intraoperative mean arterial pressure (MBP) was significantly higher in Group D only until the start of the operation. The intra- and postoperative heart rate and postoperative MBP were generally lower in Group D. The incidence of respiratory depression was significantly lower in group D. Intraoperative pain, postoperative pain did not differ between the groups. (Table 2)

Conclusion

Our results suggest that the combination of dexmedetomidine-remifentanil can reduce the incidence of respiratory depression and provide safer sedation compared with propofol-remifentanil for MAC during hysteroscopy.

Table 1. Demographic and surgical characteristics of the two groups

	Group P (n=34)	Group D (n=36)	p-value
Age (yr)	45.7 ± 9.2	45.5 ± 9.9	0.759
Height (cm)	158.6 ± 6.1	160.3 ± 6.1	0.175
Weight (kg)	56.7 ± 6.3	58.4 ± 7.8	0.527
BMI	22.5 ± 2.2	22.8 ± 3.5	0.792
ASA	I (31)/ II (3)	I (31)/ II (5)	
BIS after study drug loading	58.8 ± 11.5	63.2 ± 10.1	0.406
Duration of operation (min)	29.2 ± 15.6	31.2 ± 14.9	0.48
Duration of anaesthesia (min)	52.0 ± 17.7	52.4 ± 17.2	0.905
PACU time (min)	33.7 ± 5.6	35.9 ± 9.9	0.634
Remifentanil dose (µg)	234.1 ± 135.1	216.4 ± 82.5	0.941

Values are expressed as means ± standard deviation. Demographic data and surgical characteristics were not different significantly between the two groups. BMI: body-mass index, BIS: Bispectral index score, PACU: post-anesthesia care unit.

Table 2. The incidence of perioperative adverse events

	Group P (n=34)	Group D (n=36)	p value
Hypertension (SBP>140 mmHg)	1 (2.9%)	0 (0%)	0.314
Hypotension (SBP<90 mmHg)	10 (29.4%)	3 (8.3%)	0.031
Tachycardia (HR>100 bpm)	2 (5.8%)	0 (0%)	0.151
Bradycardia (HR<50bpm)	6 (17.6%)	19 (52.8%)	0.001
Respiratory depression	14 (41.2%)	5 (13.9%)	0.018
Postoperative nausea and vomiting	3 (8.8%)	1 (2.8%)	0.303
Intraoperative pain score (NRS)	16 ± 27	7 ± 14	0.225
Postoperative pain score (NRS)	20 ± 25	12 ± 21	0.116
Rescue analgesics	8 (23.5%)	3 (8.3%)	0.099

Values are expressed number (%), except intraoperative and postoperative pain score. Intraoperative and postoperative pain score are expressed as mean ± standard deviation. SBP: systolic blood pressure, HR: heart rate, NRS: numeric rating scale

Figure 1. Intraoperative and postoperative changes in mean arterial pressure and heart rate