Use of Dexmedetomidine in Non-intubated Thoracoscopic Surgery

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Introduction

Optimal level of sedation and respiratory pattern both play important roles in non-intubated thoracoscopic surgery. Common intravenous anesthetics, fentanyl and propofol, cause respiratory depression. **Dexmedetomidine**, as a highly selective alpha-2 adrenergic agonist, exhibits anxiolytic, sedative, and analgesic properties. It is **devoid of respiratory depression**, and had been approved for non-intubated procedural sedation. However, little is known about its feasibility and safety in non-intubated thoracoscopic surgery.

Patients and Methods

We evaluated 33 patients with lung tumors who underwent non-intubated thoracoscopic surgery using a **combination of dexmedetomidine and propofol** between February 2016 and September 2017. During anesthetic induction, dexmedetomidine infusion was provided at a constant rate of 0.5 µg/kg/hr through the whole procedure. Target-controlled infusion with propofol was administered to achieve a bispectral index value between 40 and 60.

Table 1. Patient Demographic and Clinical Characteristics

Characteristics	Mean ± SD; No. of Patients (%)
Age, years	58.8 ± 12.0
Sex, female	23 (70)
Body mass index	22.0 ± 2.5
Smoking Status, ever	4 (12)
Comorbidities	
HTN	7 (21)
DM	5 (15)
Cardiac disease	4 (12)
Anatomical resection	10 (30)

Results

There was **no** conversion to tracheal intubation. Eighteen patients (55%) experienced **bradycardia** during the procedure and required inotropic agents. There were 4 patients (**22%**) experienced lower oxygen saturation (SpO₂ < 90%) and did not sustain for more than 5 min. During surgery, the mean PaCO₂ was **43.1 ± 7.4** mmHg. After surgery, dizziness developed in 5 patients, urinary retention in 1, nausea in 7, and 2 patients experienced vomiting requiring medication. During the perioperative period, 15 patients (**45%**) did **not** require morphine, including 4 patients underwent lobectomy and 2 segmentectomy.

Table 2. Opioid Requirement During Perioperative Period

Characteristics	Dose; No. of Patients (%)
Intraoperative consumption	69.7 ± 33.5
Fentanyl (mcg)	
Intraoperative incremental	14 (42)
Fentanyl-free	
Postoperative analgesia	15 (45)
Morphine-free	

Conclusion

Nonintubated thoracoscopic using a combination of dexmedetomidine and propofol is **feasible**. Its **analgesic** property may extend into the postoperative period with morphine-sparing effect. It may be provided as an intraoperative adjuvant to reduce opioid related adverse effects and improve postoperative outcomes in nonintubated thoracic surgery.