

# Systemic Considerations in Monitored Sedation for Topical Anesthesia in Cataract Surgery



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## Introduction

Ophthalmic surgery is one of the most common procedures performed in the elderly population worldwide, particular cataract surgery. There have been major advances in anesthetic aspects of ophthalmic surgical procedures, including shift from general anesthesia to ambulatory surgery with local anesthesia (LA) [1]. Various current LA options include retro bulbar, per bulbar, sub-tenon and topical anesthesia. Choice of local anesthetic technique is determined by considering patient condition, surgical procedure and surgeon preference. Topical anesthesia is now preferentially used in cataract surgery given the advantages of rapid onset of anesthesia, patient comfort and eliminating the risks from injection anesthesia [2]. Topical anesthesia alone may not provide adequate pain control and complete akinesia, which could lead to complications during surgery. For that reason, combined techniques using sedation and local anesthesia are the current trend [3].

The anesthetic goal for all ophthalmic surgery is to provide the patient with analgesia and anxiolysis while maintaining physiological homeostasis, as well as, the return of preoperative baseline functional status. This is challenging given the many accompanying systemic diseases with which patients present. Sedation for cataract surgery under topical anesthesia requires minimal participation from the patient. However, deep sedation should be avoided whenever possible. Deep sedation increases risk of respiratory depression and apnea. The operation site is close to the airway and it may be difficult to access the patient airway in the event of respiratory arrest. Because of this, it is imperative that a patient maintain a patent airway. Local anesthesia with sedation should be closely monitored throughout the perioperative period.

The Royal College of Anesthetists and the Royal College of Ophthalmologists in the UK published guidelines on local anesthesia for ophthalmic surgery in 2012, which provided information in order to promote safe and effective management of ophthalmic surgery under local anesthesia. Sedation techniques

are a part of anesthetic care; however, the best sedative agents are still being debated. Goals of sedation in cataract surgery aim to facilitate a safe surgical procedure with patient comfort without complications. This article discusses current anesthesia care with respect to systemic considerations for cataract surgery under monitored sedation with topical anesthesia.

## Specific Disease Considerations for Pre-Operative Assessment

### Cardiovascular considerations: Coronary Arterial Disease, Congestive Heart Failure, Valvular Heart Disease, Arrhythmias and Hypertension

Currently, there is no strong evidence to support a specific cut-off value for high blood pressure at which surgery should be postponed. However, uncontrolled hypertension could lead to systemic and ophthalmic complications. Recent guidelines recommend continuing anti-hypertensive medications up until and including the day of surgery. Guerrier et al. [4] reported risk factors for intraoperative hypertension patients undergoing cataract surgery under topical anesthesia, including anxiety, female gender and the elderly [4].

Patients on anti-coagulant pose a risk for surgical bleeding. However, it is not recommended to stop anti-coagulants or anti-platelets drugs for ambulatory ophthalmic surgery as the risk of discontinuing outweighs the risk of peri-operative hemorrhage [1,5]. The published literature showed the results of stopping anti-platelet or anti-coagulant could lead to an increased risk of serious and life-threatening complications from thromboembolic events, especially in patients with arrhythmias, prosthetic heart valve and recent coronary stent [5]. Patients with congestive heart failure are sensitive to benzodiazepines and opioid medications. These medications are titrated to obtain a balance of patient comfort and optimal physiologic homeostasis.

### Respiratory considerations: Chronic Obstructive Pulmonary Disease (COPD), Sleep apnea

Patients who have respiratory disease and anatomical airway obstruction also pose a risk of respiratory depression with sedation. Titration of medication is imperative in order to provide a safe anesthetic to patients with respiratory compromise. Supplement oxygen may be required to improve oxygen saturation during sedation [6].

#### **Endocrine considerations: Diabetes Mellitus, Thyroid disorder**

Diabetic patients under sedation may be unable to report symptoms of diabetes. Because of this, blood glucose levels are obtained and treated prior to sedation. Thyroid disorder is seen in the surgical population. Preoperative knowledge of a thyroid disease prevents unexpected hemodynamic compromise during sedation.

#### **Neurological/Psychiatric considerations: Dementia, Anxiety, Depression**

Patients with mild dementia are able to tolerate monitored sedation, however, patients with severe dementia may require general anesthesia. Psychiatric conditions such as anxiety disorder or Depression require clear communication between provider and patient. Patients may require an increased amount of sedation if on chronic anxiolytic therapy.

#### **Renal considerations: Chronic Renal Insufficiency, Renal failure**

Variability in renal disease may limit anesthetic options. However, ophthalmic surgeries are low risk surgeries, which are tolerated with minimal sedation.

#### **Gastrointestinal Tract considerations: Peptic Ulcer Disease, Gastro esophageal Reflux Disease**

The ASA practice guidelines for preoperative use of pharmacologic agents to reduce the risk of pulmonary aspiration

do not recommend routine use of gastric acid blockers in the preoperative period.<sup>6</sup> Patients with PUD and/or GERD tolerate monitored sedation well.

#### **Conclusion**

In conclusion, cataract surgery under topical anesthesia combined with monitored sedation is current trends of ophthalmic practice. The main advantage of local anesthesia is fewer systemic adverse effects. In addition, when incorporated with sedation, it helps provide better pain control, anxiety relief and improved patient satisfaction. Careful preoperative assessment, patient counseling and systemic approach are essential for successful surgery under anesthesia care.

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