

Outpatient Cataract Surgery

Incident and Procedural Risk Analysis Do Not Support Current Clinical Ophthalmology Guidelines

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Objective: To evaluate whether an ophthalmologist-led, non-anesthesia-supported, limited monitoring pathway for phacoemulsification/intraocular lens cataract surgery, can be performed safely with only a medical emergency team providing support.

Design: Retrospective, observational, cohort study.

Participants: All patients who underwent elective phacoemulsification/intraocular lens surgery under topical anesthesia in the ophthalmology outpatient unit between January 1, 2011, and December 31, 2012.

Methods: Cataract surgery was performed by phacoemulsification under topical anesthesia. The intake process mainly embraced ophthalmic evaluation, obtaining a medical history, and proposing the procedure. A staff ophthalmologist performed the procedure assisted by 2 registered nurses in an independent outpatient clinic operating room within the hospital. The clinical pathway was without dedicated presence of or access to anesthesia service. Perioperative monitoring was limited to blood pressure and plethysmography preoperatively and intraoperatively. Patients were offered supportive care and instructed to avoid fasting and continue all their chronic medication.

Main Outcome Measures: The primary outcome measure was the incidence of adverse events requiring medical emergency team (MET) interventions throughout the pathway. Secondary outcome measures were surgical ocular complication rates, use of oral sedatives, and reported reasons to perform the surgery in the classical operation room complex.

Results: Within the cataract pathway, 6961 cases (4347 patients) were eligible for analysis. Three MET interventions related to the phacoemulsification/intraocular lens pathway occurred in the 2-year study period, resulting in an intervention rate of 0.04%. None of the interventions was intraoperative. All 3 patients were diagnosed as vasovagal collapse and recuperated uneventfully. No hospital admittance was required. Eight other incidents occurred within the general ophthalmology outpatient unit population during the study period.

Conclusions: Cataract surgery can be safely performed in an outpatient clinic, in the absence of the anesthesia service and with limited workup and monitoring. Basic first aid and basic life support skills seem to be sufficient in case of an adverse event. An MET provides a generous failsafe for this low-risk procedure. *Ophthalmology* 2014;■:1–7 © 2014 by the American Academy of Ophthalmology.



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Cataract operations using minimally invasive phacoemulsification, shorter operation duration, and the use of topical anesthesia facilitate movement away from the classic full care, intramural operating room (OR) setting to other locations. At the same time, as the number of cataract operations with intraocular lens implantations increases, so do the age and comorbidity of the patients undergoing this procedure.¹ Increased comorbidity, sometimes expressed as a higher American Society of Anesthesiologists (ASA) classification, raises safety issues, with the need for non-ophthalmologic perioperative interventions being reported in 0.5% to 20% under different procedural settings.^{2–7} Controlling expenditures while maintaining sufficient

perioperative safety is an ongoing debate. Different national ophthalmologic societies have formulated guidelines on levels of equipment and quality of care required, but little is known about the safety of modern procedures with no, or only limited, perioperative workup and monitoring.^{8–11}

In our hospital, the principle cataract pathway is an ophthalmologist-led, non-anesthesia-supported, outpatient service that provides patients unrestricted access to surgery, regardless of their comorbidities or physical condition. This seemed progressive, and because we are unaware of a large-scale procedural or safety analysis of such a pathway, we devised a retrospective analysis.

Table 1. Cataract Clinical Pathway

When	Where	What
Visit 1: Intake and preoperative assessment	Outpatient clinic	Physical status Medication use Comorbidity Full ophthalmic examination Patient education Anxiety assessment if indicated OOU cataract pathway or other pathway (“opt out”)
Visit 2: Day of surgery	At home	Normal oral intake Intake of normal medication
	At home, 1 hour before arrival	Tobradex* Cyclogyl* Nevanac* Oral sedatives†
	Arrival at outpatient clinic	Cyclogyl* Phenylephrine*
	Preparation room	Dressing and positioning Plethysmography Noninvasive blood pressure measurements‡
	Operation room	Anesthesia (oxybuprocaine 0.4%)* Time-out procedure Plethysmography Phacoemulsification
	Postoperative room	Patient instructions Patient questions
Visits 3 and 4: Checkup	Outpatient clinic	Checkup 1 and 28 days postoperatively

OOU = ophthalmology outpatient unit.

*Medication applied topically.

†If applicable.

‡According to current guidelines, starting January 1, 2013, blood pressure measurements are performed during the first visit. Patients found to be hypertensive are referred to their family or other relevant physician for antihypertensive treatment before surgery can take place.

Our aim was to evaluate the safety of our system. Since this pathway might lead to altered or increased medical emergency team (MET) calls as surrogate for the anesthesia service, we also analyzed this support.

Methods

This study is a single-center, retrospective analysis held in the ophthalmology outpatient unit (OOU) at the St. Elisabeth Hospital (Tilburg, the Netherlands), a 675-bed supraregional, tertiary care facility. Data for cataract cases performed from January 1, 2011, through December 31, 2012, and identified by the national health care code were retrieved. Permission for the study was received from the regional medical ethics committee, which also waived informed consent requirements. The Ophthalmology Outpatient, the Hospital Information System, and MET databases were used for data collection. A 2-month extension in the database analysis (through February 28, 2013) was added to include any calls or complications during the follow-up of patients entering the pathway during December 2012.

Ophthalmology

Through 2009, cataract operations in our hospital were performed exclusively in the main OR suite. Techniques included general, retrobulbar or peribulbar, and topical anesthesia with full anesthesiology (physician and a nurse) participation, including preoperative screening. Typically, the procedure was performed in a day hospitalization setting. In 2010, all but a limited number of patients moved to a closed-format OOU situated within but operating largely independent of the hospital. The OOU offers full diagnostics as well

as broad therapeutic ophthalmologic care and has its own OR facilities. In preparation for the move to the OOU, the department developed pathways for specific procedures. Because the OOU location is well away from the OR, the anesthesiology and the ophthalmology departments agreed that anesthesia service would be withdrawn for cataract procedures. When necessary, the hospital's MET would be called to assist or intervene.

The OOU standard cataract pathway consists of 4 contacts: intake and assessment, day of surgery, and 2 follow-up contacts (Table 1). Each patient is seen and evaluated by the attending ophthalmologist. During intake and assessment, an ophthalmic evaluation takes place, medical history is obtained, the procedure is proposed, anxiety issues discussed, and the strategy for supportive care presented, after which informed consent is signed and the assessment forms filled in. During this visit, “opting out” to the classic OR cataract pathway can be done. No formal exclusions for the OOU pathway have been standardized. Principle reasons include causes for uncontrolled or uncontrollable movement, for example, late-stage Parkinson disease, high-level chronic obstructive pulmonary disease with coughing, or intellectual disability. The OOU pathway allows for restrictive prescription of oral anxiolytics (i.e., bromazepam, oxazepam) as premedication only if the patient asks and the risk of troublesome anxiety is considered to be high. Patients are not referred to the anesthesiology outpatient screening service or any other outside consultations. No laboratory or electrocardiographic (EKG) workup is performed. An ASA classification is typically noted. All data are recorded on standardized forms.

Patients are instructed to continue all their regular medication, including antiplatelet/anticoagulant drugs. An international normalized ratio is not determined. Patients are encouraged to eat and drink normally. The pathway includes 2 checks of vital signs

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