ORIGINAL ARTICLE

Advantages of eliminating the cataract surgery post-operative day 1 appointment in a rural practice

Gavin Bahadur, MD[1], Lewis Macdonald, BS[2], Shawn Lin, MD[3], Cynthia Boxrud, MD[3], Ralph Crew, DO[2]

[1]Stein Eye Center Santa Monica, Stein Eye Institute, University of California, Los Angeles, California, [2]Crew and Boss Eye Associates, [3]Department of Ophthalmology, Stein Eye Institute, University of California, Los Angeles, California

Correspondence to: Gavin Bahadur, bahadurgavin@gmail.com

This article has been peer reviewed.

Abstract

Introduction: We sought to streamline cataract surgery post-operative care when COVID-19 hit by discontinuing the 1-day post-operative visit. We wanted to know if this change was safe and beneficial to our patients by reducing patients' time and transportation burden, opening appointment slots allowing providers to see more patients and reducing greenhouse gas emissions. By minimising intraoperative use of dispersive viscoelastic, increasing irrigation/aspiration time at the end of the surgery and using intraocular pressure (IOP) lowering medications such as carbachol, brimonidine and acetazolamide routinely, we posit that post-operative day 1 IOP spikes can be avoided, thereby eliminating the need for the 1st post-operative day visit. We also sought to show the positive environmental impact of eliminating that 1st day.

Methods: We retrospectively reviewed cataract surgeries performed before COVID-19 to determine the incidence of serious pathology discovered at the post-operative day 1 visit. Subsequently, we examined all the cataract surgeries performed in 2023 by our practice.

Results: One hundred and ninety-three cataract surgeries performed before COVID-19 and 832 performed in 2023 were reviewed. We found that the post-operative day 1 visit after cataract surgery is unnecessary in most routine uncomplicated cases.

Conclusion: By eliminating hundreds of post-operative day 1 visits for a busy rural practice annually, patients, their friends and relatives are spared an extra trip to the office (that can be 100 km each way), the office schedule is open to accommodate more patients, and the patients' carbon footprint of travel to the office is reduced.

Keywords: Carbon footprint, cataract surgery, intraocular pressure spike, post-operative day 1, rural

Résumé

Introduction: Nous avons cherché à rationaliser les soins postopératoires de la chirurgie de la cataracte lors de l'arrivée de la Covid en supprimant la visite postopératoire d'un jour. Nous voulions savoir si ce changement était sécuritaire et bénéfique pour nos patients en réduisant le temps et la charge de transport des patients, en ouvrant des créneaux de rendez-vous permettant aux prestataires

Access this article online

Quick Response Code:

Website: https://journals.lww.com/cjrm

DOI: 10.4103/cjrm.cjrm_14_24

Received: 04-03-2024 **Revised:** 19-06-2024 **Accepted:** 19-06-2024 **Published:** 12-11-2024

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How to cite this article: Bahadur G, Macdonald L, Lin S, Boxrud C, Crew R. Advantages of eliminating the cataract surgery post-operative day 1 appointment in a rural practice. Can J Rural Med 2024;29:173-6.

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de voir plus de patients et en réduisant les émissions de gaz à effet de serre. En minimisant l'utilisation peropératoire de viscoélastique dispersif, en augmentant le temps d'irrigation/aspiration à la fin de l'opération et en utilisant systématiquement des médicaments abaissant la PIO, tels que le carbachol, la brimonidine et l'acétazolamide, nous pensons que les PIO postopératoire du premier jour peuvent être évitées, éliminant ainsi la nécessité d'une première visite de jour postopératoire. Nous avons également cherché à démontrer l'impact environnemental positif de l'élimination de ce premier jour.

Méthodes: Nous avons examiné rétrospectivement opérations de la cataracte réalisées avant la Covid afin de déterminer l'incidence des pathologies graves découvertes lors de la visite postopératoire du premier jour. Par la suite, nous avons examiné toutes les opérations de la cataracte réalisées en 2023 par notre cabinet.

Résultats: 193 opérations de la cataracte réalisées avant la Covid et 832 réalisées en 2023 ont été examinées. Nous avons constaté que la visite postopératoire du premier jour après la chirurgie de la cataracte n'est pas nécessaire dans la plupart des cas de routine sans complications.

Conclusion: En éliminant des centaines de visites postopératoires du premier jour dans une région rural, les patients, leurs amis et leurs proches n'ont pas à SE rendre au cabinet (ce qui peut représenter des centaines de kilomètres aller-retour). L'emploi du temps du cabinet est libéré pour accueillir davantage de patients et l'empreinte carbone des patients liée à leur déplacement au cabinet est réduite.

Motsclés: Chirurgie de la cataracte, jour postopératoire du premier jour, pression intraoculaire, rural, empreinte carbone

INTRODUCTION

The American Academy of Ophthalmology Preferred Practice Pattern recommends that routine cataract surgery patients be seen within 48 h postoperatively.[1] While we do not disagree with this general recommendation, we believe this first post-operative visit is not medically necessary in most routine cases. This paper shall discuss the initial motivating factors for eliminating the 1st post-operative day visit, how we compensated to ensure quality patient care and how these changes have improved the lives of our patients, increased the productivity of our office and reduced the carbon footprint associated with cataract surgery.

Before the coronavirus disease pandemic, our routine was to see cataract surgery patients on post-operative day 1. In March of 2020, our office was closed by government mandate for several months. Once reopened, our hours were limited, also by government mandate. We needed a way to provide care to our patients without increasing their risk of exposure to COVID-19 and find a place in our limited schedule to see them. It was at this point we decided not to examine routine uncomplicated patients on the post-operative day 1 visit (POD 1).

We are not the first to question the need for the POD 1 visit.[2-4]

The 1-day visit has been a quick check to make certain that no major problem occurs after surgery. We feel this is of limited value in uncomplicated surgery.

One day is too soon to determine if endophthalmitis is present. Our major concerns are wound leaks, dangerously high elevated intraocular pressure (IOP)[5] and toxic anterior segment syndrome (TASS).[6]

METHODS

We retrospectively reviewed the charts of 193 patients before COVID-19 to determine the incidence of post-operative day 1 pressure elevations and other complications such as incision leakage and TASS. A significant IOP spike was defined as an IOP of >30 mmHg.

We then looked at all the cataract surgeries performed in 2023. Our staff called each patient the day after surgery enquiring as to any problems and reviewing their medications. Preoperatively, patients were given a visual acuity chart and at this call, their vision was tested. If patients reported any pain or significant vision loss, they were asked to visit us for an examination that day to check for TASS and severe IOP spike or other pathology. We also asked the patient if they had any concerns.

Any patients with pre-existing glaucoma, high myopia, pseudoexfoliation, trypan blue staining, Malyugin rings, manual small-incision cataract surgery, extension of capsulorhexis, cumulative

dissipated energy >15 s and/or concomitant glaucoma surgery were asked to come in for a post-operative day 1 visit. Of note, none of the patients requiring a Malyugin ring experienced an IOP spike.

To reduce and essentially eliminate post-operative day 1 IOP spikes, we made changes to our surgical technique and our post-operative medication regimen. We switched from using dispersive viscoelastic throughout the case to using both dispersive and cohesive viscoelastics.

The dispersive was used at the beginning of the case and the cohesive to inflate the capsular bag for intraocular lens (IOL) insertion towards completion. It was noted that our rate of post-operative pressure elevation was reduced with this change. Retained dispersive viscoelastic had likely caused the IOP elevations. We resolved to use only the amount of cohesive viscoelastic required to fill the capsular bag thus reducing the retained viscoelastic. An extra 15 s of irrigation/aspiration was used at the end of the case to remove viscoelastic with special attention to the anterior chamber angles and the space posterior to the IOL implant. It has been shown that experienced surgeons encounter fewer IOP spikes than inexperienced surgeons and meticulous viscoelastic removal may be one factor.[7]

Added measures for preventing IOP spikes were to inject carbachol 0.01% at the end of the case, prescribe brimonidine 0.2% twice daily[8] and one 250 mg tablet of acetazolamide at bedtime on the day of surgery.[9]

RESULTS

We reviewed the charts of 193 patients in 2019 before COVID-19. We found the number of IOP spikes to be four. There were no wound leaks and no cases of TASS. Of note, most patients with a dangerous pressure elevation were symptomatic, experiencing eye pain and/or headache. We decided that post-operative pressure elevation was the most important factor that needed to be controlled if we were to cancel the day-1 visit.

We performed 832 cataract surgeries in the calendar year 2023. Within this total, we did 24 cataracts with endocyclophotocoagulation which were checked on post-operative day 1 and 29 cataracts with iStents, also checked on post-operative day 1. Thirty-four of these surgeries were seen the next day due to complications, glaucoma or patient concerns as outlined above. The remaining patients did not come on POD 1 but did come to the post-operative week 1 visit.

From the patient's viewpoint, we eliminated travel with its associated expenses and saved time not just for them but also for the family member or friend who often accompanies them. They were very appreciative, particularly during the winter months and bad weather. By evaluating the traveling distance of 50 consecutive cataract patients and determining the average mileage they travelled using Google Maps, the average distance to our office was determined to be 33 km and a round trip was 66 km. According to the US. Department of Energy, the average fuel economy of new cars sold in the United States in 2021 was 9.4 L per 100 km. A round trip of 66 km to our office requires about 6.2 L of fuel to visit us. The 745 patients who no longer need to travel to our office saved about 4619 L of gas. The amount of carbon dioxide emitted per litre of motor gasoline burned is 2.3 kg.[10]

Thus, our practice pattern saved the environment 10,624 kg of carbon dioxide from being released into the atmosphere.

From an office practice standpoint, 745 examination slots became available. During COVID-19, reduced office hours increased our ability to see the many patients that needed evaluation. It also increased our practice revenue by replacing no-fee post-operative patients with paying patients.

Our average income per patient seen in 2023 was $296 (USD). As a result, $220,520 (USD) was added to the revenue of our practice.

It is usual in rural practices for patients to travel 100 km to the nearest ophthalmologist. In such practices, the annual savings in gasoline could be 20,000 L, corresponding to over 45,000 kg of carbon dioxide prevented from being released into the atmosphere.

DISCUSSION

In a busy cataract practice, providing high-quality compassionate patient care is essential, as is efficient management of time and resources. The need for a POD 1 visit should be evidence-based. We found that if we took prophylactic measures, this visit could be safely eliminated for uncomplicated routine cataract cases.

Older patients tend to have more comorbidities and often see several different healthcare providers. Anything we can do to reduce their transportation burden is appreciated.

Worldwide, there is an active effort to reduce carbon emissions. Every industry is being encouraged to examine their carbon footprint and make efforts towards its minimisation. The healthcare industry should be no exception. Perhaps, our industry is more challenged than others because of the demand for quality of care and price controls. Nonetheless, we should take whatever steps we can to do our part in reducing carbon emissions.

CONCLUSION

Through modifications in cataract surgical technique and the use of multiple IOP lowering medications, the POD 1 visit can be safely eliminated for most routine cataract surgery cases. Reducing the number of office visits benefits the patients and their companions, the providers and the environment.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

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