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Intracanalicular Dexamethasone Insert or Topical Prednisolone Following iStent and Hydrus Surgery for Glaucoma

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Précis: Using an intracanalicular dexamethasone insert or topical prednisolone following iStent and Hydrus surgery provided similar short-term control of postoperative inflammation.

Purpose: The purpose of this study was to compare postoperative inflammation in patients who received an intracanalicular dexamethasone insert or topical prednisolone after iStent or Hydrus insertion during cataract surgery.

Patients and Methods: Patients receiving a dexamethasone insert after iStent or Hydrus insertion were included and compared with age-matched controls who received topical prednisolone. Preoperative data were recorded. Postoperative inflammatory cell and the proportion of patients with zero anterior chamber cells was recorded at month 1. Postoperative intraocular pressure (IOP) and rate of cystoid macular edema were recorded at months 1 and 3.

Results: Forty eyes receiving topical prednisolone were compared with 35 eyes receiving a dexamethasone insert after iStent or Hydrus insertion. The mean postoperative inflammatory cell for the topical group at month 1 was 0.2 ± 0.3, and the dexamethasone group, 0.3 ± 0.5 ($P = 0.816$). Overall, 70% of patients in the topical group had zero anterior chamber cell at postoperative month 1 compared with 75.8% in the dexamethasone group ($P = 0.583$). The mean preoperative IOP for the topical group was 18.8 ± 5.5 and the dexamethasone group was 17.1 ± 4.1 ($P = 0.064$). Mean postoperative IOP for the topical group at months 1 and 3 was 17.6 ± 6.4 and 15.1 ± 3.1, respectively and the dexamethasone group, 17.5 ± 4.8 and 15.0 ± 3.4, respectively ($P = 0.772$ and 0.884). One patient developed cystoid macular edema in each group.

Conclusion: There was no statistically significant difference in the proportion of patients who had zero anterior chamber cell at postoperative month 1 between groups receiving intracanalicular dexamethasone insert or topical prednisolone.

Key Words: minimally invasive glaucoma surgery, Dextenza, dropless surgery

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Glaucoma is the second leading cause of blindness in the world[1] and is typically managed first with intraocular pressure (IOP)-lowering eye drops or selective laser trabeculoplasty, but recent advances in minimally invasive glaucoma surgery (MIGS) have provided an additional option for treatment.[2] MIGS procedures are typically characterized by an ab interno approach, minimal tissue trauma, minimal conjunctival manipulation, a good safety profile, and rapid recovery.[3] There are several different MIGS procedures which have become Food and Drug Administration (FDA) approved and have shown the ability to decrease IOP as well as decrease the number of IOP-lowering drops.[4] Often, MIGS procedures are completed in combination with cataract surgery. The exact indications for cataract surgery with MIGS have been highly variable in the literature but often include patients who have a visually significant cataract, have mild to moderate glaucoma, and are on at least 1 IOP-lowering drop.[3] While MIGS has created a safer and less traumatic means of lowering IOP,[2] patients having either procedure can still have resultant inflammation and discomfort that must be treated in the postoperative period.[5]

Corticosteroids have routinely been prescribed as topical eye drops to treat postoperative inflammation and pain related to cataract surgery with or without MIGS. Untreated pain can affect overall patient satisfaction.[5] Persistent ocular inflammation can increase the risk for ocular complications such as increased IOP, cystoid macular edema (CME), posterior synechiae formation, secondary glaucoma, and reduced visual outcomes.[5] Recently, Dextenza, a sustained-release intracanalicular dexamethasone insert (Ocular Therapeutix, Bedford, MA), was approved by the FDA to treat ocular pain and to control inflammation after ocular surgery[5] with the goal of removing the need for postoperative topical anti-inflammatory drops. The insert contains 0.4 mg of active dexamethasone suspended in a dried polyethylene glycol hydrogel device that is placed within either the superior or inferior canaliculus to provide a sustained and tapered delivery of medication to the ocular surface over 30 days. When inserted, the device swells and conforms to the shape of the canaliculus. Over the subsequent 30-day time period, while eluting medication, the device softens, liquefies and is eventually cleared through the nasolacrimal system.[6] Initial studies assessed IOP at 6 postoperative visits with the last visit being 45 days after surgery and did not find any treatment-related IOP increase of > 10 mm Hg after use of the device.[5,6]

The addition of postoperative eye drops for patients with glaucoma has the potential to complicate a patient's drop regimen and interfere with patient compliance.[7–9] Failure to comply with drop regimens is often due to a combination of factors: drop phobia, poor dexterity, poor administration techniques, cost, or dosing complexity.[8–10] Using MIGS with a dexamethasone insert can reduce both the number of postoperative drops as well as the number of

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IOP-lowering drops. In addition, combining the dexamethasone insert with an intracameral antibiotic after cataract surgery has allowed patients to receive surgery without needing any postoperative eye drops. Dropless cataract surgery removes the complexity and uncertainty around the patient's use of postoperative drops, decreases a patient's drop burden, and ultimately allows physicians to have a greater degree of confidence with regards to the treatment course of patients after surgery.[11]

Due to the minimal tissue manipulation involved in MIGS, postoperative inflammation has been successfully treated with the same topical eye drop regimen used after routine cataract surgery.[12] Due to the success seen with dropless cataract surgery and the benefit of decrease topical eye drops for patients with glaucoma,[7–9,11] we wanted to evaluate the efficacy of the dexamethasone insert in controlling postoperative inflammation in patients who received iStent or Hydrus insertion during cataract surgery when compared with topical prednisolone.

PATIENTS AND METHODS

This retrospective study was performed at the Duke Eye Center and received approval from the Duke University Institutional Review Board (IRB) and was conducted in accordance with the Declaration of Helsinki and the Health Insurance Portability and Accountability Act. Ophthalmic data was assessed using a retrospective chart review. Because of the retrospective, nonrandomized nature of the study, written informed consent was not required. All study-related procedures were performed in accordance with good clinical practice (International Conference on Harmonization of Technical Requirements of Pharmaceuticals for Human Use) and applicable FDA regulations.

Patients were recruited from a pool of patients seen at the Duke Eye Center between October 2019 and July 2021 by a single fellowship-trained glaucoma surgeon (L.W.H.) and underwent a routine eye examination for the management of their ophthalmic disease. Patients were seen postoperatively by the same provider who graded anterior chamber cell. Patients receiving the dexamethasone insert after cataract surgery with MIGS were identified and compared with age-matched controls who received topical prednisolone after cataract surgery with MIGS. After reviewing the number of patients identified, the MIGS procedures included in this study were trabecular microbypass stenting (iStent; Glaukous Corporation, San Clemente, CA) and canalicular scaffolding (Hydrus; Ivantis Inc., Irvine, CA). Each patient in the topical prednisolone group received either an iStent or Hydrus implant, while in the dexamethasone insert group, all but 5 patients received either an iStent or Hydrus implant. The 5 patients who received MIGS other than the iStent or Hydrus implant were excluded from this study. No other patients were excluded. Patients were selected for the dexamethasone implant if the implant was covered by their insurance. The pharmacy cost of the dexamethasone implant is more than generic topical prednisolone eye drops (~$500 vs. ~$40 from GoodRx). However, for this study, patients were selected for the dexamethasone implant if the implant was already preapproved for reimbursement by the patient's insurance. Most commonly, we have found this to be patients who have Medicare as reimbursement occurs via the Transitional Pass-Through Status under the Hospital Outpatient Prospective Payment System (OPPS).[13] As a result, there was not a significant difference in cost due to receiving the dexamethasone insert. If the patient's insurance did not cover the dexamethasone insert, they received topical prednisolone drops which were covered by their insurance. All patients received an intracameral antibiotic for postoperative infection control. Patients in the topical prednisolone group received a taper of topical corticosteroid (prednisolone acetate 1%) starting at 4 times a day and decreasing by 1 drop per day weekly until finishing the taper after week 4. We chose to use topical prednisolone as the comparator in our study because it is the standard topical corticosteroid used after cataract surgery at our institution.

In each case, cataract surgery and intraocular lens implantation was completed before the insertion of the iStent or Hydrus. The initial steps for the insertion of either device were similar. The patient's head was rotated 30 degrees away from the surgeon. Viscoelastic was placed into the nasal iridocorneal angle and used as a coupling agent for a gonio lens. The iridocorneal angle was then viewed with the gonio lens to ensure there was an adequate view for device implantation. For the iStent, the injector was advanced under direct gonioscopy through the existing corneal incision to the nasal trabecular meshwork (TM), where the first stent was implanted into the Schlemm canal. Without withdrawing from the eye, the injector tip then was repositioned laterally to implant the second stent ~2–3 clock hours away from the first stent. Proper stent placement and seating were confirmed after implantation. At the completion of the procedure, viscoelastic was removed and replaced with balanced salt solution. For the Hydrus stent, a sideport incision was created around 7 o'clock for the right eye and 2 o'clock for the left eye and was angled towards the nasal iridocorneal angle. The Hydrus device was directed through this sideport incision and using the device injector, the TM was incised with the tip of the delivery cannula, and the microstent was threaded into the Schlemm canal over a span of ~90 degrees. Upon visual confirmation of proper device positioning in the canal, the delivery system was withdrawn, and the viscoelastic was removed and replaced with a balanced salt solution. A 0.3 mL of moxifloxacin was instilled into the anterior chamber through the paracentesis incision for all eyes, then the corneal wounds were sealed with balanced salt solution hydration. The eyelid speculum was then removed, and for eyes that received a Dextenza implant, the lower or upper lid was gently pulled temporally to align the vertical and horizontal canaliculi while dilating the punctum with an ophthalmic dilator angled in toward the nose. The punctal opening was dried with a cotton-tipped applicator then blunt forceps were used to grasp the insert and place it into the lacrimal canaliculus angling the insert nasally. Viscoelastic was used to facilitate the smooth passage of the insert into the canaliculus. Topical hypotensive medications were reintroduced at the discretion of the surgeon.

Baseline patient demographics and preoperative data were collected. The primary endpoints were the proportion of patients with an absence of inflammatory cell in the anterior chamber at postoperative month 1. Secondary endpoints were the presence of CME identified on optical coherence tomography (OCT) imaging, use of additional topical steroids during the postoperative period, postoperative inflammatory cell at month 1, postoperative IOP at months 1 and 3, postoperative number of IOP-lowering medications at month 3, and number of patients who had a postoperative IOP spike, defined as a postoperative month 1 IOP 10 mm Hg or higher than preoperative IOP. The

TABLE 1. Grading of Anterior Chamber Cells (SUN Workshop)[13]

Grade of Anterior Chamber Cells	Cells in Field (Size 1 mm by 1 mm Slit Beam)
0	< 1
0.5	1–5
1+	6–15
2+	16–25
3+	26–50
4+	> 50

SUN indicates Standardization of Uveitis Nomenclature.

anterior chamber cell was measured using the Standardization of Uveitis Nomenclature (SUN) grading criteria (Table 1).[14] Two patients in the dexamethasone insert group tested positive for coronavirus disease 2019 just before their 1-month visit and were rescheduled for their postoperative month 3 visit; as a result, these patients did not have postoperative 1-month data. The presence of CME and need for additional steroids was evaluated at postoperative month 3. Four patients in the dexamethasone insert group were lost to follow up and did not have postoperative month 3 data; however, those patients also did not have OCT documented CME or a need for additional topical steroids at their previous postoperative visits.

For statistical analysis, Mann-Whitney *U* testing was used to compare means between continuous variables and χ^2 testing was used to compare means between categorical variables. A *P*-value <0.05 was determined to be statistically significant. The sample size for this study was calculated from previous literature evaluating the proportion of patients who had zero anterior chamber cell 3–4 weeks after routine cataract surgery; Malik et al[15] found that 100% of patients with topical prednisolone and Tyson et al[6] found that 81% of patients with the dexamethasone implanthad zero anterior chamber cell at postoperative month 1. We assumed a noninferiority margin of 10% between the 2 percentages with an α of 0.025 and power of 80%. The required sample size for this evaluation was 22 patients in each group.

RESULTS

Thirty-five patients received an intracanalicular dexamethasone insert, and 40 patients received topical prednisolone after cataract surgery with iStent or Hydrus insertion. Most patients were diagnosed with primary open-angle glaucoma, 77.5% (31/40 patients) in the topical prednisolone group and 62.9% (22/35 patients) in the dexamethasone insert group. The most common stages of glaucoma treated were mild and moderate, 70% (28/40 patients) in the topical prednisolone group and 82.9% (29/35 patients) in the dexamethasone insert group. The majority of patients in each group were either of African American or Caucasian ethnicity; 55% and 40% for the topical prednisolone group and 31.4% and 68.6% for the dexamethasone insert group, respectively. Full patient demographics and baseline disease characteristics are detailed in Table 2.

The proportion of patients with zero anterior chamber cells at postoperative month 1 was 70.0% (28/40 patients) in the topical prednisolone group and 75.8% (25/33 patients) in the dexamethasone insert group ($P = 0.583$). Additional topical steroids were used in 12.5% (5/40 patients) of cases in the topical prednisolone group and 9.7% (3/31 patients) of the cases in the dexamethasone insert group ($P = 0.709$). In all, 18.2% (4/22) of the African American patients in the topical prednisolone group and 27.3% (3/11) in the dexamethasone group developed the need for additional topical steroids. Mean postoperative day 1 anterior chamber cell was 1.6 ± 1.0 in the topical prednisolone group and 0.9 ± 0.9

TABLE 2. Patient Demographics and Baseline Disease Characteristics

	n (%)		
	Topical Prednisolone	Dexamethasone Insert	*P*
Age (mean ± SD)	73 ± 7	74 ± 6	0.678
Female	26 (65.0)	24 (68.6)	0.743
Left eye	23 (57.5)	20 (57.1)	0.975
Ethnicity			
African American	22 (55.0)	11 (31.4)	
Caucasian	16 (40.0)	25 (68.6)	
Hispanic	1 (2.5)	1 (2.9)	
Not specified	1 (2.5)		
Glaucoma type			
POAG	31 (77.5)	22 (62.9)	
PCAG	1 (2.5)	4 (12.9)	
OAG suspect	7 (17.5)	2 (6.5)	
Low-tension glaucoma	1 (2.5)	3 (9.7)	
CAG suspect		3 (9.7)	
Pigmentary glaucoma		1 (3.2)	
Glaucoma severity			
Suspect	7 (17.5)	4 (11.4)	
Mild	13 (32.5)	13 (37.1)	
Moderate	15 (37.5)	16 (45.7)	
Severe	4 (10.0)	1 (2.9)	
Indeterminant	1 (2.5)	1 (2.9)	
MIGS type			
iStent	16 (40.0)	16 (45.7)	0.618
Hydrus	24 (60.0)	19 (54.3)	

CAG indicates closed-angle glaucoma; MIGS, minimally invasive glaucoma surgery; OAG, open angle glaucoma; PCAG, primary closed-angle glaucoma; POAG, primary open angle glaucoma.

TABLE 3. Postoperative Inflammation Measured by Standardization of Uveitis Nomenclature (SUN) Grading Criteria

	Topical Prednisolone	Dexamethasone Insert	*P*
POD1 inflammation (mean ± SD)	(n = 40) 1.6 ± 1.0	(n = 35) 0.9 ± 0.9	0.002*†
POM1 inflammation (mean ± SD)	(n = 40) 0.2 ± 0.3	(n = 33) 0.3 ± 0.5	0.816†
Zero cell at POM1 [n (%)]	28 (70.0)	25 (75.8)	0.583‡
Additional topical steroid [n (%)]	7 (17.5)	3 (9.7)	0.347‡
Number with CME [n (%)]	1 (2.5)	1 (3.2)	0.855‡

*Statistically significant.
†*P*-value calculated using Mann-Whitney *U* testing.
‡*P*-value calculated using χ^2 testing.
CME indicates cystoid macular edema; POD, postoperative day; POM, postoperative month.

TABLE 4. IOP and IOP-lowering Drops

	Mean ± SD		
	Topical Prednisolone	Dexamethasone Insert	*P*
Preoperative IOP (mm Hg)	18.8 ± 5.5	17.1 ± 4.1	0.064*
Preoperative IOP-lowering medications	1.8 ± 1.2	1.6 ± 1.1	0.584*
POD1 IOP (mm Hg)	(n = 40) 15.4 ± 6.0	(n = 35) 16.0 ± 6.7	0.890*
POM1 IOP (mm Hg)	(n = 40) 17.6 ± 6.4	(n = 33) 17.5 ± 4.8	0.772*
POM3 IOP (mm Hg)	(n = 38) 15.1 ± 3.1	(n = 31) 15.0 ± 3.4	0.884*
No. POM3 IOP-lowering medications	0.8 ± 1.1	0.5 ± 0.8	0.607*
Change in IOP-lowering medications	−1.1 ± 1.1	−1.1 ± 1.0	0.860*
Number with IOP spike [n (%)]	2 (5.0)	2 (6.1)	0.843†

*P-value calculated using Mann-Whitney U testing.
†P-value calculated using χ^2 testing.
IOP indicates intraocular pressure; MIGS, minimally invasive glaucoma surgery; POD, postoperative day; POM, postoperative month.

in the dexamethasone group ($P = 0.002$). A single patient developed CME during the postoperative period in both the topical prednisolone and the dexamethasone insert group (Table 3).

There was no statistically significant difference between postoperative IOP or the number of IOP-lowering drops between patients who received iStent or Hydrus during cataract surgery with topical prednisolone or the dexamethasone insert (Table 4). The percentage of patients who had an IOP spike of 10 mm Hg or more was 5.0% (2/40 patients) in the topical prednisolone group and 6.1% (2/33 patients) in the dexamethasone insert group ($P = 0.843$). There was a statistically significant decrease in IOP and the number of IOP-lowering drops after MIGS procedures in each group (Table 5).

DISCUSSION

To our knowledge, this is the first study to describe dropless cataract surgery with iStent or Hydrus insertion using intracameral antibiotics and an intracanalicular dexamethasone insert for infection and inflammation control postoperatively. We found that there was no statistically significant difference between mean postoperative inflammation or the percentage of patients with zero anterior chamber cell at month 1 postoperatively between patients who received iStent or Hydrus insertion with topical prednisolone versus those who received the dexamethasone insert. We found that 75.8% of patients in the dexamethasone group had an absence of anterior chamber cell at postoperative month 1 which is consistent with the 62.1% to 81% listed in previous literature when the dexamethasone insert was used after cataract surgery.[5,6,16]

Our study focused on the iStent and Hydrus MIGS procedures, which promote outflow through the TM without excising tissue and are thought to provide minimal inflammation in addition to routine cataract surgery.[12] Given the dexamethasone insert has been shown to provide adequate inflammatory control in routine cataract surgery, it is not surprising that we found the dexamethasone insert provided adequate inflammatory control in patients who received iStent or Hydrus insertion with cataract surgery. We also found that there was a similar number of patients who developed CME between groups (1 in each group). The patient in the topical prednisolone group was Caucasian and had preexisting CME, which was worsened and associated with decreased visual acuity. The patient in the dexamethasone insert group was African American and had persistent iritis and a subsequent decreased visual acuity but no prior history of CME. Both patients were treated with prednisolone, and ketorolac eye drops 4 times daily.

There was a difference in the number of patients who were still using topical steroids at postoperative month 3 or required the use of additional topical steroids between the 2 groups with more patients in the topical prednisolone group requiring supplemental corticosteroid therapy. This difference was not statistically significant. Each patient who required additional topical steroids was previously diagnosed with primary open angle glaucoma. Two of these events in the topical prednisolone group can be directly attributed to patient confusion with their postoperative drop regimen, which is removed by using the dexamethasone insert. The first patient ran out of their topical eye drops abruptly around postoperative week 3 visit and was restarted on a prednisolone taper at his postoperative month 1 visit (2 drops daily for 1 wk, 1 drop daily for 1 wk, and then stop). The second patient continued taking their postoperative steroid drop daily until the postoperative month 3 visit. The other 5 events required additional topical steroids due to presence of anterior chamber cell at postoperative month 1. Three patients were started on a topical prednisolone taper at 3 times daily and the other 2 patients were started on a topical prednisolone taper at twice daily. Each patient had resolution of their anterior chamber inflammation after this additional treatment. In the dexamethasone group, the need for additional topical steroids was due to the dexamethasone insert falling out in 1 case and the presence of anterior chamber cell at postoperative month 1 in the other 2 cases. The first case was treated by starting the patient on a typical topical prednisolone taper at 4 times daily. For the other 2 patients, one was started on a prednisolone taper at 3 times daily and the other at 4 times daily. Each patient had resolution of their anterior chamber inflammation after this additional treatment. There has not been a previous literature report on rates of the dexamethasone insert falling out after insertion. Walters and colleagues reported that the insert was well visualized at day 30 after implantation in 96.6% of patients (28 of 29). They did not specify if the one insert that was not visualized was due to the insert falling out, faster resorption, or further distal placement into the canaliculus.[5]

TABLE 5. Comparing IOP and IOP-lowering Drops Before and After iStent or Hydrus Insertion

	Mean ± SD		
	Preoperative	POM3	*P*
Topical prednisolone			
IOP (mm Hg)	18.8 ± 5.5	15.1 ± 3.1	< 0.001*
IOP-lowering drops	1.8 ± 1.2	0.8 ± 1.1	< 0.001*
Dexamethasone insert			
IOP (mm Hg)	17.1 ± 4.1	15.0 ± 3.4	0.022*
IOP-lowering medications	1.6 ± 1.1	0.5 ± 0.8	< 0.001*

*Statistically significant, *P*-value calculated using Mann-Whitney *U* testing.
IOP indicates intraocular pressure; MIGS, minimally invasive glaucoma surgery; POM, postoperative month.

In the topical prednisolone group, 4 of the 5 patients who developed anterior chamber inflammation had the Hydrus device implanted. In the dexamethasone group, 1 patient had an iStent, and the other had the Hydrus. Yook et al[17] reported in a review of MIGS procedures that both the iStent and Hydrus can have transient hyphema, stent malposition and stent obstruction after implantation. This study did not discuss the rate of postoperative inflammation or need for additional topical steroids based on the device implanted. Possibly, due to the Hydrus' larger profile in the anterior chamber, any device malposition has a greater chance of iris contact and resultant inflammation. Future studies are needed to better evaluate if there is a significant difference in postoperative inflammation and need for additional topical steroids based on the type of MIGS procedure.

Our study did not include MIGS which promote increased aqueous outflow through the excision of tissue-like gonioscopy assisted transluminal trabeculotomy, OMNI surgical system (Sight Sciences Inc., Menlo Park, CA) or Kahook Dual Blade goniotomy (New World Medical, Rancho Cucamonga, CA), which can be associated with hyphema and increased postoperative inflammation.[16,18] Further investigation is needed to determine the utility of the dexamethasone insert in comparison with topical prednisolone for postoperative inflammation control in these patients.

There was a statistically significant difference in postoperative inflammation on postoperative day 1 with the dexamethasone insert group having less inflammation (Table 3). We believe these findings are a result of the immediate and constant delivery of corticosteroids to the ocular surface with the dexamethasone insert in contrast to topical prednisolone where only 1–2 drops may be instilled before the postoperative visit on day 1. Compared with topical corticosteroid use, the sustained-release intracanalicular dexamethasone insert has a number of key similarities and differences. Most obviously, corticosteroids delivered to the ocular surface, whether topically or via insert form, work to rapidly control inflammation and ocular pain. In the event of an adverse reaction, both treatment modalities are reversible; topical drop administration might be stopped while the insert can be removed from the canaliculus. However, key differences in the dexamethasone insert include the self-tapering nature of the insert, the constant low-dose drug load on the ocular surface, the absence of preservatives, improved bioavailability, and most importantly, the elimination of the risk for poor patient compliance.[6] With a self-tapered sustained drug release, the treatment burden of a complex postoperative regimen of topical eye drops on cataract surgery with MIGS patients is alleviated, and the potential risk for ocular rebound inflammation with improper (ie, too rapid) corticosteroid tapering is mitigated. In addition, the insert provides a fraction of the total dose of corticosteroid given via a typical monthly taper of corticosteroids, but there is still sufficient therapy to control inflammation due to the proximity of the insert to the ocular surface.[6] This allows the insert to control postoperative inflammation while also decreasing the risk of unintended side effects like increased IOP. The intracanalicular insert is formulated preservative-free, eliminating the risk for preservative-induced toxicity and ocular surface damage.[19]

The primary goal of MIGS procedures is to provide a reduction in intraocular pressure and, if possible, decrease the patient's drop burden.[20] We found that there was a statistically significant decrease in IOP and number of IOP-lowering drops in the topical prednisolone group and dexamethasone groups after iStent or Hydrus insertion during cataract surgery at postoperative month 3. Our study is limited by sample size and a short follow up time relative to prior literature.[20,21] We did not find a statistically significant difference in the rate of IOP spike between the 2 groups. Two patients had an IOP spike in the topical prednisolone group; 1 was Caucasian, and 1 was African American. The former patient's IOP increased by 27 mm Hg, and the latter patient's IOP increased by 11 mm Hg. Two patients had an IOP spike in the dexamethasone insert group; both were Caucasian. Patient 1's IOP increased by 13 mm Hg and patient 2's by 18 mm Hg. All patients were restarted on 2 additional IOP-lowering medications, and IOP was improved at their next visit which was 2–4 weeks later. The rate of IOP spikes was small at ~5% in comparison to ~20% which has been previously reported in the literature.[11]

Due to the small sample size and lack of randomization, there was heterogeneity between groups in terms of ethnicity. While previous studies have shown there can be racial differences in the response to traditional glaucoma surgical procedures,[22,23] there has been limited data with regards to the success of MIGS procedures in different populations. Bargoud et al[24] did show that cataract surgery with trabecular microbypass stenting was safe and effective in African American patients with open angle glaucoma. The topical prednisolone group had a higher percentage of African American patients, while the dexamethasone group had a higher percentage of Caucasian patients. Oyewole et al[25] evaluated rates of postoperative CME after cataract surgery in an ethnically diverse population and did not find a statistically significant difference. LaMattina and Kimura[26] did report a high risk of rebound iritis in African American patients compared with Caucasian patients after uncomplicated cataract surgery, but there was no statistically significant difference in the amount of anterior chamber cell. Of the 5 patients in the topical prednisolone group who required additional topical steroids, 4 identified as African American, and all the patients in the dexamethasone group who required additional topical steroids identified as African American. While these results do seem to support increased rates of additional topical steroid use in African American patients, our sample size is too small to make this conclusion. Further investigation is needed to determine if there is a significant difference in postoperative inflammation and the need for additional topical steroids based on ethnicity after uncomplicated cataract surgery with MIGS procedures.

CONCLUSIONS

We found that the dexamethasone insert provided comparable postoperative inflammation control to topical prednisolone when used in patients who received iStent or Hydrus insertion with cataract surgery. There was no statistically significant difference in the proportion of patients who achieved zero anterior chamber cell at postoperative month 1 between groups. There was no statistically significant difference in a mean inflammatory cell at postoperative month 1 and no statistically significant difference in rates of additional topical steroids at postoperative month 3 in patients who received either the dexamethasone insert or topical prednisolone after iStent or Hydrus surgery with cataract surgery. The dexamethasone insert appears to be a safe and effective alternative to topical anti-inflammatory therapy after iStent or Hydrus insertion with cataract surgery, and its use with intracameral moxifloxacin allows for dropless MIGS to be performed.

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