Dexamethasone intravitreal implant migration into the anterior chamber: case series and review of the literature

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INTRODUCTION

Dexamethasone intravitreal implants are injected into the vitreous cavity of the eye with the goal of temporarily delivering local steroid to the area. These can be used in a multitude of settings, including uveitis, cystoid macular edema, and diabetic macular edema.[1]

These implants degrade over a period of several months, and are intended to stay suspended in the vitreous for the duration of this time.

Over the last decade, there have been an increasing number of case reports published describing dexamethasone intravitreal implants erroneously migrating into the anterior chamber.[2-13]

Some of these cases have been successfully managed conservatively,[3,5] while others have described urgent surgical removal of the implant from the anterior chamber.[10,13]

The effect of these migrated implants on vision and corneal endothelium integrity is variable, ranging from little to no effect to non-resolving corneal edema requiring corneal transplantation.[10,13]

OBJECTIVES

Our goal was to collect cases of dexamethasone intravitreal implant migration into the anterior chamber from both local and international institutions in order to compile a large and comprehensive case series.

We aim to use this case series to report patient demographics, clinical course, and visual outcomes, with a focus on the proportion of patients who require corneal transplantation.

We compare our data set to the existing body of literature as well as highlight risk factors for migration, such that ophthalmologists working with dexamethasone intravitreal implants may be better able to counsel patients on the risk of this potential complication, as well as its management and outcomes.

METHODS

This study was conducted in accordance with the principles outlined in the Declaration of Helenski, and Institutional Review Board (IRB)/Ethics Committee approval was obtained prior to initiation of this project. A literature review was conducted using the PubMed search engine which included the following search terms: anterior chamber, migration, and dexamethasone intravitreal implant.

This was a retrospective, observational, multicenter case series of patients who experienced dexamethasone implant migration into the anterior chamber. Data collected for each case included, but was not limited to age, indication for implant injection, symptoms at the time of migration, duration from detection to treatment, type of intervention performed, and visual acuity before and after implant migration.

For numerical responses, means and standard deviations were calculated, and t-tests were used to compare means, with significance being $p < 0.05$. Chi-squared tests were used to compare distributions of categorical variables. Percentages and absolute numbers were used to report the proportion of patients who experienced the various outcomes of interest, such as corneal transplantation, implant explantation, and conservative management.

RESULTS

Characteristics	Findings (n=32)	
	Absolute number	Percentage
Age (mean +/- SD) years	66.8 +/- 12.5	
Sex		
Male	28/32	87.5%
Female	4/32	12.5%
Eye involved		
Right	18/32	56.3%
Left	14/32	43.7%
Dexamethasone intravitreal implant indication		
Uveitis	11/32	34.4%
Post-operative inflammation	11/32	34.4%
Diabetes	5/32	15.6%
Retinal Vein Occlusion	4/32	12.5%
Hypotony	1/32	3.1%
Intraocular lens status		
PCIOL in capsular bag	13/32	40.6%
Scleral-fixated IOL	9/32	28.1%
PCIOL in sulcus	6/32	18.8%
ACIOL	4/32	12.5%
Past ocular history		
Trauma	5/32	15.6%
Prior PPV	24/32	75.0%
Prior YAG capsulotomy	2/32	6.3%

TABLE 1. Baseline characteristics of 32 patients who experienced dexamethasone intravitreal implant migration into the anterior chamber.

Sign/symptom at presentation	Absolute number	Percentage
Blurred vision	29/32	90.6%
Pain	10/32	31.3%
"White line" noticed	3/32	9.4%
Asymptomatic	2/32	6.3%
Corneal edema	27/32	84.4%
Management		
Explantation	21/32	65.6%
Surgical repositioning		
Vitreous cavity	4/32	12.5%
Subconjunctival	2/32	6.3%
Dilation and positioning	1/32	3.1%
Observation	4/32	12.5%

TABLE 2. Presenting features and management of patients with dexamethasone intravitreal implant migration into the anterior chamber.

Twelve (37.5%) patients required corneal transplantation due to non-resolving corneal edema. Duration from dexamethasone intravitreal implant injection to detection of migration was not significantly different between the group who went on the require corneal transplant and those who did not ($p = 0.283$). For those who underwent surgical intervention, duration from symptom onset to surgery was significantly longer in patients who ultimately required corneal transplant versus those who did not ($p = 0.007$).

Patients were more likely to require corneal transplant if they were initially managed non-surgically compared to surgically (50.0% vs 34.6%, $p = 0.48$) and if the dexamethasone implant was left in the eye versus explanted (45.5% vs 33.3%, $p = 0.50$), though neither were statistically significant. Those who required corneal transplant were more likely to have a final Snellen visual acuity at their most recent follow-up of less than or equal to 20/200, compared to those who did not undergo transplantation (66.6% vs 25.0%, $p = 0.02$).

CONCLUSIONS

Overall, our large case series highlights the variety of patients who may present with dexamethasone intravitreal implant migration into the anterior chamber.

While zonular or capsular bag disruption, aphakia, and iridectomy provide a route for entry into the anterior chamber, several patients experienced migration in the absence of these risk factors.

This potential complication as well as associated signs and symptoms should be discussed with all patients undergoing dexamethasone intravitreal implant injection, which may aid in earlier presentation and improved visual outcomes.

REFERENCES

[illegible]

DISCLOSURES

[illegible]

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Conclusions

- Overall, our large case series highlights the variety of patients who may present with this complication.
- While zonular or capsular bag disruption, aphakia, and iridectomy provide a route for entry into the anterior chamber, several patients experienced migration in the absence of these risk factors.
- This potential complication as well as associated signs and symptoms should therefore be discussed with all patients undergoing dexamethasone intravitreal implant injection, which may aid in earlier presentation and improved visual outcomes.