

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



Devin Betsch, R. Rishi Gupta on behalf of the Dexamethasone intravitreal implant migration study group*

INTRODUCTION

Devamethasone 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,348 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 comeal endothelium integrity is variable, ranging from little to no effect to non-resolving comeal edema requiring comeal 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 comeal 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 involant.

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 comeal transplantation, implant explantation. and conservative management.

RESULTS

Characteristics	rteristics Findings (n-	
	Absolute number	Percentage
Age (mean +/- SB) years	66.8 +/- 12.5	
Sex		
Male	28/32	87.5%
Female	492	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	492	12.5%
Hypotony	1/92	3.1%
Intraocular leus status		
PCIOL in capsular bag	13/92	40.6%
Scienal-finated IOE.	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	2492	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	Percentag
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	27/92	84.4%
Management		
Explantation	21/92	65.6%
Surgical repositioning		
Vitreous cavity	492	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 comeal transplantation due to non-resolving comeal 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 comeal 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 comeal 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

Nation S. Zarano, Venina J. Pane 47, et al., the International DEEN SECTION State Group, Nation of Will intervalent

Shanai S, Barad P, Kalharei P, Gupto V, Shansa A, Gupto d. Wandering (223/82/05/6-implant J Ophtholesis Inflamo Fallor

Mode St., Leure B., Capuse A. M. Migratius of DETERMENT implant into the universe election. Notice Com. Rein' Rep. anticytyseessa. Likiguuse A, Colemett M, Bannat A, et al. Autoriae deur berorigadius of Assaurethauser intraviend implant (OCTESTEST).

Strength and in information of publishers as per a solution or greater than Displacation. 2000;34(3):42-4.

It replaces to refer to the companion of the companion than Displacation. 2000;34(3):42-4.

It replaces to one report and review of Strengton. Down J Ophical Conf. 2000;14(3):41-41.

DISPLACED CONTROL OF A STRENGT CONTROL AND A DISPLACED CONTROL OF THE ADMINISTRATION OF THE ADMINISTRATION OF THE ADMINISTRATION AND A DISPLACED CONTROL OF THE ADMINISTRATION OF THE ADMINISTRATION AND ADMINISTRATION OF THE ADMINISTRATION AND ADMINISTRATION OF THE ADMINISTRATION OF THE ADMINISTRATION OF THE ADMINISTRATION AND ADMINISTRATION OF THE ADMINISTRATION OF TH

6.Dandon Ell, Debain d.P. A white line in the autories charden. 24M h. Dyblinder el. 2013;13(1):748. 7. Nguyen T., Wolfmalonger T.E. Managerousi of Justicise Chamber Dislocation of a Decomplication Prophet. Kita Month

6. Hermal 1., Units on N. Command to a letter DZT NEW SECK yearing whom into authorize absorbers. As de Nav. Nag. O Balancia.

Changia G, Niss A, DiSeis F, Ga. Sugical Management of Complications after Tenamerikas are legislat. Case Sep Ophibales

H. Kang R. Lee HPV, Ryenz RF, et al. The claimal malescenes of sanginal management of universe character origination of a

transferons involved (DECENDED SERV. Clearly, Arch Clin Dec Debritation), 218 5:244 (Oct 1894-1828). II Slick D, Serie Schmidt K.T., Sink T. Sink Series for and management of artistic element intentional decomplisation implies

D. Kaydi roğlu Ö., Toğuya X, Barqid C, Hayah H, Kari E. Antonior Chambre Higration of DZT EDEXE log lants. Turk F

operations accompagny i i is 160. Il Elemano RM, Appa RM, McCamel C.S., et al. Decamelloscore linguati Antesiae Chapter Magazines Bisk Paciera.

Compliantium, and Management Hastogies Diphiladeology. 2014;12(1):167.75.

Id Parks Tipes D, Francis Mallard, Californ Parase B, 2014;12(1):167.75.

Challepuli VK, P.C. creto DA: Migration of intentional desagnethracors in plant to anterior chapter. Notice Co.

H. Majarolin P.D., Pollor A.W., Paltor e.W., Birman J. Anterior character or ignation of a sandaterd referance decare ethan

DISCLOSURES

Adm Clair New Norman's in International Conference (Conference of Conference of Confer

Report Format (Student Salving Stude)
Landwill Salving Student Salving Student Salving Student Salving Student Salving Student Salving Student Salving Salving

*STUDY GROUP AUTHORS

Arif Samad	Efrem Mandelcom	John Galic
Landon J. Rohowetz	Ananda Kalevar	Alan R. Berger
Nicolas A. Yamuzzi	Mark Seamone	Karim Hammamj
Audina M. Berrocal	Mark Greve	Emmanuel Chang
Nimesh A. Patel	Geoff Williams	Andrew Kirker
Jayanth Sridhar	Amin Kherani	Flavio Rezende
Serge Bourgault	Eric Tourville	Nathan Steinle
Steve Levasseur	Jorge A. Fortun Tom Sheidow	

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:
OZURDEX®, anterior chamber, migration, and dexamethasone intravitreal implant.

• This was a retrospective, observational, multicenter case series of patients who experienced dexamethasone intravitreal 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	Finding	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.

Results

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.

Results

- 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 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 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.