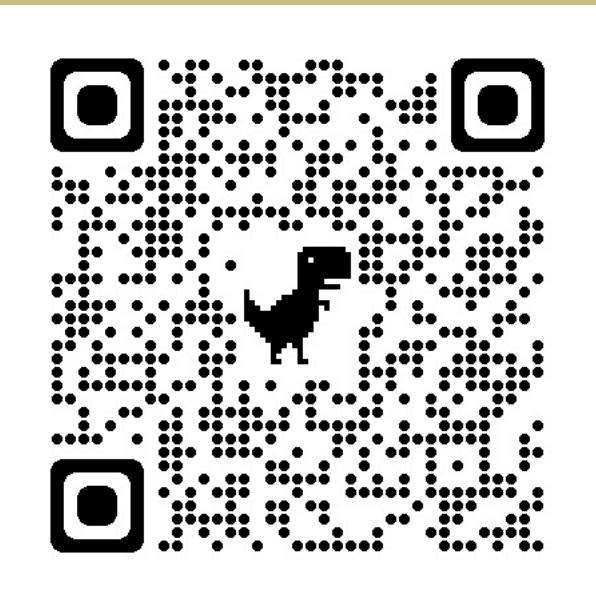


Indicators of Post-Operative Intraocular Pressure Elevation after Naïve Fluocinolone Acetonide Surgical Implantation

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Publication PubMed link (1)

Background

- Increased intraocular pressure (IOP) is a significant complication of uveitis.
- Increased IOP may arise due to glaucoma.
- Glaucoma is an optic neuropathy where elevated IOP is a risk factor for visual loss, Glaucoma is defined as progressive visual field loss, or retinal nerve fiber layer thinning on optical coherence tomography.
- Secondary glaucoma from steroid exposure has been reported to occur in 9.6-18.3% of patients with uveitis.(2-5)
- Non-infectious intermediate, posterior, and pan uveitis (NIPPU) often requires treatment with intravitreal or periocular (local) corticosteroids or systemic immunosuppression, as it is usually not responsive to topical medications for anterior uveitis.(6)
- Elevated IOP is a common side-effect in patients treated for uveitis with fluocinolone acetonide (FA) implantation.
- FA implant is the most effective form of local steroid therapy, but has a high incidence of secondary IOP rise.
- Characterizing factors conferring an increased surgical risk of developing ocular hypertension due to FA sustained-release surgical implant will enable us to more effectively guide patients contemplating a FA implant in their options for NIPPU.

Methods

- Retrospective, observational case series.
- Inclusion criteria: patients with a history of NIPPU undergoing naïve surgical FA implantation between 2007 to 2018 at the University of Colorado.
- Patient demographics and clinical measures were noted one year before and after FA implantation.

Results

TABLE 1. Patient demographics reported by sex, race/ethnicity, age, glaucoma history, and diagnosis, N = 29 eyes.

	N (%)
Sex	
Male	8 (27.6%)
Female	21 (72.4%)
Race/ethnicity	
White	24 (82.8%)
Black	3 (10.3%)
Hispanic	2 (6.9%)
Age (years)	
Mean (Standard Deviation)	36.5 (20.4)
Median	28
Range	9–74
History of Glaucoma	
Yes	2 (6.9%)
No	27 (93.1%)
Diagnosis	
Idiopathic pars planitis	19 (65.5%)
Idiopathic panuveitis	6 (20.7%)
Idiopathic occlusive retinal vasculitis	2 (6.9%)
Juvenile rheumatoid arthritis-associated uveitis	1 (3.4%)
Sympathetic ophthalmia	1 (3.4%)

TABLE 2. Potential risk factors of post-fluocinolone acetonide implantation IOP rise.

	Post-FA Implantation	
	Presence of IOP rise	p-value
Total (N = 29)	14/29 (48.3%)	-
Sex		
Male	2/8 (25.0%)	0.21
Female	12/21 (57.1%)	
Race/ethnicity		
White	12/24 (50.0%)	1.00
Other	2/5 (40.0%)	
Age (years)	Median 27.0 IOP rise vs. Median 54.0 no IOP rise	0.01*†
History of glaucoma or ocular hypertension		
Yes	5/12 (41.7%)	0.71
No	9/17 (52.9%)	
Diagnosis		
Pars planitis	8/16 (50.0%)	1.00
Other	6/13 (46.2%)	
Lens status		
PCIOL	6/15 (40.0%)	0.43
Cataract	7/11 (63.6%)	
Baseline IOP (mmHg)	Median 14.0 IOP rise vs. Median 12.0 no IOP rise	0.37*
History of IOP surgery		
Yes	2/7 (28.6%)	0.39
No	12/22 (54.6%)	
Prior Maximum IOP (mmHg)	Median 18.0 IOP rise vs. Median 17.0 no IOP rise	0.86*
Prior IOP rise		
Yes	4/13 (30.8%)	0.82**
No	10/16 (62.5%)	
Prior IOP-lowering drops		
Yes	4/10 (40.0%)	0.70
No	10/19 (52.6%)	

† $p < 0.05$
*Wilcoxon rank sum test for non-parametric continuous variables.
**McNemar's test for paired testing of categorical variables.
Note: All other statistical testing used Fischer's exact tests.
Abbreviations: FA = fluocinolone-acetonide, IOP = intraocular pressure, PCIOL = posterior chamber intraocular lens.

TABLE 3. Potential risk factors of post-fluocinolone acetonide implantation need for surgery to lower intraocular pressure.

	Post-FA Implantation	
	Need for Glaucoma Surgery	p-value
Total (N = 29)	10/29 (34.5%)	-
Sex		
Male	2/8 (25.0%)	0.67
Female	8/21 (38.1%)	
Race/ethnicity		
White	8/24 (33.3%)	1.00
Other	2/5 (40.0%)	
Age (years)	Median 24.5 surgery vs. Median 41.0 no surgery	0.07*
History of glaucoma or ocular hypertension		
Yes	4/12 (33.3%)	1.00
No	6/17 (35.3%)	
Diagnosis		
Pars planitis	7/16 (43.8%)	0.43
Other	3/13 (23.1%)	
Lens status		
PCIOL	3/15 (20.0%)	0.10
Cataract	6/11 (54.6%)	
Baseline IOP (mmHg)	Median 14.5 surgery vs. Median 12.0 no surgery	0.12*
History of IOP surgery		
Yes	1/7 (14.3%)	0.37
No	9/22 (40.9%)	
Prior Maximum IOP (mmHg)	Median 18.5 surgery vs. Median 17.0 no surgery	0.02*†
Prior IOP rise		
Yes	5/13 (38.5%)	0.26
No	5/16 (31.2%)	
Prior IOP-lowering drops		
Yes	3/10 (30.0%)	0.71
No	7/19 (36.8%)	

† $p < 0.05$
*Wilcoxon rank sum test for non-parametric continuous variables.
Note: All other statistical testing used Fischer's exact tests.
Abbreviations: FA = fluocinolone-acetonide, IOP = intraocular pressure, PCIOL = posterior chamber intraocular lens.

Conclusions

- A risk factor of elevated post-FA implantation IOP includes younger age. A potential risk factor for glaucoma surgery after FA implantation was higher maximum IOP before FA implantation.

Implications

- Altogether, our data demonstrate that in eyes with NIPPU of patients seeking FA implantation as a treatment modality, younger age and pre-operative maximum IOP are potential pre-implantation risk factors of post-implantation IOP rise and the need for post-implantation glaucoma surgery.
- Future directions of this study would include evaluation of a larger group of patients using an expanded set of possible risk factors and following patients for a longer duration.

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Disclosures

DECLARATION OF INTEREST: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

FUNDING: Supported in part by a challenge grant from Research to Prevent Blindness, New York, NY to the University of Colorado Department of Ophthalmology.