

Ophthalmology Times

Research Scholar

Honoree Program

Improving the Safety of  
Intravitreal Injections:  
The Timing and Application of Povidone-Iodine

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# FINANCIAL DISCLOSURES:

None



# MY ROLE IN THIS RESEARCH:

Please answer which of the following portions of the research you participated in:

- ✓ Conception and design of the work/project
- ✓ Acquisition of data
- ✓ Analysis and interpretation of data
- ✓ Creation and/or critical review of the presentation



# Introduction

- Endophthalmitis is the most feared complication of intravitreal injections
- Appropriately applied povidone-iodine is the most important step in endophthalmitis prevention (Avery, 2014)



# Study Goals & Objectives

- Identify risk factors for post-injection endophthalmitis
- Compare pre-injection aseptic protocols
- Improve safety of intravitreal injections for our patients



# Pre-Injection Prep

All patients initially prepped by technician

- 1) Topical tetracaine
- 2) 5% Povidone-Iodine applied to eyelids & lashes
- 3) 5% Povidone-Iodine “flush” of the conjunctiva
- 4) Eye is closed & covered with sterile patch



# Povidone-Iodine Application

- 1) Physician did not reapply PI
- 2) Physician reapplied PI but did not use a lid speculum
- 3) Physician reapplied PI prior to insertion of a lid speculum
- 4) Physician reapplied PI after inserting the lid speculum



# Methods

## Retrospective review

37,646 injections (27 physicians) in 2016

### Anti-VEGF

- Bevacizumab
- Ranibizumab
- Aflibercept

### Intravitreal Steroids

- Preservative free triamcinolone
- Dexamethasone Implant





# Methods

## Multivariate risk factor analysis

- Aseptic technique (Groups 1 – 4)
- Control for:
  - 1) Use of gloves
  - 2) Caliper to mark the injection site
  - 3) Class of medication (Anti-VEGF vs. Steroid)

No physicians in the study routinely wear masks or prescribe antibiotics



# Results

33 cases of presumed infectious post-injection  
endophthalmitis (0.088%)



# Results

## Gloves

- Yes (0.076% [9 of 11,910])
- No (0.093% [24 of 25,736])
- $p = 0.119$

## Caliper

- Yes (0.077% [10 of 13,060])
- No (0.094% [23 of 24,586])
- $p=0.496$

## Drug Class

- Anti-VEGF (0.086% [31 of 36,112])
- Steroid (0.130% [2 of 1,534])
- $P=0.740$

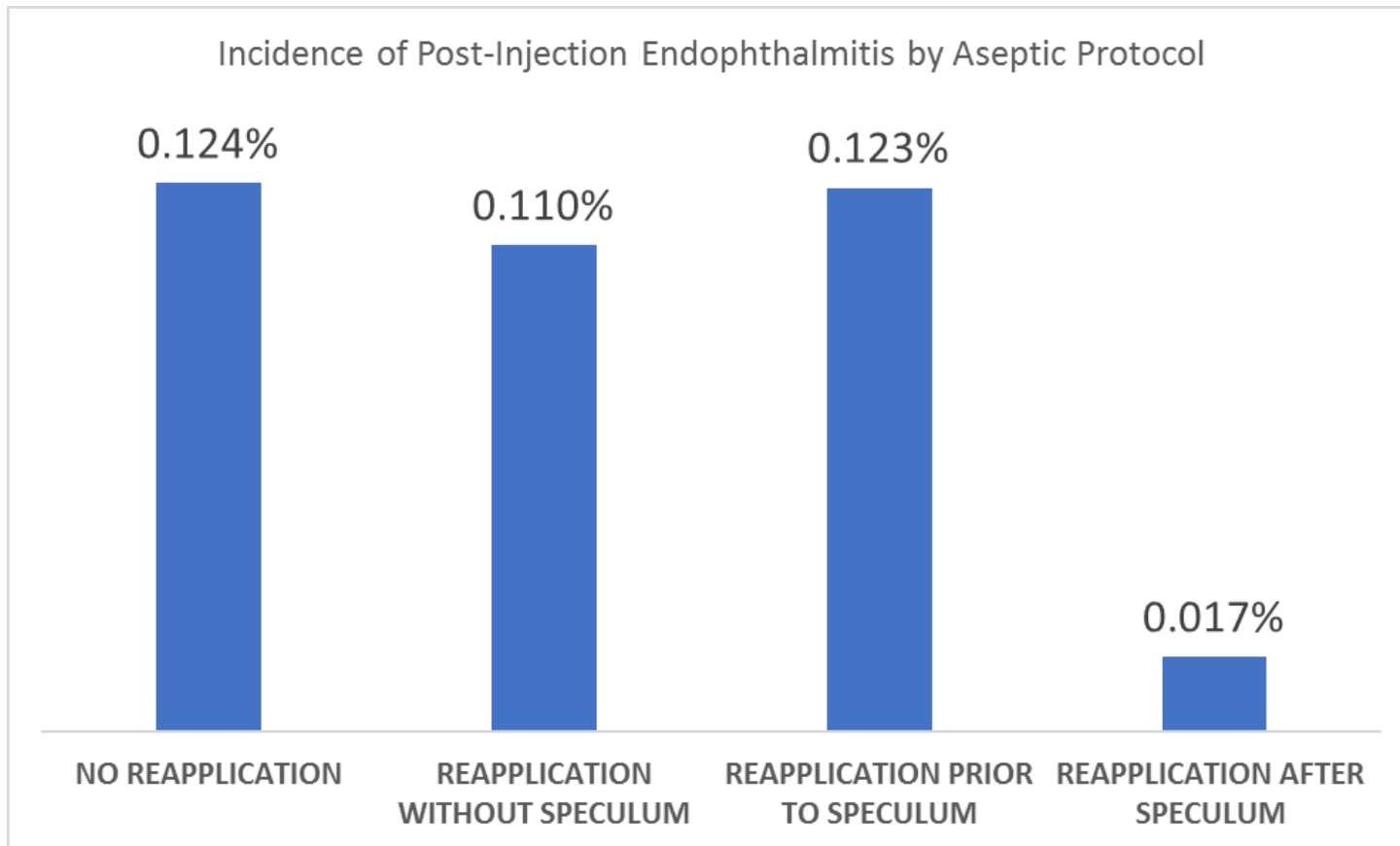


# Application of Povidone-Iodine

Reapplication of Povidone-Iodine by MD	Injections	Endophthalmitis	P = 0.031
1) No Reapplication	16,155 (42.9%)	20 (0.124%)	
2) Reapplication without a speculum	5,472 (14.5%)	6 (0.110%)	0.584
3) Reapplication prior to speculum	4,067 (10.9%)	5 (0.123%)	0.863
4) Reapplication after speculum	11,952 (31.7%)	2 (0.017%)	<b>0.004</b>



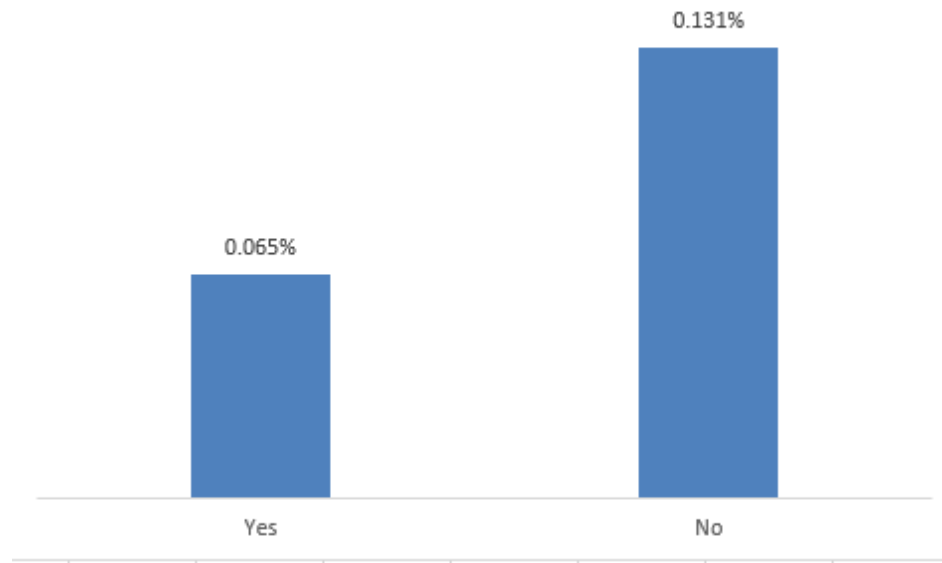
# Application of Povidone-Iodine





# Lid Speculum Use (Univariate Analysis)

Speculum use associated with significantly lower incidence of endophthalmitis



0.065% (16 of 24,683) versus 0.131% (17 of 12,963), p=0.039



# Lid Speculum Use (Univariate Analysis)

In cases where the physician did not reapply povidone-iodine, speculum use was not protective against endophthalmitis

0.104% (9 of 8,663) vs 0.147% (11 of 7,492),  $p=0.439$



# Conclusions

- Additional povidone-iodine after placement of a lid speculum significantly decreased the incidence of post-injection endophthalmitis
- We recommend that the eyelid not be allowed to contact the injection site following the final application of povidone-iodine





# Implementation of Protocol

20,327 injections since study conclusion

2 month transition period excluded

56% decrease in endophthalmitis incidence

0.088% → 0.039% (p=0.054)



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# Acknowledgements

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