

Role of Physician Experience in Pterygium Surgical Outcomes

Ben J. Janson, BS and Shameema Sikder, MD

The authors have no financial interest in the subject matter of this poster.

Advance slide to begin viewing poster

The Role of Physician Experience in Pterygium Surgical Outcomes

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Background

- Pterygia
 - Fibrovascular ocular growth from conjunctiva onto cornea
 - Pterygia induce astigmatism, discomfort, and poor cosmesis
- Management
 - Surgical excision
 - Surgical adjuvants (mitomycin C, 5-Fluorouracil, beta-irradiation)
 - Surgical graft attachment (sutures, fibrin glue)
- Problems
 - Often recur
 - Time to recurrence: 50% chance within 4 months, 97% chance within 12 months
 - Role of physician experience not extensively studied in recurrence risk like procedure type, adjuvants, and attachment methods.
- Previous Studies
 - Farah et al. 2006 "Outcomes of autconjunctival grafting for primary pterygia when performed by consultant compared with trainee ophthalmologists"
 - Lower recurrence and complications reported with attendings
 - Ti et al. 2000 "Analysis of variation in success rates in conjunctival autografting for primary and recurrent pterygium"
 - Recurrence rates 5-82% with lowest rates in most experienced attending physicians (no trainees analyzed)

Hypothesis

Pterygium surgical outcomes will have lower recurrence rates and complication rates when performed by the attending surgeons as compared to the trainee surgeons.

Methods

Nine Year Retrospective Chart Review

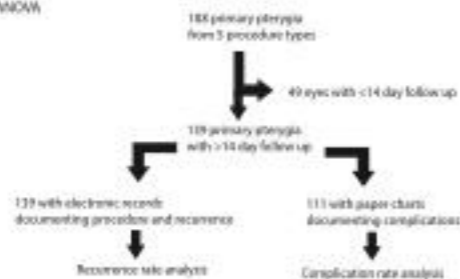
- Inclusion Criteria
 - Primary pterygium eyes
 - Received surgical treatment at Wilmer Eye Institute
- Exclusion
 - Previous recurrences
 - <2 week follow up
- Data Collection
 - Patient demographics
 - Length of follow up
 - S procedure types
 - Mitomycin C adjuvant use
 - Suture type and thickness
 - Surgeon experience level
 - Fibrin glue use
 - "Trainee" = resident and fellows
 - Attendings

Main Outcomes

- Recurrence (yes/no)
- Time to recurrence (days)
- Total complications (each reported complication given value of 1, then summed to determine total complications)

Statistical Analysis

- STATA 12
- Fisher exact test
- ANOVA



Results

Comparison of Patient Demographics

Patient Demographics	Patient Demographics of Attending Cases	Patient Demographics of Trainee Cases	Fisher Exact Test Experience Groups
Gender	46% Female	46% Female	1.00
Race	45% Caucasian 12% Hispanic	62% Caucasian 15% Black	0.60
Age	54.5 ± 12.0 Years (28-94.0)	54.6 ± 12.8 Years (30.0-90.0)	0.97
Eye Treated	46% Left eye	49% Left eye	0.73

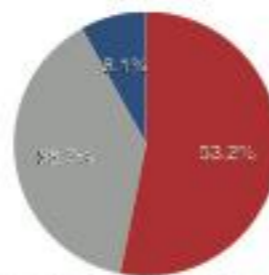
Surgical Technique Selection

Surgical Technique	Attending Physician Procedures	Trainee Procedures
Anastomosis Membrane Graft	79.2%	41.9%
Bare Sclera	3.5%	3.7%
Conjunctival Autograft	49.7%	48.8%
Conjunctival-Limbal Autograft	17.8%	1.2%
Primary Conjunctival Closure	10.8%	4.9%

-Fisher exact test determines that there are statistical differences in the selection of procedure between trainee and attendings (p=0.001)

Complications

Number of Reported Complications



● No Complications ● 1-2 Complications ● 3+ Complications

Complication	Anastomosis Membrane Graft		Bare Sclera		Conjunctival Autograft		Conjunctival-Limbal Autograft		Primary Conjunctival Closure	
	Attending	Trainee	Attending	Trainee	Attending	Trainee	Attending	Trainee	Attending	Trainee
Number of Patients	44	25	4	3	28	9	9	2	2	1
Patients with any complication	35%	40%	0%	0%	32%	33%	33%	0%	0%	0%
Self-Healed	7%	8%	0%	0%	11%	4%	11%	0%	0%	0%
SB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hyphema	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Postoperative Infection	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Recur	1%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Strabismus	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Stylocystitis	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Superficial Scleritis	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Only the top 8 complications are shown. Other complications that occurred but are not included in the above table are: deflex, graft retraction, symblepharon, vascularization, diplopia, corneal stromal melt, and chemosis. No statistically significant differences between groups for all 5 procedures.

Results

Recurrence

• Average follow up time: 467 ± 637 days (range 15-2917 days)

Surgical Technique	Combined Recurrences	Attending Physician Recurrences	Trainee Recurrences	Fisher Exact P-Value
Anastomosis Membrane Graft	1945 (34.4%)	411 (36.4%)	704 (30.9%)	0.421
Bare Sclera	18 (28%)	12 (38%)	6 (9%)	0.408
Conjunctival Autograft	888 (8.9%)	528 (17.9%)	190 (2.9%)	0.074
Conjunctival-Limbal Autograft	811 (8.4%)	616 (38%)	91 (9%)	0.455
Primary Conjunctival Closure	392 (38%)	16 (16.7%)	29 (58%)	0.008

(a) This statistic is for all procedures recorded and does not distinguish attending from trainee cases. Recurrence rates are statistically associated with procedure type (fisher exact test p=0.003).

(b) This statistic is for the Fisher exact test comparing "Attending Physician Recurrence" and "Trainee Recurrence" for each type of procedure.

Time to Recurrence

- Time to recurrence 9.56 ± 10.93 months
- Shortest 0.5 months (bare sclera)
- Longest 40.5 months (anastomosis membrane graft)
- 22% occurred after 12 months
- No significant differences between attending and trainees (Fisher exact p=0.64)

Conclusions

No statistical differences between experience groups in recurrence or complication rates when examining outcomes based on procedure type.

Statistical difference between surgical technique and recurrence rate when not distinguishing attending from trainee cases.

Recurrence time was often later than one year, which is longer than literature recommendations for follow up.

Limitations

- Cannot determine whether the trainee performed alone or with attending assistance
- Small sample sizes when analyzing bare sclera, conjunctival limbal autograft, and primary conjunctival closure
- Could not control pterygium size or grade
- Possible selection bias in difficulty of cases by attendings
- 24% lost based on follow up <14 days

Implications

- May need to extend follow up times for research
- 22.2% occurred after 12 months
- Literature suggests 97% recurrence chance within one year
- Kaplan-Meier estimates from other studies also suggest recurrence occurring outside of one year
- Prospective trials are required to standardize terminology of recurrence and adjust for differences in pterygium grade and size.

Acknowledgements

Ben Janson would like to acknowledge the support of the Johns Hopkins Scholarly Concentration Program, advisor Jennifer Haythornthwaite, and the statistical support from Abanti Sanyal.

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Hypothesis

Pterygium surgical outcomes will have lower recurrence rates and complication rates

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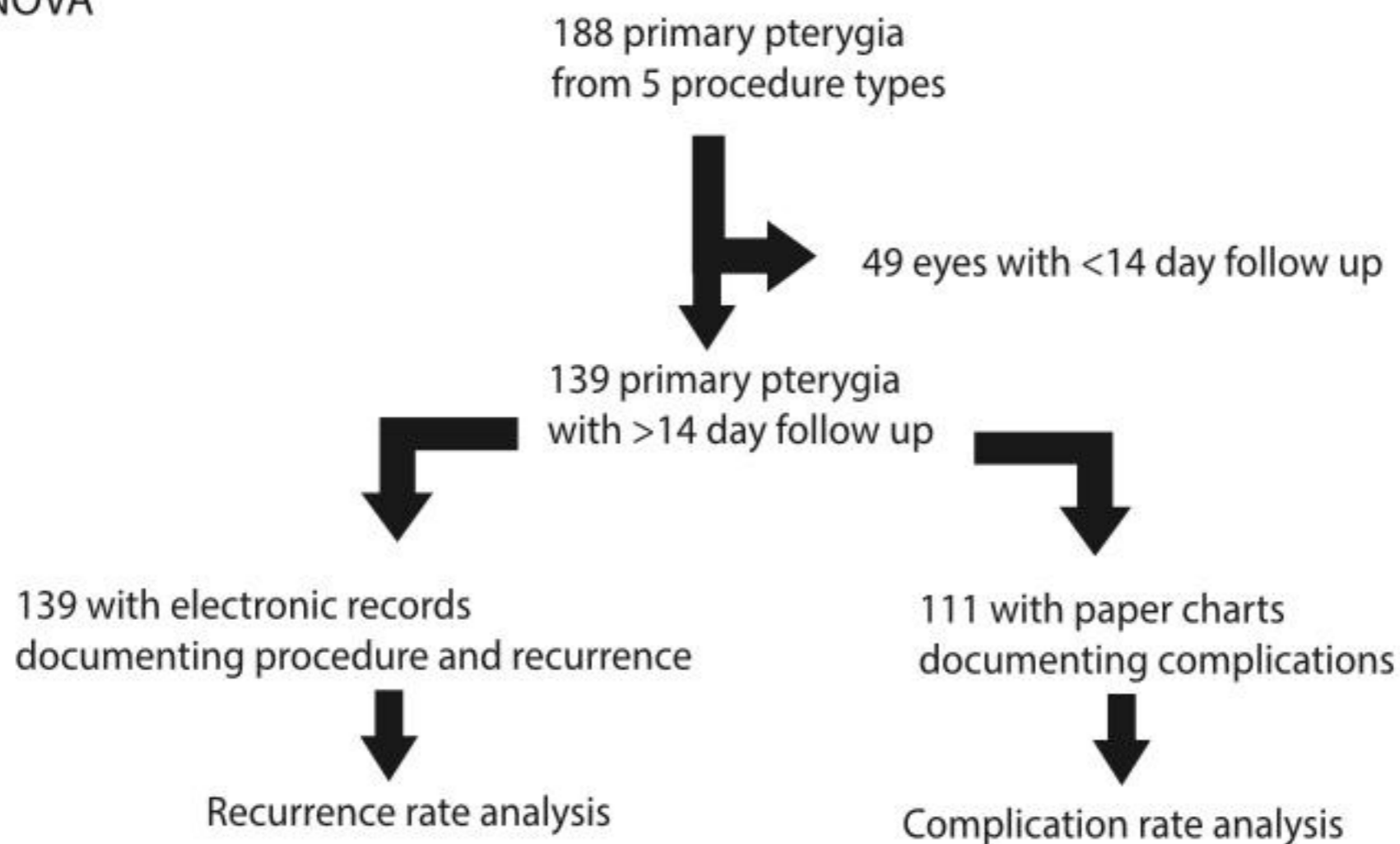
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- Suture type and thickness
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- Length of follow up
- Mitomycin C adjuvant use
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Primary Conjunctival Closure	10.5%	4.9%

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Complications

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Complication	All Pterygium Procedures		Amniotic Membrane Graft		Bare Sclera		Conjunctival Autograft		Conjunctival Limbal Autograft		Primary Conjunctival Closure	
	Attending	Trainee	Attending	Trainee	Attending	Trainee	Attending	Trainee	Attending	Trainee	Attending	Trainee
Number of Patients	44	67	6	28	2	2	24	33	8	1	4	3
Patients with any complication	50%	45%	83%	57%	100%	0%	42%	36%	63%	100%	0%	33%
Graft edema	7%	0%	17%	0%	50%	0%	42%	0%	0%	0%	0%	0%
Cyst	5%	2%	0%	0%	0%	0%	0%	3%	25%	0%	0%	0%
Hemorrhage	2%	10%	0%	0%	0%	0%	4%	6%	0%	0%	0%	33%
Foreign body sensation	27%	13%	17%	11%	50%	0%	29%	15%	38%	0%	0%	33%
Haze	7%	8%	0%	4%	0%	0%	4%	12%	25%	0%	0%	0%
Injection	11%	5%	33%	7%	0%	0%	4%	0%	25%	0%	0%	33%
Blepharitis	7%	2%	0%	0%	0%	0%	4%	3%	25%	0%	0%	0%
Significant pain (>5/10)	11%	16%	17%	25%	0%	0%	4%	6%	38%	100%	0%	33%

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Surgical Technique	Combined Recurrences ^(a)	Attending Physician Recurrences	Trainee Recurrences	Fisher Exact P-Value ^(b)
Amniotic Membrane Graft	11/45 (24.4%)	4/11 (36.4%)	7/34 (20.6%)	0.421
Bare Sclera	1/5 (20%)	1/2 (50%)	0/3 (0%)	0.400
Conjunctival Autograft	6/68 (8.8%)	5/28 (17.9%)	1/40 (2.5%)	0.074
Conjunctival-Limbal Autograft	6/11 (54.5%)	6/10 (60%)	0/1 (0%)	0.455
Primary Conjunctival Closure	3/10 (30%)	1/6 (16.7%)	2/4 (50%)	0.500

(a) This statistic is for all procedures recorded and does not distinguish attending from trainee cases. Recurrence rates are statistically associated with procedure type (Fisher exact test $p=0.003$).

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Implications

conjunctival
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Trainee

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33%

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primary conjunctival closure

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