Do topical ocular antihypertensives affect Dacryocystorhinstomy outcomes: The Coventry experience

Priyanka Mandal,[1] Harpreet Ahluwalia[1,2]

[1]Department of Ophthalmology, University Hospitals of Coventry and Warwickshire NHS Trust Coventry, UK

[2]Professor of Ophthalmology, Aston Medical School, Aston University, Birmingham, UK

Background

- Ocular antihypertensives may be associated with an increased risk of nasolacrimal duct obstruction.
- Sulfonamides, including topical Dorzolamide, have been linked to mucosal inflammatory diseases such as Erythema Multiforme, Toxic Epidermal Necrolysis and Steven Johnson Syndrome.[1-4]
- This study aims to assess the effect of topical antihypertensive treatment on surgical outcomes for patients undergoing Dacryocystorhinostomy (DCR) with intubation.

Methods

- Single centre, retrospective analysis of 170 operations carried out on 144 patients between January 2014 and January 2019.
- Statistical analysis of DCR failure rates comparing patients on topical ocular antihypertensive treatment and those not on any topical ocular antihypertensive treatment.

Results

	Antihypertensive group failure rate %, ($n = 10$)	Control group failure rate %, ($n = 139$)	p value
Overall failure rate (endonasal + external)	40% ($n = 4$)	9.4%, ($n = 13$)	0.02
Endonasal	100%, ($n = 2$)	7.4%, ($n = 4$)	0.01
External	25%, ($n = 2$)	10.1%, ($n = 9$)	0.22

- 6.9% of patients undergoing DCR surgery were on topical antihypertensive treatment.
- Overall failure rate for all DCR operations = 11.2%.
- The most commonly used topical treatments were carbonic anhydrase inhibitors (CAI, 81.8%), followed by beta-blockers (72.7%).
- All patients who had failure of primary DCR were using topical beta-blockers and CAI at the time of surgery and post-operatively.
- There was no statistically significant association between failure rates and the use of preserved or unpreserved drops (p=1.0).

Conclusion

- Topical ocular antihypertensives may lead to a higher failure rate for DCR surgery via an inflammatory cicatricial response.
- Beta-blockers and CAIs appear to have the strongest association.
- Considering a primary external approach in this group as well as switching the class of topical antihypertensive treatment preoperatively may improve DCR outcomes.

Case note review of patients on topical antihypertensives

Patient	Surgery	Treatment at time of surgery	Duration of use	Successful?
60M	Left external DCR	Alpha agonist, β blockers, PG Brimonidine/timolol and latanopros Unpreserved	1 year pre-op (alpha agonist and β blocker), PGA commenced post-op	Yes
63M	Left external DCR	PGA and CA Travoprost and brinzolamid Unpreserved	1 year pre-op	Yes
66F	Right external DCR	PG Latanopros Unpreserved	5 months pre-op	Yes
75F	Left external DCR	PGA + CA Brinzolamide and bimatopros Unpreserved	>10 years pre-op	Yes
81F	Left external DCR	β blocker and CA Dorzolamide/timolo Preserved	5 years pre-op	Yes
69F	Left external DCR	PGA, β Blocker and CA Dorzolamide/timolol and bimatopros Unpreserved	>10 years pre-op	Yes
86M	Right endonasal DCR	β blocker and CA Dorzolamide/timolo Unpreserved	>10 years pre-op	Original surgery in 2012. This re-do surgery was successful.
43M	Left endonasal DCR	β blocker and CA Brinzolamide/timolo Unpreserved	From 2 weeks post-op	No. Found to have scarring on endoscopy. Had re-do external DCR was successful.
69M	Right endonasal DCR	β blocker and CA Dorzolamide/timolo Unpreserved	2 years pre-op	No. Found to have scarring on endoscopy. Had re-do endonasal DCR which was successful.
71F	Right external DCR	PGA, β blocker and CA Dorzolamide/timolol and bimatopros Unpreserved	>10 years pre-op	No. Found to have substantial granulation tissue around ostium and had re-do endonasal DCR twice with eventual success.
76M	Right external DCR	β blocker and CA Dorzolamide and levobunolo Unpreserved	>10 years pre-op	No. Post-sac delay on scintigraphy. Awaiting further review.

M male, *pre-op* pre-operatively, *post-op* post-operatively, *F* female, *β blockers* beta-blockers, *PGA* prostaglandin analogue, *CAI* carbonic anhydrase inhibitor

References:

[1] Munshi V, Ahluwalia H. Erythema multiforme after use of topical dorzolamide. J Ocul Pharmacol Ther. 2008 Feb;24(1):91-3.

[2] Asensio-Sánchez VM. [Toxic epidermal necrolysis following dorzolamide eyedrops]. An Med Interna. 2008 Jan;25(1):47-8.

[3] Chun JS, Yun SJ, Lee JB, Kim SJ, Won YH, Lee SC. Toxic Epidermal Necrolysis Induced by the Topical Carbonic Anhydrase Inhibitors Brinzolamide and Dorzolamide. Ann Dermatol. 2008 Dec;20(4):260-2.

[4] Yang MS, Lee JY, Kim J, Kim GW, Kim BK, Kim JY, et al. Searching for the Culprit Drugs for Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis from a Nationwide Claim Database in Korea. J Allergy Clin Immunol Pract. 2020 02;8(2):690-695.e2.

NHS
University Hospitals Coventry and Warwickshire
NHS Trust