A close-up photograph of a human eye during a surgical procedure. A surgical instrument is visible, and a bright green light is directed at the eye. The text is overlaid on the image.

Intracanalicular Dexamethasone Insert for Post-Corneal Cross- Linking Inflammation and Pain

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Financial Disclosures

- Alanna Nattis DO, FAAO: Alcon (consultant, research), Glaukos (research), Novartis (consultant) Ocular Therapeutix (research), Sight Sciences (consultant), Tarsus (consultant)
- Eric Rosenberg DO, MSE: Alcon (consultant, research), Ocular Therapeutix (consultant) Sight Sciences (consultant), Zeiss (consultant, research), Tarsus (consultant), Eyevance (consultant), Omeros (consultant)

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Purpose

- There is no standard post-crosslinking (CXL) regimen for pain and inflammation.
- In addition to topical steroid, some prescribe oral narcotics due to severe pain that may occur.
- This study compared post-CXL **pain scores** between patients receiving a **tapered topical steroid** (*Prednisolone Acetate 1%*) over 1-month post-CXL vs. an **intracanalicular dexamethasone insert** (*Dextenza*, Ocular Therapeutix, Bedford MA)

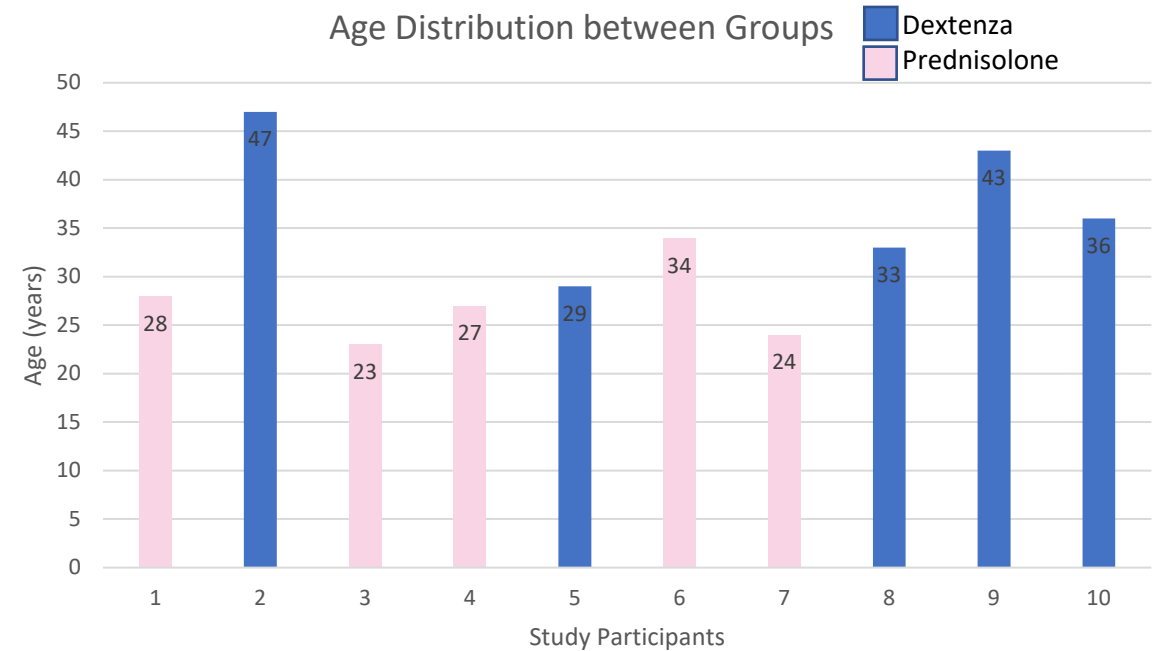
Methods/Study Design

- Prospective, randomized study
- Ten patients (20 eyes) enrolled
 - Bilateral, same-day epithelium-off CXL (*Dresden Protocol*)
 - 50% randomized into a post-CXL 28-day topical tapering steroid regimen
 - QID x 1 week, TID x 1 week, BID x 1 week, QDx 1 week
 - 50% randomized into the intracanalicular insert group
 - Both groups used topical fluoroquinolone eye drop QID x 10 days
 - All patients were evaluated for **pain scores** following standard bilateral epithelium-off CXL on postoperative day(POD) 1, POD-3, POD4-7, postoperative week (POW)-1, POW2, POW3 and POW4.
 - Rate of **re-epithelialization**, need for 'rescue' pain medication, and **ease of postoperative regimen** was assessed between groups.

Demographics/Baseline Data

	Control (Prednisolone)	Dextenza
Sex (%M v F)	7M (70%), 3F (30%)	
Mean Age	32.4 ± 7.49 (23-47)	
Mean Baseline BCVA	20/40 (20/20 - 20/100)	20/40 (20/25 – 20/70)

- No statistical difference between sex and whether or not patient received Dextenza or Prednisolone (z-score, $p=0.329$)



Results: Trend BCVA, CCT

	Prednisolone	Dextenza
Baseline BCVA	20/40 (20/20 - 20/100)	20/40 (20/25 - 20/70)
POM1 BCVA	20/40 (20/30 - 20/70)	20/30 (20/25 - 20/70)
Baseline CCT (μm)	504.5 \pm 30.1 (462 - 569)	528.4 \pm 40.9 (466 - 579)
POM1 CCT (μm)	471.8 \pm 34.02 (425 -531)	476.5 \pm 48.04 (412-558)

- No significant difference between BCVA at POM1 (t-test, $p=0.380$) and whether the patient received Dextenza or Prednisolone
- No significant change in baseline BCVA and POM1 BCVA
- No statistically significant change between baseline CCT and POM1 CCT

Results: Trend in Pain Scale

	Prednisolone	Dextenza
POD0 Pain Scale	6.6 ± 2.15 (4-10)	6.8 ± 2.04 (4 - 10)
POD1 Pain Scale	1.4 ± 0.49 (1-2)	2.2 ± 1.47 (1-5)
POD3 Pain Scale	0	0
POD7 Pain Scale	0	0
POW2 Pain Scale	0	0
POW3 Pain Scale	0	0
POM1 Pain Scale	0	0



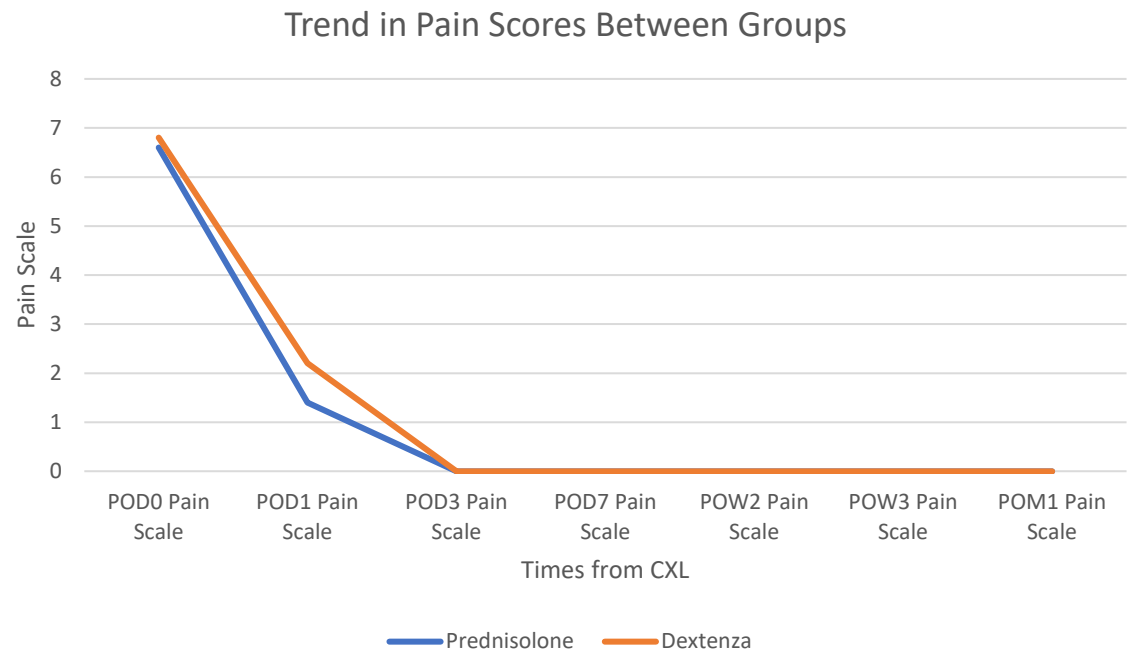
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[Instructions for Usage](#)

Explain to the person that each face represents a person who has no pain (hurt), or some, or a lot of pain.

Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurt a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain.

Ask the person to choose the face that best depicts the pain they are experiencing.



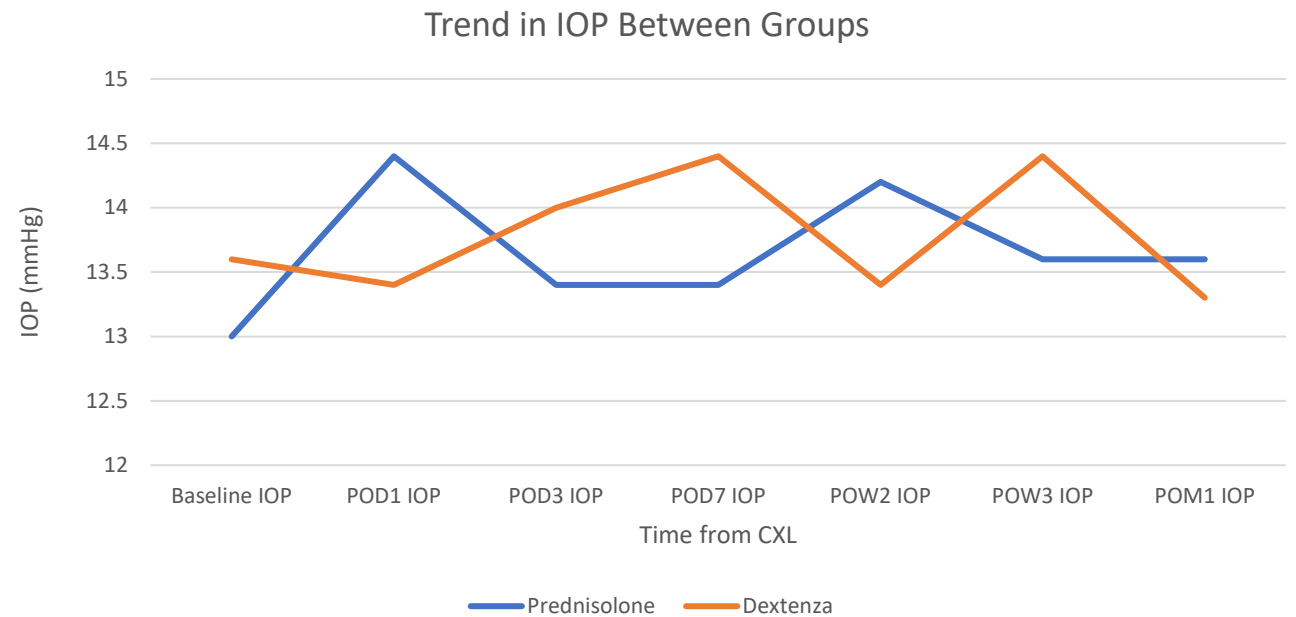
- No significant difference between groups for pain scale at POD0 (t-test, $p=0.842$) and POD1 ($p=0.139$), nor in use of 'rescue meds'

POD = postoperative day, numbers in parentheses represent range of values

Results: Trend in IOP

	Prednisolone	Dextenza
Baseline IOP	13 ± 1.788 (11 - 16)	13.6 ± 2.3 (12 -18)
POD1 IOP	14.4 ± 1.02 (14 - 16)	13.4 ± 1.2 (12-15)
POD3 IOP	13.4 ± 2.15 (10-16)	14 ± 1.26 (12 - 15)
POD7 IOP	13.4 ± 1.96 (10-16)	14.4 ± 2.58 (12-19)
POW2 IOP	14.2 ± 0.75 (13-15)	13.4 ± 1.36 (11-15)
POW3 IOP	13.6 ± 1.02 (12-15)	14.4 ± 2.06 (12-18)
POM1 IOP	13.6 ± 1.02 (12-15)	13.3 ± 2.37 (10-16)

- No significant difference in baseline IOP between groups (t-test, $p=0.822$)
- No significant difference in IOP between groups across all time points:
 - POD1: $p=0.073$
 - POD3: $p=0.480$
 - POD7: $p=0.366$
 - POW2: $p= 0.139$
 - POW3: $p=0.310$
 - POM1: $p=0.731$

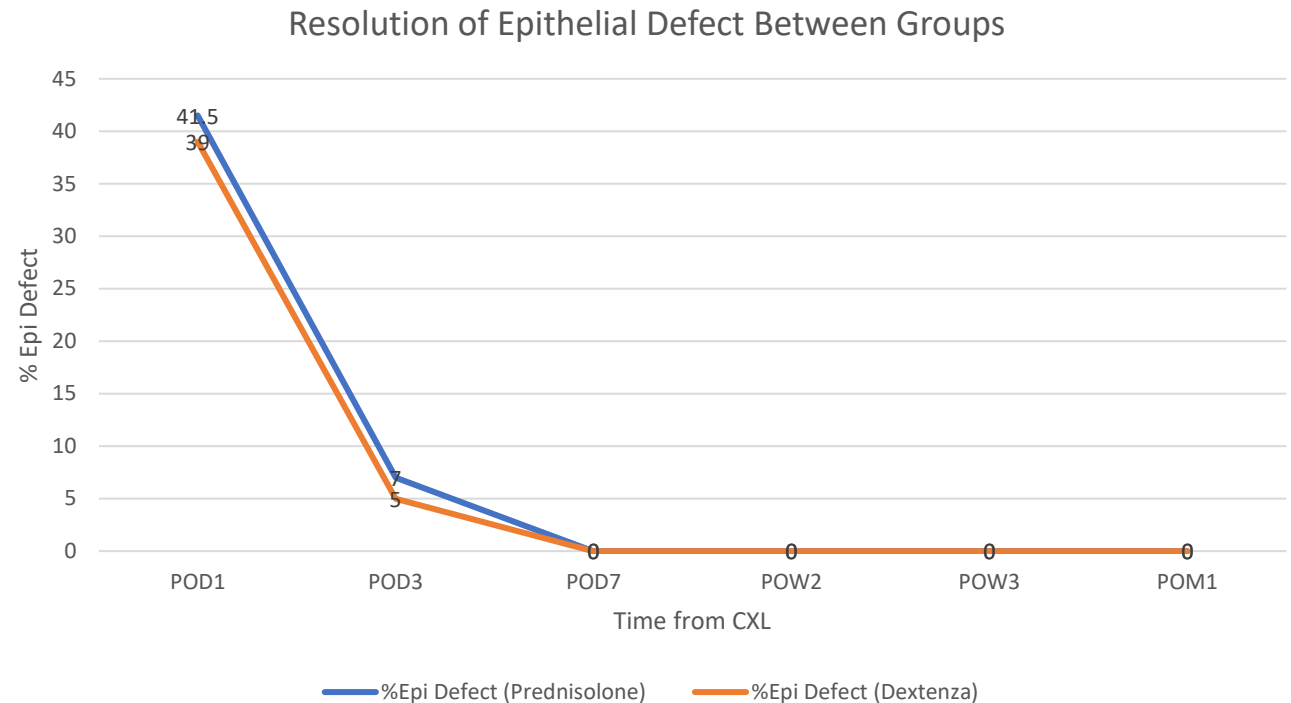


POD = postoperative day, IOP = intraocular pressure, numbers in parentheses represent range of values

Results: Trend Epithelial Defect Resolution

	POD1	POD3	POD7	POW2	POW3	POM1
%Epithelial Defect (Prednisolone)	41.5 ± 3.9 (35-45)	7 ± 4 (0-10)	0	0	0	0
%Epithelial Defect (Dextenza)	39 ± 5.8 (30-45)	5 ± 3.16 (0-10)	0	0	0	0

- **No significant difference** between groups and rate of epi defect resolution at POD1 (t-test, $p=0.299$) and POD3 ($p=0.255$)



POD = postoperative day, numbers in parentheses represent range of values

Results: Ease of PO Medication Questionnaire

Question	Prednisolone	Dextenza
<i>1. Were directions regarding eye drop use post-CXL easy to follow?</i>	100% yes	100% yes
<i>2. Was it cumbersome to use eye drops for more than 10 days?</i>	100% no	n/a
<i>3. Was it difficult to remember to use postoperative drops?</i>	100% no	100% no

Discussion

- Our results demonstrate that utilizing a dexamethasone intracanalicular insert at the time of CXL rather than prescribing a month-long tapering dose of prednisolone is **safe** and **efficacious**.
- No patients had any adverse events in relation to dexamethasone intracanalicular insertion, and rate of re-epithelialization was similar between groups.
- Our results support the use of a dexamethasone intracanalicular insert post-CXL patients. This can help improve compliance with postoperative eye drop instructions and even comfort.

Thank you!

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