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ABCD progression post crosslinking for Keratoconus

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ABCD progression post crosslinking for Keratoconus

Sonali Patel, Dr. Neil Vadhar, Dr. Zeba Syed

- Keratoconus → corneal disease
 - Cornea thins out and becomes cone shaped
- Most common treatment → Cross Linking
 - Riboflavin drops are placed on the patients eyes and allowed to sit
 - The treated eye is then exposed to UV light
 - increases the degree of interfibrillar collagen cross linking
 - Extra strength from cross linking can help stop the progression of keratoconus.

- Post-surgical outcomes of cross linking → traditionally analyzed using an AK (Amsler- Krumeich) system
 - Could not account for posterior corneal surface and corneal thickness)
- New ABCD classification was developed
 - Takes into account anterior (A) and posterior (B) radius of curvature, the thinnest corneal pachymetry (C) and the distance for best corrected vision (D)
 - Data collected via Pentacam
- extra information should help describe the keratoconic cornea in a much improved manner /allow for more personalized treatment plans.

Objectives & Hypothesis

- Research Question

- How do ABCD measurements fluctuate with the changes in visual acuity post cross linking surgery?

- Hypothesis

- ABCD measurements should all decrease post cross linking surgery

Approach & Results

- A retrospective study was done using 104 patients who underwent CXL treatment for keratoconus at Wills Eye between 1/2016 and 6/2019
- previous Lasix surgery was an exclusion criteria
 - corneas might show different post-surgical changes
- Measurements were taken using a Pentacam.
 - pre-operatively
 - post operatively at months 3 and 6
 - D value not readily available for all of the patients and thus was not collected.
 - Increases in these measurements → disease progression
 - decreases → Disease regression

Approach & Results

Table 1. Comparison of ABCD values pre-op and at POM3. n=35

	Pre-op	POM3	p-value
A	3.60	3.88	0.39
B	5.00	5.77	0.07
C	1.86	2.44	0.00016*

Table 2. Comparison of ABCD values pre-op and at POM6. n=25

	Pre-op	POM6	p-value
A	3.58	3.43	0.43
B	4.97	5.28	0.24
C	1.88	2.16	0.06

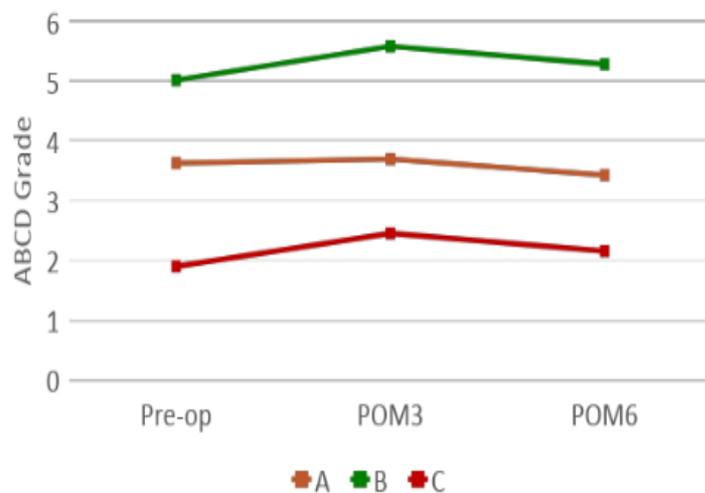


Figure 1. ABCD values pre-op, POM3, and POM6

- A, B and C → initially progressed post-operatively at 3 months
 - B and C values progresses to a much higher degree than A value
 - 6 months post operatively:
 - A values regressed past baseline
 - B and C values also regressed but not past baseline.
- CXL surgery → improves keratoconus in the anterior cornea but not as effective in the posterior cornea
- Initial regression in the B and C value → not a concern
 - stabilize later than the A value
 - does not mean that the CXL surgery was unsuccessful

Future Directions

- Longer follow up times:
 - looking at patient data at 9 or 12 months could help pinpoint when the posterior chamber and corneal thickness stabilize in disease progression.
- Increased sample size
 - the amount of eyes looked at was relatively small

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