

EVALUATING CORNEAL CHANGES AFTER CORNEAL COLLAGEN CROSS-LINKING IN KERATOCONUS BY OPTICAL COHERENCE TOMOGRAPHY

Ahmed Abdelkarim Elmassry ,Mohamed El Kateb ,Ehab Othman , Abdalla Sami Barakat

Department of Ophthalmology, Faculty of Medicine, Alexandria University

INTRODUCTION

Keratoconus It is one of the progressive, non-inflammatory, bilateral (yet often asymmetrical) ectatic corneal diseases, manifested by stromal thinning and weakness that results in distorted corneal surface. Corneal collagen CXL has emerged as approach to delay or prevent the progression of KC and LASIK ectasia following surgery. Demarcation line This line indicates the transition zone present between cross-linked anterior stroma of the cornea and untreated posterior stroma. Recently, OCT has gained interest as an approach for investigation of CXL influences including corneal thickness prior to and following CXL for KC, and demarcation line depth after CXL.

Aim of the work

The aim of this work was to assess the postoperative corneal alterations following CXL in progressive KC patients using AS-OCT.

PATIENTS

The study was carried out on 30 eyes of 18 KC patients at private center(El-nour eye centre), Alexandria, Egypt.a prospective interventional study, non comparative case series ,Age between 15 and 35 years, Keratoconus without significant corneal scarring.

METHODS

The studied patients were subjected to following :
Thorough history taking
Visual acuity testing ,anterior segment biomicroscopy ,posterior segment biomicroscopy
Keratoconus was diagnosed using (Pentacam HR, Oculus)
Epi-off CXL was performed under aseptic conditions
Postoperatively, all patients were subjected to(Pentacam HR, and AS-OCT) after 1 ,3 and 6 months post operatively .

RESULTS

Table (1): Comparison between the two studied periods according to demarcation line depth (n = 30)

Demarcation line depth	Post-Operative Pentacam	
	1 st month	3 rd months
T at 2 mm		
Min. – Max.	205.0 – 413.0	202.0– 398.0
Mean ± SD.	281.01 ± 55.22	273.0 ± 55.32
C		
Min. – Max.	224.0 – 462.0	210.0 – 410.0
Mean ± SD.	302.39 ± 60.77	285.9 ± 55.45
N at 2 mm		
Min. – Max.	202.0 – 402.0	200.0 – 395.0
Mean ± SD.	280.77 ± 54.32	272.2 ± 54.54

T: depth of demarcation line 2mm temporal to center of cornea
C: depth of demarcation line at center of cornea
N: depth of demarcation line 2mm nasal to center of cornea

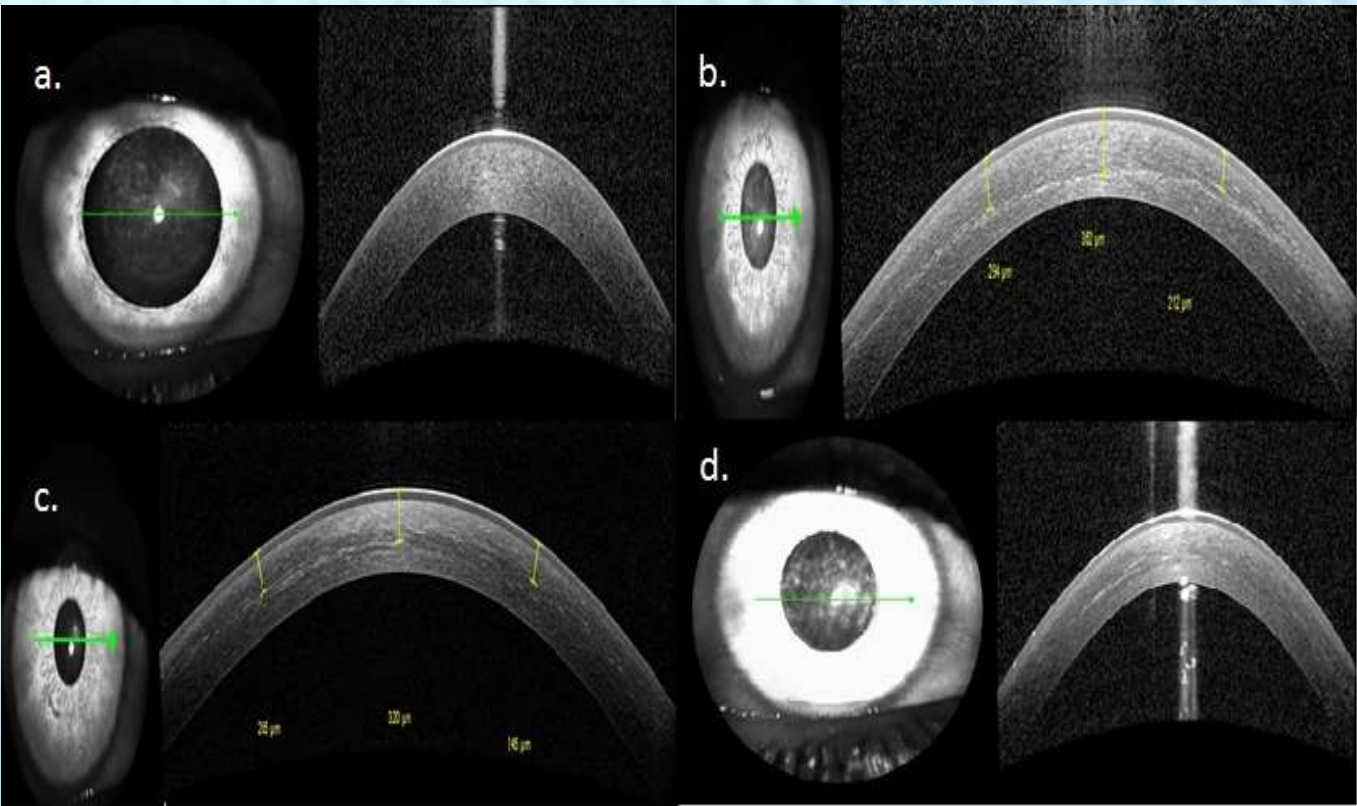


Fig (1): AS-OCT showed demarcation line : preoperatively ,b.1-month postoperatively, c.3months post operatively, d.6months postoperatively

CONCLUSION

AS-OCT is a useful device in detecting the corneal cross-linking stromal demarcation line and is considered an efficient tool in monitoring the effective depth of CXL ,This line is a direct clinical sign of corneal cross-linking and can be found within the 1st month following therapy , being most clearly visible a month following corneal cross- linking, The depth of the line can be measured precisely denoting an adequate CXL penetration within the stroma.