

Evaluation Of Endothelial Cell Loss After Deep Anterior Lamellar Keratoplasty

Thesis

Submitted for partial fulfilment of MS degree in Ophthalmology Cairo university

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Aim of Work

To estimate the **corneal endothelial cell count** **pre** and **post** operatively after deep anterior lamellar keratoplasty

Study is done at two consecutive time periods **6 weeks** and **24 weeks** using non-contact specular microscopy **SP 2000P** for **30** patients

No **recurrences**, previous **rejections** nor **infections** encountered in sample.



Endothelial cell loss is considered significant across age groups (20-40s) through study.

Endothelial count	Mean ± SD	95% CI	Range	IQR	Median	SD	P value	
							Age	Gender
Preoperative endoth.	2905.5 ± 119.5	2661-3149	2525	873	2721	654	0.019*	0.83
Post Op 6 weeks endoth.	2374.8 ± 113.5	2142-2607	2230	1032	2182	621	0.005*	0.715
Post Op 24 weeks endoth.	1894 ± 113.2	1662-2125	2196	1139	1662	620	0.006*	0.898

Endothelial cell loss is considered significant across timeline of study:

Loss over time period **pre** endothelium to **post 6 weeks**

P value: **0.009***

Loss over time period **pre** endothelium to **post 24 weeks**

P value: **0.004***

Loss over time period **post 6 weeks** endothelium to **post 24 weeks**

P value: **0.001***

Comparison Between **Males** And **Females** For Endothelial Cell **Loss**

Females				Males			
Mean ± SD	Min	Max	IQR 25th - 75 th	Mean ± SD	Min	Max	IQR 25th - 75th
1037 ± 321	582	1897	743.5-1242.75	959.6 ± 352	462	1631	762 - 1258.75

- **Mann Whitney U Test:** Loss difference between gender is **less likely to be significant**

Mann Whitney U:87
desirable values are near Zero

P Value: 0.567

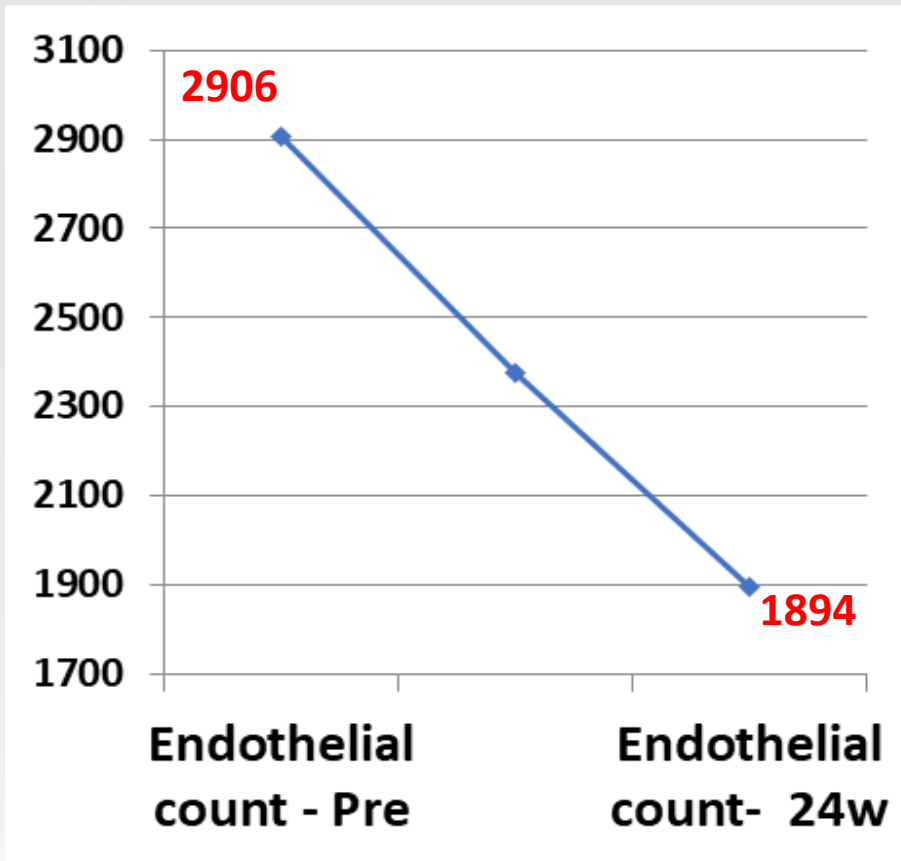
- **Maximum Loss** was reported in **female** group

- **Minimum Loss** was reported in **male** group

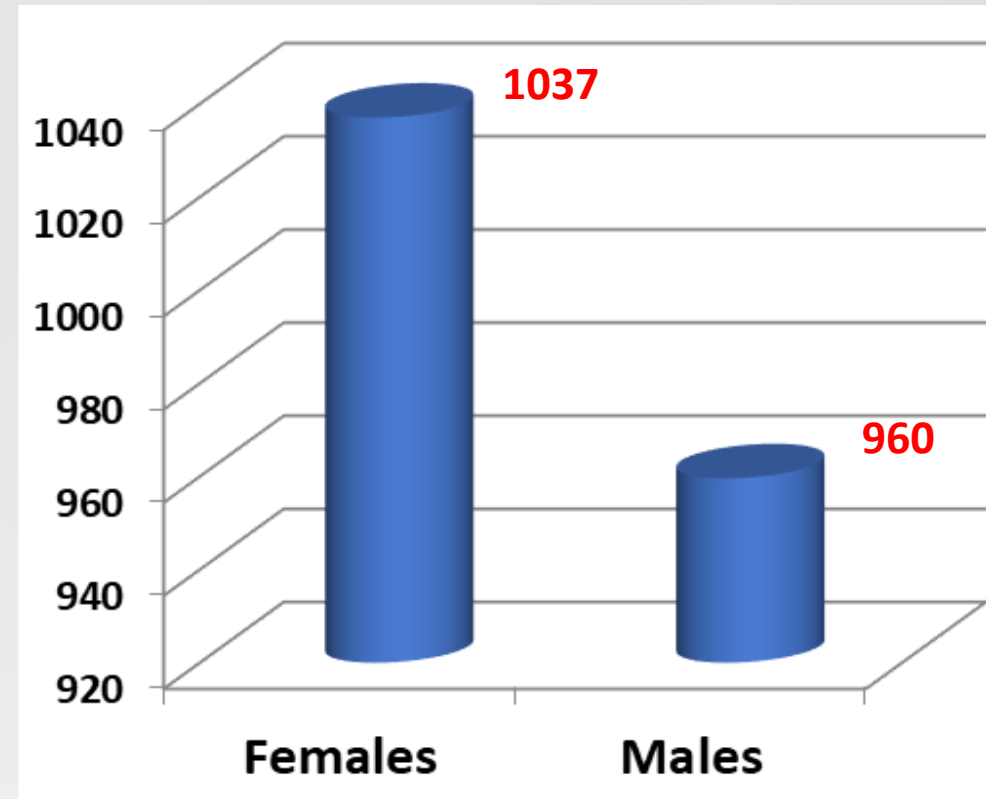
- **Z Score:** SD deviation of mean loss for females & males

F: -0.5

M: -0.3



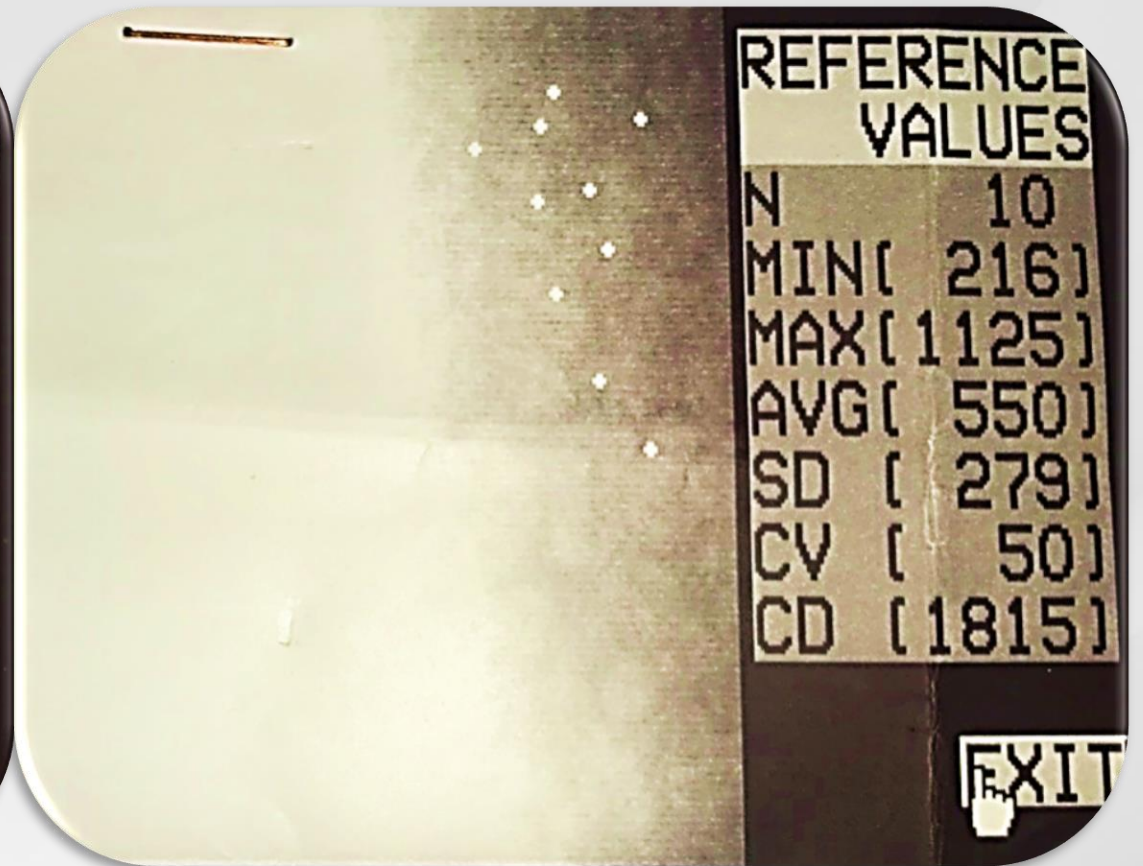
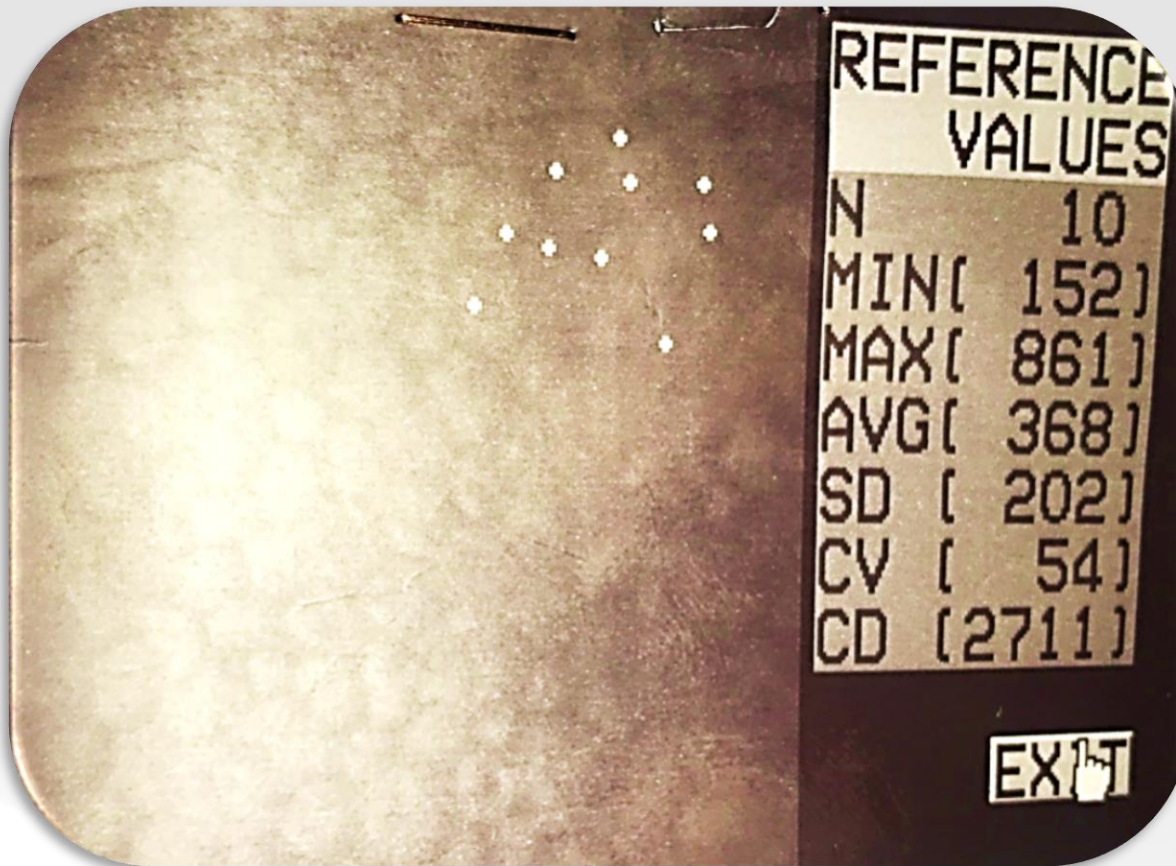
Mean Endothelial **count** over the study period



Mean endothelial **loss** between males and females

Pre operative **2711**

24 weeks Post operative **1815**



The average endothelial cell loss figured out at end study was 900 - 1000 cell loss

✓ Limitations:

- 1) The study follow up period (6 months only)
 - 2) Sample size (30)
 - 3) No control group or PKP group
- It is recommended to carry a **comparative** study for a **longer follow up period** to be **extended more than 1 year** on **larger scale** of patients



Summary

- DALK salvage endothelium & diminishes rejection rate compared to PKP in studies.
- **Pre-operative endothelial count** dropped **significantly** in **early post**-operative period and rate of loss decline **gradually** in **late post**-operative period. Cell loss is **18.3 %** (6 weeks) and **34.8 %** (24 weeks). **Rate of loss (velocity)** was similar to studies of **6 months time period**.
- Rate of endothelial loss was affected by **surgical technique (big bubble)** & compares similarly to studies used same technique as well less cell loss was reported than manual dissection technique.
- The main **culprit pathology** in study was **keratoconus**.
- **Study crucial factors:** **Sample size, disease progression, study time period, surgeon's skill, Graft condition & thickness** and **texture of the residual stroma**.

Thank you

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