

Epithelial Stress Test

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- SS Smith, OD

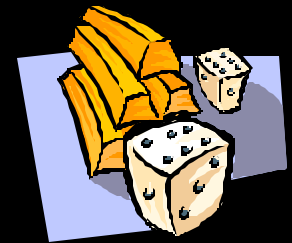
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Epithelial Trauma in LASIK

- Clinical problem is well-described
- Known/ suspected risk factors include
 - Epithelial Basement Memb. dyst. (EBMD)
 - Prolonged anesthetic exposure time
 - Microkeratome pass on dry cornea
 - Age
- Anecdotal reports of test for EBMD



Epithelial Stress Test

- Perform at the slit lamp using a surgical micro-sponge
- Instruct patient to look directly ahead
- Place a sponge on epithelium superiorly
- Horizontal pressure to globe
 - Start slowly
 - 'Stable' if sufficient pressure to shift globe does not move the epithelium

Epithelial Stress Test

- Previous reports for clinical evaluation of suspected EBMD
- No peer-reviewed publications of test efficacy
- No apparent 'gold standard'
- Design of clinical trial to evaluate the EST

Epithelial Stress Test – Outcomes

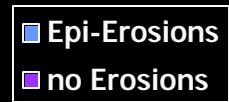
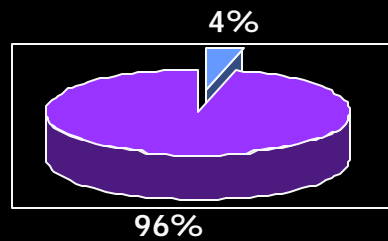
- Studied in 3863 consecutive eyes undergoing LASIK
- Control group is the series of untested eyes immediately preceding the test population
- Primary outcome = torn or shifted epith.
- Secondary outcomes = final VASC and BSCVA, residual refractive error

Epithelial Stress Test

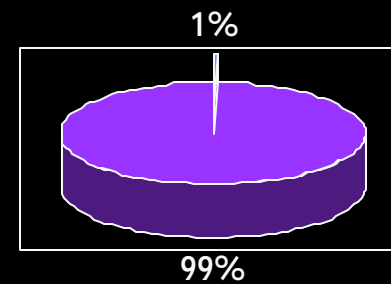
- **Comparison between:**
 - Different B&L Hansatome microkeratome units
 - 2 surgeons
 - 2 depth plates
- **No significant differences**

Epithelial Erosions

Pre-EST



Post EST



Conclusions – Epith. Stress Test

- *EST is able to distinguish sub-clinical EBMD*
- *These eyes are more prone to epith.-erosions during LASIK*
- *Risk of longer recovery, residual refractive error or possibly epith. ingrowth*

Conclusions – EST cont'd

- *Pre-operative evaluation should include EST to screen for eyes at higher risk for epi-erosion*
- *Other refractive options such as PRK, Phakic IOLs or Refractive lensectomy may be more appropriate if EST is positive*

Further Study

- *Can we pre-treat eyes or modify surgery when EST is positive to reduce epith complications during LASIK? Turn off suction for the reverse pass, treat later in the day, use Muro at night, alternative lubrication prior to cut*
- *Timing of test may influence result – avoid the EST less than 24 hrs. prior to LASIK*