

# The effect of anti-glaucoma medications on the ocular surface.

This promotional topic was presented by Dr Ravin N Das on 21-08-05 at Hotel Satya Ashoka. The program was sponsored by Avesta Division of Sun Pharma.

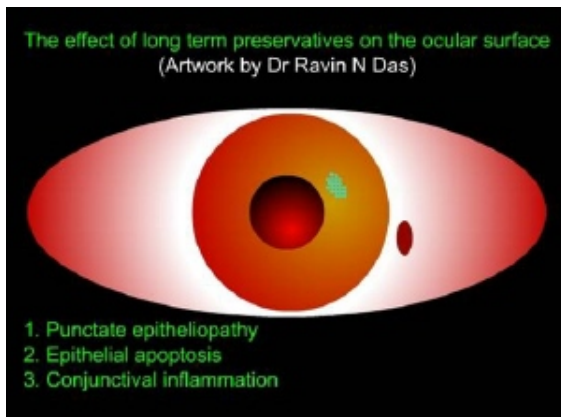
## Introduction

Increased chances of dry eye in glaucoma patients due to:

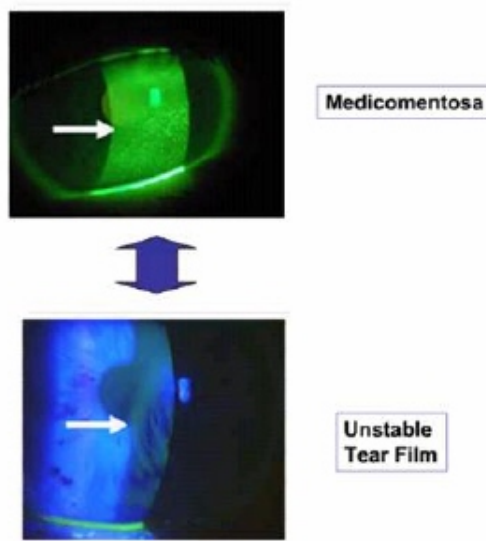
- Dry eye prevalence 6% at 40 years age to 15% at 65.
- Lower basal tear turnover in Glaucoma (Kuppens et al. AJO 1995)
- Topical therapies promote OSD

## Topical therapies promote OSD

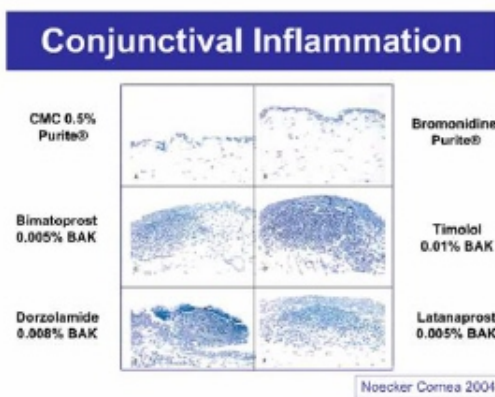
- Corneal and conjunctival epitheliopathy (Inou et al. Glaucoma 2005)
- Low grade conjunctival inflammation (Baudolin et al. Ophthalmology 1994; Noecker Cornea 2004)
- Epithelial apoptosis (Debbasch et al. IOVS 2001; Pisella et al. IOVS 2004)



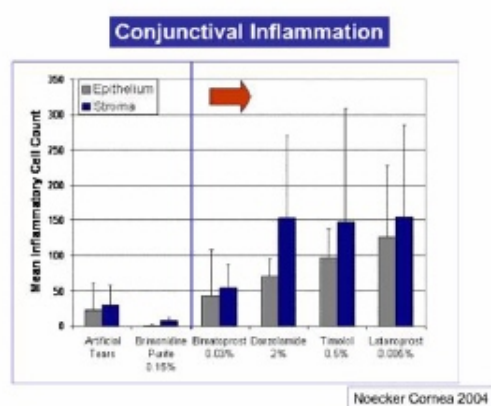
## Punctate epitheliopathy



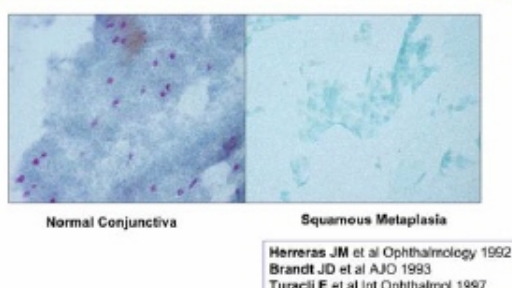
## Conjunctival inflammation - 1



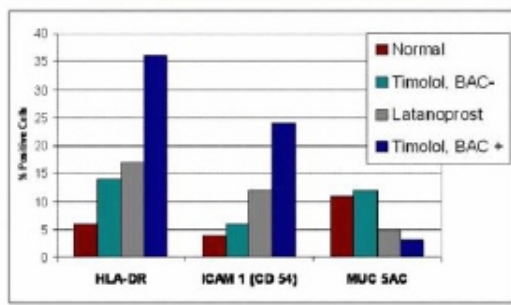
## Conjunctival inflammation - 2



## Preserved Glaucoma Medications Promote Conjunctival Goblet Cell Loss

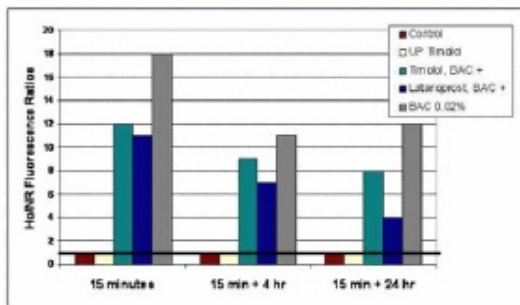


### Conjunctival Inflammation



Pisella PJ et al IOVS 2004

### Conjunctival Epithelial Apoptosis



Pisella PJ et al IOVS 2004

## Prior Glaucoma surgery

Leading to an altered lid-globe relationship:-

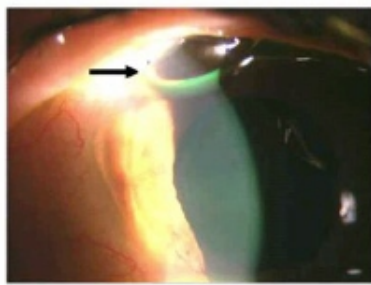
- Bleb
- Shunt

### Bleb - 1



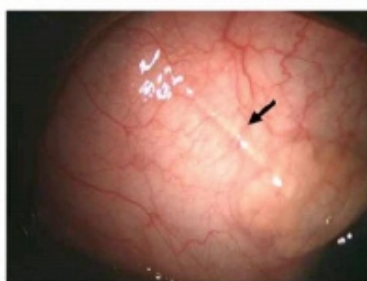
### Bleb - 2

#### Bleb Associated Altered Tear Spread



### Shunt

#### Shunt Associated Altered Tear Spread



## Ocular surface effects

- Irritation related symptoms
- Unstable tear film
- Blurred and fluctuating vision
- Altered corneal barrier -
  - stromal haze (colored haloes)
  - infiltrates
  - corneal ulceration

## Management

- Eliminate offending agents - toxic drops & preservatives.
  - Oral CAI (not always possible)
- Minimize preservative exposure.
  - Non-preserved Timolol/Brimonidine
  - Lower BAK concentration (0.005 to 0.02%)
  - Purite® preserved Timolol/Brimonidine
  - Switch to combinations - reduce exposure to preservatives (applicable to patients on multi-drug therapy).
- Preserve tears
  - puntal occlusion - may exacerbate corneal preservative toxicity.
- Decrease ocular surface inflammation
  - Steroids & NSAIDS
  - Tetracycline
  - Cyclosporine

- non-preservative
- good lubricant due to base
- doesn't raise IOP
- inhibits apoptosis of cornea and conjunctival epithelium.

## Summary

Dry eye is prevalent in glaucoma patients.

Multifactorial:-

- reduced tear production
- altered tear distribution
- ocular surface disease from medication and preservative toxicity (due to epitheliopathy, conjunctival inflammation and epithelial apoptosis)

**Treatment requires:-**

- Elimination of offending agents
- Improve or preserve tear turnover
- Decrease inflammation/apoptosis

Suggested remedy: Use preservative free (Purite® preserved) anti-glaucoma medications whenever possible...