



Long-term application of benzalkonium chloride increases the risk of filtration surgery failure

The Science behind the Tip

Glaucoma medication solutions usually contain the preservative benzalkonium chloride (BAK) in concentrations varying from 0.004% to 0.02%. This detergent is mainly used to preserve the sterility of the solutions. In addition, it can solubilize and stabilize the active drug and enhance its penetration into the eye.

It has long been known that long-term application of glaucoma medications decreases the success rate of trabeculectomy¹. This has been linked to the subclinical conjunctival inflammation induced by ophthalmic solutions². Such inflammation can induce fibrosis and scarring of subconjunctival and Tenon's tissue, which at the site of the bleb may lead to bleb failure. Recently, evidence has been accumulating that the BAK in the ophthalmic solutions is at least partly responsible for this effect³.

Thus, reduction of inflammation prior to surgery by using preservative-free ophthalmic solutions whenever possible should be considered. Further, the possibility cannot be excluded that restarting topical therapy with BAK-containing solutions after surgery might have a negative impact on filtration as well.

References

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2. Broadway DC, Grierson I, O'Brien C, Hitchings RA. Adverse effects of topical antiglaucoma medication. II. The outcome of filtration surgery. *Arch Ophthalmol.* 1994;112:1446-54.
3. Baudouin C, Labbé A, Liang H, Pauly A, Brignole-Baudouin F. Preservatives in eyedrops: the good, the bad and the ugly. *Prog Retin Eye Res.* 2010;29:312-34.