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Abstract Information

Abstract Title:
Glaucoma drainage implant surgery has a higher survival rate as a primary procedure in a rabbit model

Purpose:
The purpose of this study was to investigate the effect of prior trabeculectomy (GFS) on the survival of drainage implant surgery in a rabbit model.

Design:
Prospective, randomized, masked study

Participants:
M B Sherwood, D W Esson, E M Sampson, D Samuelson & G S Schultz

Main Outcome Measures:
Bleb area and survival + histological quantatative analysis + Elisa for TGFß2

Methods:
The study was divided into 3 parts.

In part one, 12 rabbits underwent a trabeculectomy procedure and the blebs were allowed to fail. A second procedure was performed consisting of the insertion of a simple drainage cannula without plate to allow aqueous to shunt to the sub-conjunctival space in the vicinity of the previous, failed bleb and the length of time to bleb failure monitored. Twelve further, un-operated rabbits underwent similar cannula insertion surgery and served as a control.

In part two, pediatric Molteno implants were placed in an additional 12 rabbits. Half of these rabbits underwent prior failed sclerostomy surgery, before Molteno implant insertion, and the remaining half had not undergone previous surgery The bleb capsule surrounding the plate was examined histologically.

In part three, conjunctival, Tenons'capsule and scleral tissues from another 8 rabbits were examined on the fifth day following either cannula tube or pediatric Molteno implant insertion and levels of TGFß2 were measured by ELISA.

Results:
Bleb survival was significantly longer for drainage cannula tubes in eyes that had not undergone prior failed trabeculectomy surgery (18 days versus 13 days – $p<0.0001$). Histological analysis of the capsules surrounding the Molteno implants showed that these were thicker and associated with greater number of inflammatory cells in those associated with prior failed surgery. Examination by ELISA showed significantly higher levels of TGFß2 in the tissues of rabbits undergoing either cannula or Molteno implant that had undergone prior (failed) sclerostomy surgery.

Conclusion:
This study supports the idea that drainage implant surgery may be more successful if performed as a primary procedure in cases of medically intractable glaucoma.