**Application of collagen impregnated polyester grafts as drainage devices in different types of glaucoma surgery**

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### Background

One of the main problems in the surgical treatment of therapy-resistant glaucoma is scarring and adhesion in the filtration area. Drainage devices, which increase outflow facility and maintain space under the scleral flap open, are gaining more and more attention from glaucoma specialists. We propose novel glaucoma implants, made from Hemashield Gold™ (Maquet Gmbh, USA) or Albograft (LeMaire Vascular Inc, USA), which are polyester double velour collagen impregnated grafts used in vascular surgery to replace or repair vessels.

**Microstructure of the Hemashield Gold Vascular Graft**

**Components of collagen:**
- Anti-inflammatory effect, which inhibits ferments activity (hyaluronidase, elastase, collagenase etc)
- Block action of free O2 radicals and antigen determinants, binding the products of desintegration and a part of mediators
- Prevent hemotaxis of leycocites, trombocites desintegration and a part of mediators
- Bind well H2O, that determines flow of the aqueous humor facilitating formation of the outflow pathway

**Vascular graft is a knitted double velour polyester graft impregnated with purified collagen.**

**Advantages:**
- Minimizes bleeding at implantation
- Biocompatible tissue
- Hydrophyllic
- Gamma sterilized
- Available in all sizes and easy to manipulate

### Purpose

To evaluate the efficacy of penetrating or non-penetrating glaucoma surgery in combination with the drainage device made from Hemashield Gold™ (Maquet Gmbh, USA) or Albograft (LeMaire Vascular Inc, USA).

### Methods

This study involved 116 eyes of 97 patients with therapy-resistant glaucoma in advanced stages. All operations were performed at the Ophthalmology Department of the Republican Clinical Hospital, Chişinău from June 2004 to November 2011. The major types of glaucoma were primary open-angle glaucoma (POAG) - 87 eyes, phakolytic glaucoma - 21 eyes, diabetes-associated neovascular glaucoma - 8 eyes. All patients were divided into 2 groups by the type of operation: group A – sinusubrcelectectomy with basal iridectomy (96 eyes), group B – deep sclerectomy (20 eyes). "Hemashield Gold" was implanted under the scleral flap in 67 eyes in group A and in 13 eyes in group B, "Albograft" was implanted in 29 eyes in group A and in 7 eyes in group B. Group B included patients with POAG only. Group A included the rest of the patients.

Surgery was performed according to the following steps: dissection of the conjunctiva 7-8 mm from the limbus and separation of scleral flap 6x6 mm, implant fixation (size:1x3 mm) at 2 mm from the filtering zone, performing of sinusubrcelectomy 1x4 mm with basal iridectomy or deep sclerectomy, suturing of scleral flap to underlying sclera with 2 nods, suture on Tenon’s capsule and conjunctiva.

### Results

The follow-up period varied from 6 months to 5 years. Patients were followed at day 1, 3, 6, week 2, months 1, 3, 6 and 12 following surgery.

Surgery failed in 4 cases in patients with diabetes-associated neovascular glaucoma and in 5 cases of advanced glaucoma. The complete success rate, defined as an IOP lower than 21 mm Hg without medications, was 90 % (105 eyes) at 6 months. At 1 year this rate was 85 % (99 eyes), because 6 patients after deep sclerectomy underwent Nd:YAG laser gonipuncture. The other patients had no further changes in peripheral visual field, visual acuity remained as before the operation. Implant rejection was not observed in either patient.

### Clinical Case

Patient S, 71 y.o.
Diagnosis: Primary open-angle glaucoma

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<th>6 months after operation</th>
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### Conclusion

Drainage devices made from polyester vascular grafts demonstrate a pronounced and sustained effect in preventing adhesion of scleral flap in different types of therapy-resistant glaucoma in penetrating and non-penetrating glaucoma surgery.

### References


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