The Evolution of Glaucoma Implants
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Financial Interest: Optonol-Alcon and SOLX (research support)

Introduction

Background
Early attempts involved “setons” (eg, horsehair), which shunted aqueous to perilimbal area.
Era of drainage implants began in 1960s and 1970s with Molteno Implant.
Current Implant choice varies with surgeon preference and experience...

Indications for Conventional Glaucoma Drainage Implants
Failure of conventional surgery
Extensive limbal scar
Failure of conventional surgery likely
Primary surgery ??

(Multicenter, randomized, prospective trial)
In contrast with trabeculectomy- antifibrosis drugs (eg, mitomycin C) have little or no effect on success or mean IOP after drainage implant


<table>
<thead>
<tr>
<th>Influence success or failure</th>
<th>Little or no effect</th>
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<tbody>
<tr>
<td>Implant-related</td>
<td>Adjunctive antifibrosis drugs</td>
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<tr>
<td>Implant plate size</td>
<td>Location of implant</td>
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<td>Implant plate material</td>
<td>Superior versus inferior</td>
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<tr>
<td>Race</td>
<td>Age</td>
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<tr>
<td>Diagnosis</td>
<td>Previous surgery</td>
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<tr>
<td>Silicone oil endotamponade</td>
<td>Diagnosis</td>
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<td>Neovascular glaucoma*</td>
<td>Controlled uveitis</td>
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<td>Severe ocular surface disease</td>
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Examples of Management of Specific Refractory Glaucomas

Elevated IOP After Silicone Oil. Al-Jazzaf, Netland, Charles, J Glaucoma, 2005
Drainage implants effective in refractory glaucoma associated with silicone oil.
Implants are placed in the inferior quadrant with intraoperative viscoelastic.
Require prolonged adjunctive treatment with steroids and glaucoma medications.

Elevated IOP in Severe Ocular Surface Disease
Glaucoma after Keratoprosthesis: IOP control 81% after drainage implant
Glaucoma drainage implants effectively control IOP.
Management of Uveitic Glaucoma
Current management includes comprehensive treatment of uveitis
Control of uveitis with adjunctive medical therapy improves the outcome of glaucoma surgery
Prognosis has greatly improved

Glaucoma Drainage Implants in NVG
IOP controlled with glaucoma drainage implants in NVG
Loss of vision observed despite control of IOP
Therapy to prevent optic nerve and retinal damage may improve success

Elevated IOP after Pediatric Surgery
Failed glaucoma surgery; After penetrating keratoplasty and congenital cataract surgery

Implants for Primary Surgery
Patients and surgeons seek a procedure that is safe, effective, and predictable
New implant techniques include modified filtration surgery, angle surgery, and suprachoroidal aqueous drainage

Primary Surgical Therapy
Although imperfect, trabeculectomy remains the “gold standard” primary surgical procedure
Modified with adjunctive techniques: mitomycin C (MMC) and Laser suture lysis

Modified Filtration Surgery
Ex-PRESS Miniature Glaucoma Implant under Scleral Flap
Technique similar to trabeculectomy
Advantages: less invasive, predictable, efficient, safe
Disadvantages: Cost, Device-related complications

Is Trabeculectomy Necessary for All Primary Surgery?
Early treatment is desirable
Target IOP not as low with less disc damage
Procedures not as effective as trabeculectomy but safer may have a role

Angle Surgery
“Non-penetrating” surgery
Viscocanalostomy, Deep sclerectomy
Ophthalmic Microcatheter (iScience), Canaloplasty
Trabectome (NeoMedix)
iStent Trabecular Bypass Microstent (Glaukos)

Conclusions

Notes: