

TRABECULECTOMY THE BEST AND WORST CANDIDATES

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FINANCIAL DISCLOSURES

None

TRABECULECTOMY

- Performed for over 100 years
- Most commonly performed glaucoma procedure
- Greatest IOP lowering potential
- Requires no special equipment or instrumentation
- Within the realm of most ophthalmic surgeons

HISTORY

- 1856 Von Graefe¹ - sector iridectomy
- 1961 Sugar¹, 1967 Coryllos² - partial thickness procedure
- 1968 Cairns³ - describes procedure in AJO
- 1986 Savage and Simmons⁴ - argon laser suture lysis
- 1987 Kiazawa⁵ - 5-fluorouracil
- 1990 Chen⁶ – mitomycin c

OPTIONS

- Phacoemulsification ^{7,8}
- Phaco with
 - I-stent™
 - EPC
- MIGS
 - I-Stent™
- Angle Based
 - Goniotomy
 - Trabectome™ (Not FDA Approved)
- Canaloplasty
- Trabeculectomy
 - Express Shunt™
- Tube Shunt
 - +/- valve
- Cyclodestructive
 - Diode Laser
 - EPC

COMPLICATIONS

- Intra Operative
- inadequate conjunctiva
 - button hole, retraction
 - scarring
 - thin sclera
 - bleeding

COMPLICATIONS

Early Post Operative

- wound leak
- flat anterior chamber
 - over filtration, aqueous misdirection, decreased aqueous production
- hypotony
 - maculopathy
 - choroidal effusions, hemorrhage

COMPLICATIONS

Early Post Operative

- under filtration
- bleeding
- infection
- corneal decompensation

COMPLICATIONS

Late Post Operative

- under filtration
- bleb leak
- bleb infection
- enlarged bleb
 - discomfort, dellen
- endophthalmitis
- cataract

SUCCESS



- Proper patient selection
- Meticulous surgical technique
- Aggressive post operative management

PATIENT SELECTION

- understands the need for the procedure
- goal of the procedure
- frequent post operative visits
- compliant with medical regimen
- possible subsequent surgical intervention

PATIENT SELECTION

- may experience a decrease in vision
- long term follow-up

- will patient be better managed with a different procedure
 - may require transfer of care

HISTORY

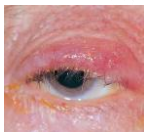
- Prior eye trauma
- Prior ocular surgery
- Uveitis
- Neovascular glaucoma
- Anticoagulation
- Target IOP

GENERAL CONSIDERATIONS

- Age
 - Young - greater scarring
- Race
 - Darker pigment - greater scarring

EXTERNAL DISEASE

- Eye Lid
 - Prior surgery
 - Blepharitis / meibomianitis
 - Scarring
 - Position
 - Lagophthalmos



CONJUNCTIVA

- Quality of the tissue
- Scarring
- Inflammation
- Mobility



SCLERA

- Scarring
- Scleromalacia
- Prior surgery



CORNEA

- Hx of severe dry eye
- Intolerance to topical therapy
- Tolerate 5-FU injections



AXIAL LENGTH

- Short Eyes
 - Aqueous misdirection
- Long Eyes
 - Hypotensive maculopathy



LENS STATUS

- Phakic
 - cataract
- Aphakic
 - vitreous



SUCCESS RATE

- Lamping KA, Bellows AR, Hutchinson BT, Afran SI¹⁰ 1985
 - In Study of 252 eyes, 76% success at 4 years
- Yamashita h, et al¹¹ 1986
 - 50 pts 61% success at 5 years in primary glaucoma, similar results after failed trab
- Jampel HD, et al¹² 2012
 - 797 eyes 70% success rate for an IOP of 18mmHg or less at 4 years

RISK FACTORS FOR FAILURE

AGIS 11⁹

- Younger age
- Higher pre-op IOP
- Diabetes
- Post operative complications
- Marked inflammation

TUBE VS TRABECULECTOMY (TVT) STUDY

5 YEAR RESULT¹³

- 212 Pts with uncontrolled glaucoma with previous cataract and/or glaucoma surgery
- 107 350-mm² Baerveldt implant vs.
105 Trab with mitomycin C (0.4mg/ml for 4 minutes)

Complication	Tube Group (n = 107), n (%)	Trabeculectomy Group (n = 105), n (%)
Choroidal effusion	17 (16)	20 (19)
Shallow or flat anterior chamber	12 (11)	10 (10)
Wound leak	1 (1)	12 (11)
Hyphema	2 (2)	8 (8)
Persistent corneal edema	7 (7)	3 (3)
Encapsulated bleb	2 (2)	6 (6)
Dysesthesia	1 (1)	7 (7)
Cystoid macular edema	3 (3)	2 (2)
Suprachoroidal hemorrhage	2 (2)	3 (3)
Persistent diplopia	5 (5)	0 (0)
Aqueous misdirection	3 (3)	1 (1)
Hypotony maculopathy	1 (1)	3 (3)
Endophthalmitis or blebitis	1 (1)	3 (3)
Chronic or recurrent iritis	2 (2)	1 (1)
Bleb leak	0 (0)	2 (2)
Vitreous hemorrhage	1 (1)	1 (1)
Tube obstruction	2 (2)	—
Decompression retinopathy	0 (0)	1 (1)
Corneal ulcer	0 (0)	1 (1)
Retinal detachment	1 (1)	0 (0)
Total number of patients with postoperative complications	36 (34)	60 (57)

RE-OPERATIONS FOR COMPLICATIONS¹⁴

Complication	Tube Group (n = 107), n (%)	Trabeculectomy Group (n = 105), n (%)
Pars plana vitrectomy	4 (4)	0 (0)
Penetrating keratoplasty	1 (1)	2 (2)
Drainage of choroidal effusion	1 (1)	1 (1)
Drainage of suprachoroidal hemorrhage	0 (0)	1 (1)
Drainage of choroidal effusion and pars plana vitrectomy	1 (1)	0 (0)
Lysis of iris adhesions to tube and cataract extraction	1 (1)	—
Vitreous tap with injection of intravitreal antibiotics	0 (0)	1 (1)
Total number of patients with reoperations for complications	8 (7)	5 (5)

TUBE VS. TRAB (TVT) STUDY
5 YEAR OUTCOME

	Tube(107)	Trab(105)	P
IOP (mmHg)	14.4± 6.9	12.6 ± 5.9	.12
Meds	1.4 ± 1.3	1.2 ± 1.5	.23
Failure*	29.8%	46.9%	.002
Reop	9%	29%	.025

PRIMARY TUBE VS. TRABECULECTOMY STUDY(PTVT)

- Similar study protocol looking at Baerveldt shunt vs Trab with Mito C for primary surgery for glaucoma
- Start date April 2008, 5 year Study
- Completion date April 2016 (final data collection date)
- Compare: IOP, complication rates, Va, FV, Reop rates, medical Tx

PERFECT PATIENT

- Good long term relationship
- Understanding
- Available
- POAG, PXG, Pigmentary
- No anticoagulation
- Healthy eye lid margins
- Pseudophakic from prior clear corneal phaco
- Healthy mobile conjunctiva
- Average axial length
- No other pervious ocular surgery
- Good vision other eye

WORST CASE

- Hx of noncompliance
- Missed many appts in past, has trouble with transportation
- Has significant field loss and doesn't understand why his glasses cannot be improved
- High myopia on Coumadin for mechanical artificial heart valve
- Floppy eye lid syndrome from chronic eye rubbing with injected conjunctiva, chronic blepharitis and has been treated for conjunctivitis on numerous occasions

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