Deep-sclerectomy trabeculectomy with Mitomycin C in the treatment of glaucoma: postoperative long term results

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Introduction & Aim

- Trabeculectomy is the current gold standard in the management of glaucoma. Deep sclerectomy is non-penetrating glaucoma filtering procedure.
- Deep-sclerectomy trabeculectomy (DST) with Mitomycin C (MMC) is a relatively new modified surgical technique combining the advantages of both deep sclerectomy and trabeculectomy
- To evaluate the long term success rate and complications of this modified surgical technique.

Methods

- Retrospective observational cohort study (2010-2017)
- Inclusion criteria:

a) diagnosis of any type of glaucoma characterised by unsatisfactory IOP reduction with maximally tolerated medications, progression of visual field defects or progression of glaucomatous optic nerve cupping with or without good IOP reduction

b) at least 1 year follow up duration postoperatively after DST with MMC

- Exclusion criteria:

a) Pre-existing ophthalmic surgery (inc. glaucoma surgery), argon or selective laser trabeculoplasty

b) DST combined with cataract surgery

c) Patients who had other significant co-existing ocular pathology affecting visual acuity and/or visual fields (eg. history of posterior segment pathology, previous ocular trauma etc.)

Data collection

- Patient demographics
- Pre-operative and postoperative data:

a) number of IOP-lowering medications

b) logMAR distance best-corrected visual acuity

c) IOP measured using Goldmann Applanation Tonometer

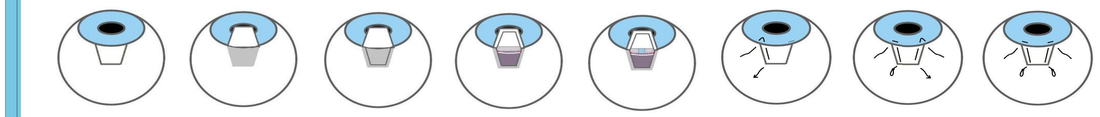
d) Mean deviations using Humphrey Visual Field (24-2) full threshold test

- Intraoperative anaesthesia
- Intraoperative and postoperative complications
- Follow up reviews: 1-week, 1 month, 3 months, 6 months, and then yearly to up to 7 years.

Outcome measures

- Complete success: Postoperative IOP of ≤21 mmHg or 30% reduction of IOP from baseline without any topical IOP-lowering agent.
- Qualified success: Postoperative IOP of ≤21 mmHg or 30% reduction of IOP from baseline with/without single topical IOP-lowering agent.
- Failure: more than one topical IOP-lowering medication and/or repeat glaucoma surgery was required to control IOP postoperatively.

Operative techniques



Results

- 98 eyes of 74 Caucasian patients, after excluding 19 eyes
- Follow up: mean 67.5 months (SD 18.8months; range 12-84 months)

Demographics		
Gender	Male, n (%)	34 (46.7%)
	Female, n (%)	40 (53.3%)
Age	Mean (SD)	77.4 (10.4)
	Range	49-97
Glaucoma type	POAG, n (%)	76 (77.6%)
	PACG, n (%)	7 (7.1%)
	Other types, n (%)	15 (15.3%)
Side	Left eye, n (%)	47 (48.0%)
	Right eye, n (%)	51 (52.0%)
Anaesthesia	Local anaesthetics	8 (8.2%)
	General anaesthetics	90 (91.8%)
Pre-operative IOP	Mean mmHg (SD)	23.1 (7.6)
	Range	10-46
Pre-operative IOP-lowering medications	Mean no. of medications, n (SD)	2.8 (0.8)
Pre-operative BCVA	Median LogMAR (IQR)	0.12 (0-0.22)
Pre-operative HVF 24-2	Mean MD (SD)	-12.23 (5.93)

- 84 eyes (85.7%) achieved complete success. 9 eyes (9.2%) had surgical failure.
- IOP : a) pre-op: 23.1 +/- 7.6mmHg b) post-op: 12.7 +/- 4.4mmHg, p=0.0954
- BCVA: a) pre-op: median 0.12 (IQR 0-0.22) b) post-op: median 0.14 (IQR 0.06-0.30), p=0.5601
- MD 24-2 HVF: a) pre-op -12.23 +/- 5.93 b) post-op: -11.2 +/- 5.4, p=0.8011
- IOP-lowering medications: a) pre-op: 2.8 +/- 0.8 b) post-op: 0.3 +/- 0.7, p=0.0684

Time (months)	No. of eyes, n	Mean IOP mmHg (SD)	Eyes with IOP ≤21 mmHg, n(%)	Eyes with IOP ≤15 mmHg, n(%)	Eyes with IOP ≤12 mmHg, n(%)	Complete success rate, n(%)	Qualified success rate, n(%)
0	98	23.1 (7.6)	47 (48.0)	11 (11.2)	4 (4.1)	N/A	N/A
12	97	12.4 (4.3)	93 (95.9)	71 (73.2)	58 (59.8)	91 (93.8)	0 (0)
24	95	12.6 (3.9)	93 (97.9)	69 (72.6)	56 (58.9)	83 (87.4)	87 (91.6)
36	91	12.5 (4.2)	89 (97.8)	68 (74.7)	53 (58.2)	76 (83.5)	80 (87.9)
48	84	12.6 (4.1)	83 (98.8)	63 (75.0)	45 (53.6)	73 (86.9)	76 (90.5)
60	79	12.7 (4.4)	77 (97.5)	59 (74.7)	43 (54.4)	66 (83.5)	69 (87.3)
72	71	12.9 (4.4)	69 (97.2)	50 (70.4)	37 (52.1)	58 (81.7)	64 (90.1)
84	30	12.3 (4.6)	30 (100.0)	22 (73.3)	16 (53.3)	25 (83.3)	27 (90.0)

Complications/Interventions	Eyes [n (%)]
Hyphaema	15 (15.3)
Transient choroidal effusion	11 (11.2)
Shallow anterior chamber	5 (5.1)
Bleb leak requiring conjunctival suturing	4 (4.1)
Macular oedema/hypotonic maculopathy	0 (0)
Bleb needling with 5-Fluorouracil injection	9 (9.2)
Bleb revision or transconjunctival suturing of bleb for hypotony	7 (7.1)
Laser suturelysis or removal of releasable sutures	6 (6.1)
Repeat trabeculectomy	1 (1.0)
Blebitis	0 (0)
Endophthalmitis	0 (0)

Conclusion

- DST with MMC is an effective surgical procedure in giving a sustained IOP reduction in the long term, with fewer complications commonly seen in standard trabeculectomy.
- Our proposed anti-glaucoma surgical modification can be considered for open-angle glaucomas.

References

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