Real World Treatment Outcomes of Baerveldt Aqueous Tube Shunt Surgery after 5 years Follow up

Dr Oonagh Crothers, Mr Nick Wride Sunderland Eye Infirmary

Introduction

Real world data can help inform clinicians and patients on the longterm effectiveness of Baerveldt Tube surgery as a treatment for refractory glaucoma by offering complementary insights to large clinical trials. This information is useful for audit purposes and to set potential benchmarks for treatment.

Aims

To evaluate the outcomes of Baerveldt Aqueous Tube Shunt Surgery in the surgical management of a cohort of patients with refractory glaucoma

Methodology

A single surgeon's database of consecutive eyes undergoing tube implant surgery in a tertiary centre between 2011 and 2015 was retrospectively reviewed. There were no exclusion criteria. The primary outcomes were the success and failure rates as defined below. Secondary outcomes were change in IOP and visual acuity at 5 years

Success:

Complete Success:
-absence of failure
-not on supplementary anti-glaucoma therapy

Qualified Success:
-absence of failure
-Patient requiring anti-glaucoma therapy

Failure:

IOP</=5

IOP>21 on 2 consecutive follow up visits after 3 months

Reoperation for glaucoma
- Additional shunt
- Return to operating theatre for glaucoma surgery
- Cyclodestructive procedure

Implant removal

Severe vision loss related to surgery
- Endophthalmitis
- Suprachoroidal haemorrhage with vision loss
- Enucleation or evisceration
- Phthisical eye
- Progression to NPL for any reason

The 5 year follow up data was obtained from medical charts and compared with the published literature from 2 large studies:- the TVT Study 2012[1] and the ABC Study 2016[2] as well as a local study auditing the 1 year outcomes of the same patient cohort [3]

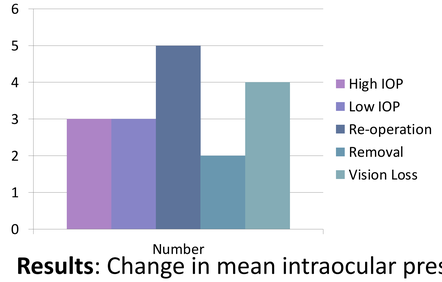
Results: Patient characteristics:

Characteristic	Audit n, (%)	Local Audit 2015 n, (%)	TVT n, (%)	ABC n, (%)
N implants	45	40	107	133
Age (ys) Mean, Range	55 21-93	57 16-88	70.9	62.2 24-85
Gender male n, (%)	26, (58)	24, (57)	43, (40)	70, (52)
POAG, (%)	13, (29)	13, (34)	82, (76)	53, (40)
Uveitic Glaucoma	14, (31)	8, (21)	Excluded	7, (5)
Trauma	4, (9)	4, (11)	Excluded	Unknown
Rubeotic glaucoma	4, (9)	2, (5)	Excluded	39, (29)
Congenital glaucoma	4, (9)	2, (5)	Excluded	Excluded
Aphakic glaucoma	2, (4)	1, (3)	Excluded	Excluded
Pseudoexfoliation	1, (2)	1, (3)	7, (6)	Unknown
Sympathetic Ophthalmia	1, (2)	1, (3)	Excluded	Unknown
Carotid Cavernous fistula	1, (2)	1, (3)	Excluded	Excluded
PACG	1, (2)	0	Excluded	8, (6)
Other	0	0	0	26, (20)

Results: Success and failure rate

	Audit	Local Audit (2015)	TVT N=73	ABC N=98
Success n, (%)	28, (62)	35, (92)	49, (67)	51, (52)
Complete Success n, (%)	13, (29)	25, (64)	18, (25)	14, (14)
Qualified Success n, (%)	15, (33)	11, (29)	31, (42)	37, (38)
Failure n, (%)	17, (38)	3, (8)	24, (33)	47, (48)

Results: Reason for failure



Results: Change in mean intraocular pressure

	Audit	Local Audit (2015)	TVT	ABC
Mean Pre-op IOP	30	30	25.1	31.8
Mean post- op IOP	13	18	14.4	12.7

Results: Change in VA

Audit (Snellen)
- Median VA pre-op 6/12
- Median VA post-op 6/18

TVT (EDTRS letters)
- Mean VA pre-op 63 (~6/18)
- Mean VA post-op 40 (~6/48)

ABC (logMAR)
- Mean VA Pre-op 1.04 (~6/60)
- Mean VA Post-op 1.43 (~6/150)

Conclusion

The cohort of patients in this audit was inclusive of a greater number of glaucoma causing conditions. This cohort was of a younger patient population.

After 5 years of follow up, 62% of patients were deemed to be 'successes'. This was comparable with the 2 multicentered TVT (67%) and ABC glaucoma trials (52%).

A large reduction in the success rate was noted when comparing the 5 year outcomes with the 1 year outcomes from the local audit, although this too was comparable with the 1 year outcomes in the TVT and ABC studies.

There was a moderate but reasonable reduction in VA across all studies. This was likely multifactorial due to concomitant disease e.g diabetic retinopathy and corneal pathology across all studies.

The results from SEI's 5 year outcomes for Baerveldt aqueous shunt surgery are comparable with the standard set by the large-scale studies. Tube shunt surgery is an effective management tool for refractory glaucoma. Limitations of this study include smaller sample sized, slight differences in how success and failure was defined between studies, and differences in inclusion/exclusion criteria.

References:

(1)Gedde, S., Schiffman, J., Feuer, W., Herndon, L., Brandt, J. and Budenz, D., 2012. Treatment Outcomes in the Tube Versus Trabeculectomy (TVT) Study After Five Years of Follow-up. *American Journal of Ophthalmology*, 153(5), pp.789-803.e2

(2)Budenz, D., Barton, K., Gedde, S., Feuer, W., Schiffman, J., Costa, V., Godfrey, D. and Buys, Y., 2015. Five-Year Treatment Outcomes in the Ahmed Baerveldt Comparison Study. *Ophthalmology*, 122(2), pp.308-316

(3)Sandhu J, Wride N 2015. Audit of Baerveldt Tube Shunt Surgery after 1 year follow up.

(4)Gedde, S., Herndon, L., Brandt, J., Budenz, D., Feuer, W. and Schiffman, J., 2012. Postoperative Complications in the Tube Versus Trabeculectomy (TVT) Study During Five Years of Follow-up. *American Journal of Ophthalmology*, 153(5), pp.804-814.e1.

The authors **declare** no conflicts of interest. Please direct any queries to Oonagh.Crothers@nhs.net