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Cape Town SOUTH AFRICA

Benefits of Routine Insertion of Ventricular Access Device (VAD) During Endoscopic Third Ventriculostomy in the Paediatric Population

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Introduction

Variable ETV failure rate at 1 year post intervention : 30-50%

Diagnostic dilemmas in cases with subtle symptoms with no radiological changes

Failure of ETV can be fatal

1. Endoscopic third ventriculostomy in pediatric patients: the Canadian experience, Drake HM, Canadian Paediatric Neurosurgery Study Group, Neurosurgery 2007 May;60(5):881-6; discussion 881-6

2. Long-term follow-up of endoscopic third ventriculostomy performed in the pediatric population., Stovell MG, Zakaria R, Ellenbogen JR, Gallagher MJ, Jenkinson MD, Hayhurst C, Mallucci CL, J Neurosurg Pediatr. 2016 Jun;17(6):734-8

3. Pediatric endoscopic third ventriculostomy: a population-based study, Lam S, Harris D, Rocque BG, Ham SA, J Neurosurg Pediatr. 2014 Nov;14(5):455-64

4. Is the success rate of endoscopic third ventriculostomy age-dependent? Tjemme Beems Andre J. Grotenhuis, Childs Nerv Syst. 2002 Nov;18(11):605-8

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Aim of the Study

Assess usefulness of routine insertion of Ventricular Access Device (VAD) post ETV in the paediatric population

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Methods

Prospective Database – Single center review

Routine insertion of VAS post EVD between 2014-2017

Frequency, reason and outcome post access to the VAS in each child

Methods

ETV using rigid neuroendoscope within ‘peel-away’ catheter

Stoma fashioned with bipolar probe or ME2 electrode and expanded with balloon catheter

Ventricular catheter attached to Ommaya reservoir and inserted to 5-6 cm.

Prophylactic IT Abx

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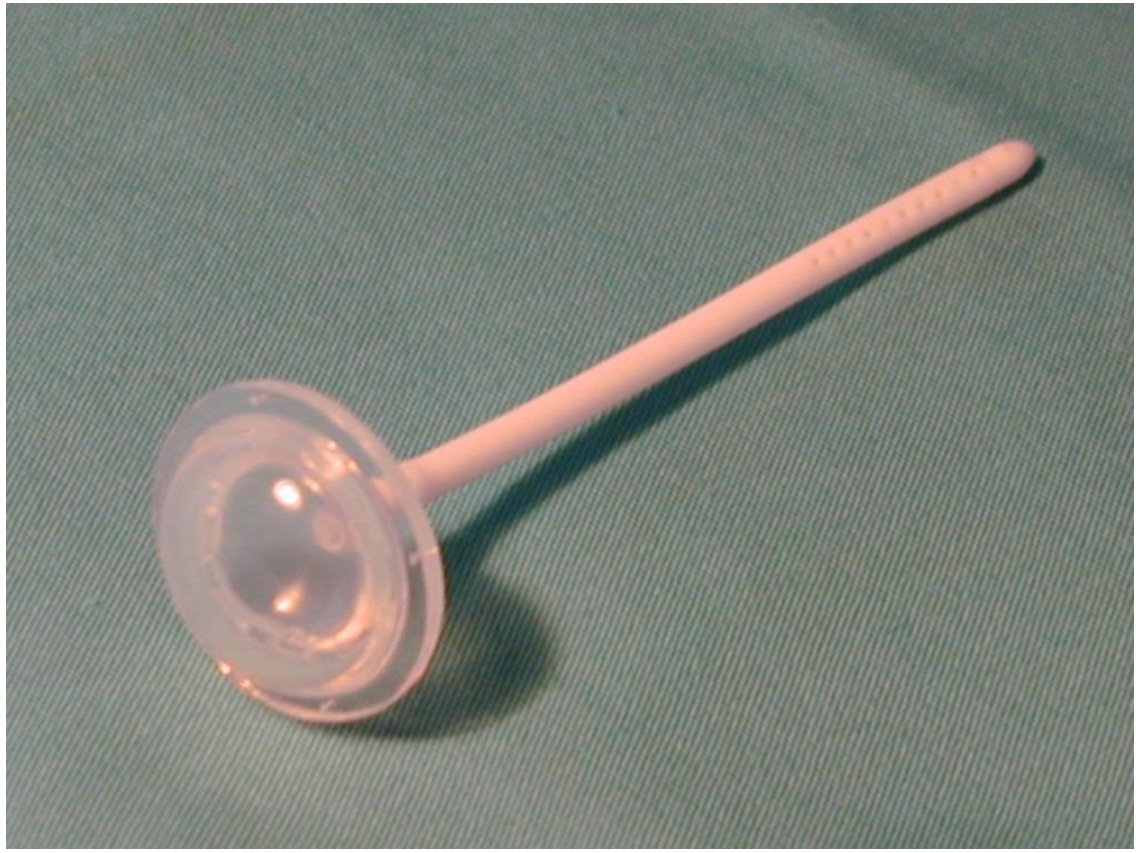
Methods



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Methods

Success was defined as control of hydrocephalus without recourse to shunting or ETV revision during period of follow-up

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Results

DEMOGRAPHICS	
Total Patients	N = 60
Sex M:F	1:1
Age (years) • <6m • 6-24m • >24m	7.3 (0.1-18) n = 8 n = 9 n = 43
Follow-up (months)	12.8 (1-34)

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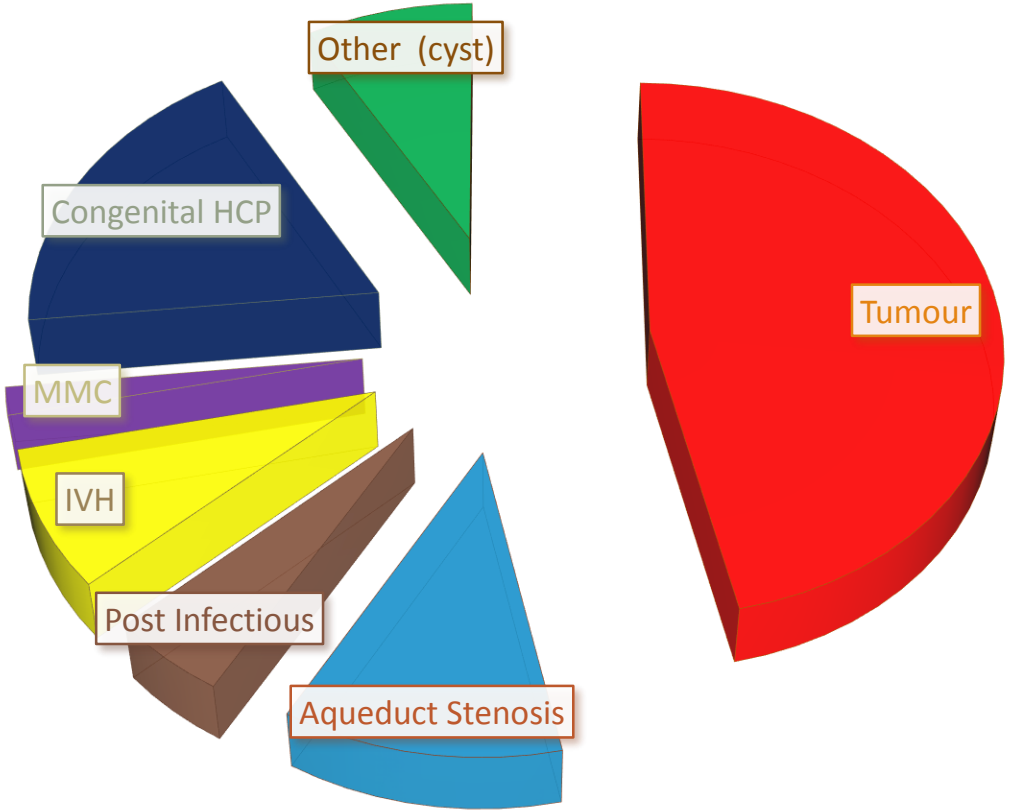

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Results

ETVs	n=63
ETV failures • Re-do ETV • VP shunt	n=13 (21%) n=3 n=10
Primary Surgeon • Consultant • Trainee (Supervised)	 n=26 n=37

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Results

VAD	
Insertion	100% (n=63)
Complications • Bleeding • Infection	 0% 0%
VAD Access	30% (n=19)
Diagnostic • Infusion studies • ICP Monitoring • CSF Sampling	 11% (n=7) 9% (n=6) 4% (n=3)
Therapeutic • CSF Drainage • IT Antibiotics (shunt infection after failed ETV)	 6% (n=4) 3% (n=2)

Abnormal n=3

EVD n=3

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Results

VAD Accessed Population	
Age	
• <6m	N = 4 (50%)
• 6-24m	N = 3 (30%)
• >24m	N = 14 (32%)
Aetiology	
• Tumour	N = 4
• Aqueduct Stenosis	N = 4
• IVH	N = 4
• Congenital	N = 5
• Post Infectious	N = 1
• Cyst	N = 1

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Conclusion

VAD was implanted in 100% of the cases

Not correlated with increased risk of complications (safe adjunct)

Accessed in 30% of the cases (mixed population)

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Conclusion

Routine VAD placement reduces the need for secondary diagnostic interventions in these children and facilitates emergency access to the ventricle in the event of acute ETV failure with neurological compromise