

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

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Supplementary Appendix for
Endoscopic Treatment versus Shunting for Infant Hydrocephalus in Uganda

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Table S1. Post hoc analyses of outcomes at 12 months*

	Overall	Randomized to ETV/CPC	Randomized to VPS	Difference (95% confidence interval) for VPS compared to ETV/CPC †
BSID Cognitive, change from baseline	0 (-1, 4)	0 (-1, 4)	0 (-1, 4)	0 (-2, 1)
BSID Expressive Language, change from baseline	0 (-3, 2)	-1 (-3, 1)	0 (-3, 2)	1 (-1, 2)
BSID Receptive Language, change from baseline	-1 (-4, 2)	-1 (-4, 1)	-1 (-3, 2)	1 (-1, 2)
BSID General Motor, change from baseline	-0.5 (-3, 0)	0 (-3, 1)	-1 (-3, 0)	0 (-1, 1)
BSID Fine Motor, change from baseline	0 (-2, 3)	0 (-2, 3)	0 (-2, 3)	0 (-1, 2)
Normal brain volume at 12 months, N (%)	23 (24.5%)	10 (21.3%)	13 (27.7%)	6.4% (-11.0%, 23.7%)
Substantial brain growth at 12 months, N (%)	25 (26.6%)	8 (17.0%)	17 (36.2%)	19.1% (1.7%, 36.6%)
Head circumference, cm	48.9 (46.4, 51.1)	49.0 (47.5, 52.0)	48.0 (45.3, 50.8)	-1.6 (-3.0, -0.2)
Change in head circumference from baseline, cm	0.1 (-2.3, 2.8)	1.9 (-0.1, 4.7)	-1.7 (-4.3, 0.2)	-4.0 (-5.5, -2.5)

* Data are median (interquartile range) or number (percent). Twelve-month data for head circumference, BSID scores, and volumes were available on 47 patients in each treatment group (94 patients total).

† Hodges-Lehmann estimates and 95% confidence intervals were used for differences in medians and normal approximation for differences in proportions. Because of the use of the Hodges-Lehmann estimator, the estimated difference is not the crude difference in the medians.

Table S2. Patient characteristics at baseline for treatment as received*

	Overall	Received ETV/CPC (N=43)	Received VPS (N=57)
Age at randomization, months	3.1 (2.6, 4.1)	3.3 (2.2, 4.2)	3.1 (2.7, 4.0)
Sex, female	39 (39.0%)	16 (37.2%)	23 (40.4%)
Weight, kilograms	6.0 (5.0, 7.0)	5.6 (4.5, 7.0)	6.2 (5.4, 7.15)
Head circumference, cm	48.5 (45.2, 50.8)	48.5 (44.5, 50.0)	48.3 (45.5, 53.4)
Bayley Scales of Infant Development (BSID) Scaled Scores †			
BSID Cognitive	1 (1, 5)	1 (1, 5)	1 (1, 5)
BSID Expressive Language	3 (1, 6)	4 (2, 7)	2 (1, 5)
BSID Receptive Language	6 (1, 8)	6 (3, 9)	4 (1, 8)
BSID General Motor	3 (1, 5)	3 (1, 6)	2 (1, 4)
BSID Fine Motor	3 (1, 5)	4 (1, 6)	3 (1, 4)
Brain and CSF volumes			
CSF volume, cm ³	783 (570, 1050)	746 (559, 992)	790 (617, 1331)
Brain volume, z-score	-2.6 (-3.2, -1.9)	-2.6 (-3.2, -1.7)	-2.6 (-3.3, -2.0)
Normal brain volume	10/99 (10.1%)	5/42 (11.9%)	5/57 (8.8%)

* Data are median (interquartile range) or number (percent). Brain and CSF volume data were available for 42 ETV/CPC and 57 VPS infants. There were no significant between-group differences in the characteristics listed except for BSID Receptive Language (p=0.03, Mann-Whitney).

† BSID scaled scores range from 1 to 19 (higher scores indicate better performance). Scores are scaled to general population mean of 10 and standard deviation (SD) of 3.

Table S3. Outcomes at 12 months for treatment as received *

	Overall	Received ETV/CPC	Received VPS	p- value†	Difference (95% confidence interval) for VPS compared to ETV/CPC ‡
Primary outcome					
BSID Cognitive	3 (1, 6)	4 (1, 7)	3 (1, 5)	0.65	0 (-1, 1)
Secondary outcomes					
BSID Expressive Language	2 (1, 5)	2 (1, 5)	3 (1, 5)	0.96	0 (-1, 1)
BSID Receptive Language	4 (3, 6)	5 (3, 6)	4 (3, 6)	0.51	0 (-1, 1)
BSID General Motor	1 (1, 3)	1 (1, 4)	1 (1, 2)	0.16	0 (0, 0)
BSID Fine Motor	4 (1, 7)	4 (1, 7)	3 (1, 6)	0.38	0 (-2, 0)
CSF volume, 12 months, cc	311 (97, 526)	520 (322, 704)	167 (77, 341)	<0.001	-307 (-412, -216)
Brain volume, 12 months, z-score	-2.3 (-3.3, -1.0)	-2.3 (-3.5, -1.0)	-2.3 (-3.2, -1.0)	0.49	0.2 (-0.5, 0.9)
Treatment failure	30 (30.0%)	15 (34.9%)	15 (26.3%)	0.39	-8.6% (-26.7, 9.6%)
Infection	4 (4.0%)	0 (0%)	4 (7.0%)	0.13	7.0% (0.1%, 14.8%)
All-cause mortality	6 (6.0%)	3 (7.0%)	3 (5.3%)	1.00	-1.7% (-11.3, 7.9%)
Post hoc outcomes					
BSID Cognitive, change from baseline	0 (-1, 4)	0 (-1, 5)	0 (-1, 4)		0 (-2, 1)
BSID Expressive Language, change from baseline	0 (-3, 2)	-1 (-5, 1)	0 (-2, 2)		1 (-1, 3)
BSID Receptive Language, change from baseline	-1 (-4, 2)	-1 (-5, 1)	0 (-3, 2)		1 (0, 3)

BSID General Motor, change from baseline	-0.5 (-3, 0)	-1 (-3, 2)	-1 (-3, 0)		0 (-1, 1)
BSID Fine Motor, change from baseline	0 (-2, 3)	0 (-2, 3)	0 (-2, 4)		0 (-1, 2)
Normal brain volume, 12 months, N (%)	23 (24.5%)	10 (25.0%)	13 (24.1%)		-1.0% (-18.5%, 16.7%)
Substantial brain growth at 12 months, N (%)	25 (26.6%)	6 (15.0%)	19 (35.2%)		20.2% (2.1%, 38.3%)
Head circumference, cm	48.9 (46.4, 51.1)	49.7 (48.2, 52.3)	47.9 (45.1, 50.1)		-2.6 (-3.9, -1.2)
Change in head circumference from baseline, cm	0.1 (-2.3, 2.8)	2.6 (0.3, 5.5)	-1.0 (-3.6, 0.3)		-4.4 (-5.9, -2.9)

* Data are median (interquartile range) or number (percent). Twelve month data for head circumference, BSID scores, and volumes were available on 40 ETV/CPC patients and 54 VPS patients (94 patients total).

† P-values are Mann-Whitney test or Fisher's exact test.

‡ Hodges-Lehmann estimates and 95% confidence intervals were used for differences in medians and normal approximation for differences in proportions. Because of the use of the Hodges-Lehmann estimator, the estimated difference is not the crude difference in the medians.

Table S4. Outcome results for brain growth*

	Difference (95% confidence interval) for those achieving <i>normal brain volume</i> (N=23) compared to not	Difference (95% confidence interval) for those achieving <i>substantial brain growth</i> (N=25) compared to not
BSID Scaled Scores at 12 months		
BSID Cognitive	1 (0, 3)	1 (0, 3)
BSID Expressive Language	1 (0, 2)	1 (0, 2)
BSID Receptive Language	1 (0, 2)	0 (-1, 1)
BSID General Motor	2 (0, 2)	0 (0, 0)
BSID Fine Motor	3 (1, 5)	2 (1, 4)
Change in BSID Scaled Scores at 12 months from baseline		
BSID Cognitive, change from baseline	1 (-1, 3)	2 (0, 4)
BSID Expressive Language, change from baseline	0 (-3, 2)	0 (-1, 2)
BSID Receptive Language, change from baseline	0 (-2, 2)	0 (-2, 2)
BSID General Motor, change from baseline	1 (0, 3)	1 (0, 3)
BSID Fine Motor, change from baseline	3 (1, 4)	3 (2, 5)

* Hodges-Lehmann estimates and 95% confidence intervals were used for differences in medians. Because of the use of the Hodges-Lehmann estimator, the estimated difference is not the crude difference in the medians.