

Endoscopic Third Ventriculostomy for Adults with Hydrocephalus: Creating a Prognostic Model for Success – Protocol for a Retrospective Multicentre Study (Nordic ETV)

## Supplementary Material 1: List of Variables

Variable / Field name	Field Label	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
<b>Instrument: Data Entry Form (for local data collection)</b>		
record_id	Record ID	Text
location_country	Country	Radio buttons: 1. Norway 2. Sweden 3. Denmark 4. Finland
location_no	Where in Norway was the ETV performed?	Radio buttons: 1. Bergen 2. Oslo – Ullevål 3. Oslo – Rikshospitalet 4. Tromsø 5. Trondheim
location_swe	Where in Sweden was the ETV performed?	Radio buttons: 1. Stockholm 2. Lund 3. Linköping 4. Gothenburg 5. Uppsala 6. Umeå
location_dk	Where in Denmark was the ETV performed?	Radio buttons: 1. Copenhagen 2. Odense 3. Århus 4. Ålborg
location_fin	Where in Finland was the ETV performed?	Radio buttons: 1. Helsinki 2. Tampere 3. Kuopio 4. Turku 5. Oulu
date_of_birth	Date of Birth	Date
sex	Sex	Radio buttons: 1. Female 2. Male
<b>History and Aetiology</b>		
patient_group	Patient group - Estimated or defined time of hydrocephalus onset, in relation to age.	1. Child - diagnosed during childhood with congenital or early acquired hydrocephalus 2. Adult - diagnosed during childhood with congenital or early acquired hydrocephalus 3. Adult - diagnosed as an adult, presumably with a congenital or early acquired hydrocephalus 4. Adult diagnosed as an adult with acquired hydrocephalus
aetiol	Aetiology of hydrocephalus	1. Non-traumatic haemorrhage 2. Infection 3. Neoplasm or cyst 4. Trauma 5. Malformation 6. Other
aetiol_haem	What type of haemorrhage? (If haemorrhagic aetiology)	1. SAH 2. IVH 99. Other
aetiol_infect	What type of infection? (If infectious aetiology)	1. Meningitis 2. Abscess 99. Other
aetiol_tumour	Where is the tumour located? (If tumoural aetiology)	1. Third ventricle 2. Fourth ventricle 3. Cerebellum 4. Cerebellopontine angle 5. Tectal plate tumour 6. Pineal tumour 99. Other
aetiol_trauma	Type of traumatic lesion? (If traumatic aetiology)	Checkbox: 1. aetiol_trauma__1 Contusions 2. aetiol_trauma__2 Traumatic SAH 3. aetiol_trauma__3 SDH

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		4. aetiol_trauma__4 IVH 5. aetiol_trauma__5 DAI 99. aetiol_trauma__99 Other
aetiol_cong	What type of malformation? (If congenital or early acquired aetiology)	Radio buttons: 1. Aqueductal stenosis 2. Chiari malformation 3. Dandy-Walker malformation 4. LOVA 99. Other
aetiol_idio	Diagnosis? (If other aetiology)	Radio buttons: 1. iNPH 2. IIH 99. Other
aetiol_other	Other aetiology	Text
<b>Radiology</b>		
visible_obstruct	Documented obstruction? In radiologists description	Yes/No
visible_obstruct_loc	Where was the obstruction?	Radio buttons: 1. Foramen monroi 2. Third ventricle 3. Aqueductus sylvii 4. Fourth ventricle 99. Other extraventricular obstruction
visible_obstruct_loc_o ther	Describe the location of the obstruction. If other obstruction.	Text
sagittal_upload	Upload mid-sagittal image	File
axial_upload	Upload axial image at the level of the frontal horns widest point	File
coronal_upload	Upload coronal image at the level of the posterior commissure	File
<b>Symptoms</b>		
symptoms	Preoperative symptoms	checkbox 1. symptoms__1 Headache 2. symptoms__2 Nausea/Vomiting 3. symptoms__3 Dizziness 4. symptoms__4 Visual symptoms 5. symptoms__5 GCS < 15 6. symptoms__6 Cognitive Decline 7. symptoms__7 Gait Imparement 8. symptoms__8 Urinary Problems 99. symptoms__99 Other
gcseye	GCS: Eye opening	Text
gcsverbal	GCS: Verbal response	Text
gcsmotor	GCS: Motor response	Text
gcs	Preoperative GCS score	Text
symptoms_other	Other symptoms	Text
<b>Shunt History</b>		
shunt	Previous shunt treatment	Yes/No
shunt_year	Year of first shunt procedure?	Text (integer)
shunt_failure	Cause of shunt failure? Reason for shunt dysfunction leading up to ETV.	Radio buttons 1. Obstruction 2. Infection 3. Overdrainage 4. Disconnection 99. Other
shunt_failure_other	Other cause of shunt failure	Text
shunt_revision	Previous shunt revisions Check "Yes" if the patient has had one or more shunt revisions prior to their ETV.	Yes/No
shunt_revision_nr	Number of revisions	1. 1 2. 2-5 3. 6-10 4. 11-20 5. >20 88. Not reported
<b>ETV Procedure</b>		
etv_date	Date of ETV procedure	Date
etv_age_calc	Calculated age at ETV Procedure	Calculation: rounddown(datediff ([date_of_birth], [etv_date], "y", "dmy"),0)
perop_obs	Peroperative observations	Checkbox: 1. perop_obs__1 Opaque floor of the third ventricle

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		2. perop_obs__2 Preopontine membranes 3. perop_obs__3 Pulsations of the stoma 77. perop_obs__77 None 88. perop_obs__88 Not reported 99. perop_obs__99 Other
perop_obs_other	Other peroperative observations	
procedures	Was any of the following procedures performed at the time of ETV?	Checkbox: 1. procedures__1 Tumor biopsy 2. procedures__2 External ventricular drain (EVD) 3. procedures__3 Stent (in third ventricle floor or the aqueduct) 4. procedures__4 Shunt 5. procedures__5 ICP monitoring probe 6. procedures__6 Fenestration of preopontine membranes 88. procedures__88 Not reported 99. procedures__99 Other
other_procedures	What other procedures?	Text
shunt_handling	How was the existing shunt handled?	Checkbox shunt_handling__1 Removed during same procedure. shunt_handling__2 Removed prior to ETV procedure. shunt_handling__3 Left in situ. shunt_handling__4 Ligated and left in situ. shunt_handling__5 Ligated and removed ventricular drain. shunt_handling__88 Not reported shunt_handling__99 Other
shunt_handling_other	Please specify how the existing shunt was handled	Text
re_proced	Subsequent CSF-diversion procedure	Radio buttons: 1. None 2. Shunt treatment 3. Repeat ETV
re_procedure_date	Date of second procedure	Date
re_procedure_time_calc	Calculated time between first and second procedure (months)	Calculation: round(datediff([etv_date], [re_procedure_date], "M", "dmy"),2)
improvement_re_etv	Clinical state at first follow up after reETV? If there is any doubt if the patient has improved or not at follow up select "Not improved".	Radio buttons: 1. Improved 2. Not improved
re_proced_2	Subsequent CSF-diversion procedure	Radio buttons: 4. None 5. Shunt treatment 6. Repeat ETV
<b>Complications and Mortality</b>		
compl	Complications	Yes/No
intraop_compl	Perioperative complications	Checkbox: 1. intraop_compl__1 Haemorrhage 2. intraop_compl__2 Structural lesion 99. intraop_compl__99 Other
postop_compl	Postoperative complications	Checkbox: 1. postop_compl__1 Intracranial haematoma (EDH or SDH) 2. postop_compl__2 Wound infection 3. postop_compl__3 CNS infection 4. postop_compl__4 CSF leak 5. postop_compl__5 Thromboembolic (DVT or PE) 6. postop_compl__6 Sepsis 99. postop_compl__99 Other
compl_other	Other complications	Text
discharge_date	Date of discharge from a neurosurgical or neurological department.	Date
length_of_stay	length_of_stay	Calculation: rounddown(datediff([etv_date], [discharge_date], "d", "dmy"),0)
morbidity	Permanent morbidity. Did the patient suffer permanent morbidity in relation to the procedure?	Yes/No
morbidity_describe	What kind of morbidity? Describe the nature of the permanent deficits.	Text
mors	Procedure related mortality. Did the patient die in relation to the ETV procedure?	Yes/No

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mors_date	When did the patient die?	Date
mors_cause	How did the patient die? Describe the cause and time of death, in relation to the procedure.	Text
<b>Follow-Up</b>		
first_follow_up_date	Date of first follow-up?	Date
first_follow_up_calc	Calculated time to first follow-up (months)	Calculation: round(datediff([etv_date], [first_follow_up_date], "M", "dmy"),2)
clinical_state_follow_up	Clinical state at first follow up? If there is any doubt if the patient has improved or not at follow up select "Not improved".	Radio buttons 1. Improved 2. Not improved
success	Was the ETV procedure a success or failure?	Radio buttons 1. Success 0. Failure
recent_follow_up_date	Most recent follow-up date ETV Success: Set the date to most recent follow up. ETV failure: Set the date to when it was realized the ETV was unsuccessful.	Date
recent_follow_up_calc	Calculated follow up duration (months)	Calculation: round(datediff([etv_date], [recent_follow_up_date], "M", "dmy"),2)

Variable / Field name	Field Label	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
<b>Instrument: Radiological Measurements (completed based on uploaded images)</b>		
callosal_angle	Callosal angle	Text
temporal_horns	Dilated temporal horns	Yes/No
third_ventricle_bow	Downward bowing of third ventricle floor?	Yes/No
recesses	Ballooning of the recesses of the third ventricle	Yes/No
corpus_callosum	Thinned and/or elevated corpus callosum	Yes/No
dilated_aqueduct	Dilated aqueduct	Yes/No
radiol_obstruct_sign_other	What other radiological signs are present?	Text