

Supplemental Information

Confidential

PHIS+ GERD Classification Form

Please complete the survey below.

Thank you!

Examination

(Examination section of the radiology report.
(Scroll down or click expand to read the complete entry))

Radiology Report

(Radiology Report Text. (Scroll down or click expand to read the complete entry))

Impression

(Impression section of the radiology report.
(Scroll down or click expand to read the complete entry))

Is this a gastrojejunostomy (GJ) [G] Study

Yes

No

Unclear

The tube tip reaches Jejunum [True Jejunal]

Purpose of this Study

- Original GJ Placement
- GJ Replacement
- Verification of Position
- Verification of Patency
- Original GJ AND gastrostomy placement
- Other

SUPPLEMENTAL FIGURE 2 Screen shot of the REDCap data capture tool used to capture PHIS+ radiology report data.

SUPPLEMENTAL TABLE 5 Fourteen NI Diagnosis Groups Used for Analysis in This Study

NI Group	% of Cohort
Asphyxia, anoxia, and cardiac arrest	42.7
Brain or spinal cord abnormalities	38.5
Cerebral palsy	24.8
Cerebrovascular disease	9.8
Encephalopathy	18.9
Genetic conditions	37.9
Hydrocephalus	14.8
Intracranial hemorrhage or injury	13.4
Optic atrophy and other visual	26.6
Seizures	43.6
Spina bifida	2.5
CNS injury other (6 original NI groups collapsed)	6.3
Original NI groups	
Autoimmune	0.0
Brain or spinal cord neoplasms	0.1
Cerebral laceration and contusion	0.0
Concussion with late effects	0.0
Fracture of skull	0.0
Prenatal brain injury	6.2
Other CNS (11 original NI groups collapsed)	32.2
Original NI groups	
Altered level of consciousness	1.8
Anterior horn cell disease	5.5
Drug toxicity	0.0
Leukodystrophies	1.1
Meningitis, encephalitis or abscess	5.1
Mental retardation	8.1
Metabolic disorders	4.8
Myelopathy or myelitis	4.3
Neurodegenerative	0.6
Pervasive developmental disorder	0.6
Tuberous sclerosis	0.2
Other PNS (4 original NI groups collapsed)	16.6
Original NI groups	
Movement disorders	4.5
Muscular dystrophies and myopathies	4.8
Other paralytic syndromes	2.9
Peripheral nervous system abnormality	4.4

Berry et al²² collapsed the 604 ICD-9-CM codes identified for NI into 32 diagnoses groupings. We further collapsed these into the 14 groups used for analysis in this study. CNS, central nervous system; PNS, peripheral nervous system.

SUPPLEMENTAL TABLE 6 Chart Review Validation of Initial GT Placement Diagnosis and Procedure Codes

Hospital	Initial GT Procedure Code			Initial GT Diagnosis Code		
	Reviewed	Agreed	% Agreed	Reviewed	Agreed	% Agreed
A	65	65	100	65	65	100
B	65	65	100	65	64	98
C	65	63	97	65	60	92
D	65	65	100	65	65	100
E	65	62	95	65	60	92
F	65	64	98	65	62	95
Overall	390	384	98	390	376	96

Chart review to verify first GT placement showed overall 98% correlation with a gastrostomy procedure code and 96% correlation with first appearance of a gastrostomy diagnosis code.

SUPPLEMENTARY TABLE 7 ICD-9-CM Diagnosis and Procedure Codes, CTC Codes, and CPT Codes Used to Identify Study Population Ascertainment Variables, Independent Variables, and Dependent Variables

Variable	ICD-9-CM Diagnostic Codes (CTC and CPT Codes)	ICD-9-CM Procedure Codes
Study population identification variables		
NI	Published list and grouping (Berry ²²)	
GT placement	V441, v551, 536.4× (CTC: 244711) (CPT: 43750, 43659, 49440, 43246) 530.11, 530.81 (CTC: GER medical codes 1471xx (H2s), 1472xx (PPIs), 1473xx (AAs), 1477xx (GI stimulants))	4300, 4311, 4319, 9702
GER(D)		
Intervention identification variables (also for second intervention or repeat intervention)		
Fundoplication	(PHIS+ radiology reports)	44.66, 44.67
GJ placement		
Primary outcomes		
Esophagitis	530.1, 530.10, 530.12, 530.19 (See above)	
GERD	507.0	
Aspiration pneumonia	480-486	
Pneumonia	493	
Asthma	96.7, 96.70, 96.71, 96.72	
Mechanical ventilation		
Secondary outcomes (include second intervention and repeat intervention, codes above)		
Failure to thrive	783.41 (PHIS database)	
Death		
Early complications (≤30 d from initial procedure)		
Wound infection/dehiscence	998.30, 998.31, 998.32, 998.59, 54.61	
Bleeding	998.11, 28.7, 38.80, 38.86	
Peritonitis	567.21, 567.29, 567.89, 567.9	
Late complications (>30 d from initial procedure)		
Peritonitis	567.21, 567.29, 567.89, 567.9	
Gastrostomy complications		
Persistent vomiting	536.2	
Gastrostomy complication, unspecified or other	536.40, 536.49	
Infection of gastrostomy	536.41	
Mechanical complication of gastrostomy	536.42	

SUPPLEMENTARY TABLE 7 Continued

Variable	ICD-9-CM Diagnostic Codes (CTC and CPT Codes)	ICD-9-CM Procedure Codes
Patient-related variables		
Tracheostomy	519.00, 519.01, 519.02, 519.09, v44.0, v55.0	31.1, 31.2, 317.4, 96.55, 97.23
Upper airway anomalies	744.4x, 744.8x, 744.9, 747.21 748.0, 748.2 - 4, 749.0x, 749.2x, 759.7, 759.89	
Chronic lung disease	496, 7707, 51883	
Swallow study or known dysphagia	V416, 787xx (CTC: 442100, 442200)	8761
Complex chronic conditions	Published complex chronic conditions codes list (Feudtner ³²)	
Contraindications for fundoplication		
Microgastria	750.7	
Barrett esophagus	530.85	
Peptic stricture	530.3, 750.3	
Esophageal dysmotility	530.5	
Short esophagus	530.6, 750.4	
Gastric or intestinal motility disorders	536.3, 564.89	
Gastric outlet obstruction	537.6, 537.0	

CPT, Current Procedural Terminology.

SUPPLEMENTAL TABLE 8 CPT Concepts and Codes Used to Select Radiology Reports for Manual Extraction of GJ Group Identification

CPT Concept	Code
Contrast injection(s) for radiologic evaluation of existing gastrostomy, duodenostomy, jejunostomy, gastrojejunostomy, or cecostomy (or other colonic) tube, from a percutaneous approach including image documentation and report	49465
Conversion of gastrostomy tube to gastrojejunostomy tube, percutaneous, under fluoroscopic guidance including contrast injection(s), image documentation and report	49446
Insertion of duodenostomy or jejunostomy tube, percutaneous, under fluoroscopic guidance including contrast injection(s), image documentation and report	49441
Insertion of gastrostomy tube, percutaneous, under fluoroscopic guidance including contrast injection(s), image documentation and report	49440
Mechanical removal of obstructive material from gastrostomy, duodenostomy, jejunostomy, gastrojejunostomy, or cecostomy (or other colonic) tube, any method, under fluoroscopic guidance including contrast injection(s), if performed, image documentation and report	49460
Replacement of duodenostomy or jejunostomy tube, percutaneous, under fluoroscopic guidance including contrast injection(s), image documentation and report	49451
Replacement of gastrojejunostomy tube, percutaneous, under fluoroscopic guidance including contrast injection(s), image documentation and report	49452
Replacement of gastrostomy or cecostomy (or other colonic) tube, percutaneous, under fluoroscopic guidance including contrast injection(s), image documentation and report	49450

CPT, Current Procedural Terminology.