

Table 1: Demographic and comorbid conditions of the cohort at the time of first FEES

	Patients		Penetration and or/aspiration	
Baseline characteristics	(N)	(%)	(N)	(%)
Male	218	58.4%	113	48.6%
Female	155	41.6%	66	45.8%
Age at time of first FEES>6 months	216	57.9%	101	46.3%
Age at time of first FEES= \leq 6 months	157	42.1%	78	49.0%
Comorbid Condition				
Neurological diseases ^a	128	34.3%	80	62.5%
Prematurity ^b	105	28.3%	54	51.4%
Genetic/metabolic ^c	47	12.6%	22	46.8%
Esophageal atresia	24	6.4%	14	58.3%
Anomalies of the larynx ^d	26	7%	13	50%
No predisposing factor for aspiration	71	19%	16	22.5%
Others	39	10.5%	20	51.2%

^acerebral palsy; motor neuron disease; myopathy; birth asphyxia; microcephaly; periventricular leukomalacia

^bcauses related to prematurity: Low gestational age at birth; low birth weight;
comorbidities associated with prematurity (broncho-pulmonary dysplasia)

^cmetabolic conditions: Urea cycle defect/disorder, hereditary fructose intolerance,
lysosomal storage diseases, glycogen storage disease, mitochondrial disorders

sequences/syndromes: Moebius syndrome, CHARGE syndrome, Smith-Lemli-
Opitz syndrome, Cornelia de Lange syndrome, Noonan syndrome, trisomy 8, 9,
13, 18, 21, 22

^dlaryngomalacia, vocal cord paresis

Table 2: Reasons for referral (per age group)

Age at the time of first FEES	<6 m		7-23 m		24-72 m		>72 m		Total	
Desaturations with feeding N (%)	55	35%	2	2.5%	0		0		57	15.3%
Choking/Gagging/ Coughing with feeding N (%)	55	35%	49	61.3%	41	51.9%	29	50.9%	174	46.6%
Recurrent bronchitis/pneumonia/laryn- gitis N (%)	3	1.9%	4	5.0%	6	7.6%	9	15.8%	22	5.9%
Refusal or aversion to ingestion N (%)	35	22.3%	22	27.5%	23	29.1%	17	29.8%	97	26%
Dataset incomplete N (%)	9	5.7%	3	3.8%	9	11.4%	2	3.5%	23	6.2%
Total	15	42.1%	80	21.4%	79	21.2%	57	15.2%	373	100.0%

Table 3: FEES findings

	Total		Neurologic		Prematurity		Genetic/ Metabolic		No predisposing factors	
	N=373		N=128		N=105		N=47		N=71	
Pharyngeal pooling N (%)	68	18.2%	41	32%	4	3.8%	14	29.8%	4	5.6%
Residues N (%)	119	31.9%	57	44.5%	10	9.5%	29	61.7%	11	15.5%
Altered sensitivity N (%)	136	36.5%	60	46.9%	44	41.9%	5	10.6%	27	38%
Gastroesophageal reflux signs N (%)	82	21.9%	26	20.3%	18	17.1%	22	46.8%	7	9.9%

Table 4: Recommended interventions

	No							
	Neurologic		Prematurity		Genetic/metabolic		No predisposing factors	
	(N=128)		(N=105)		(N=47)		(N=71)	
Any intervention N (%)	98	76.6%	59	56.2%	27	57.5%	18	25.4%
Thickened feeding N (%)	41	32%	39	37.1%	11	23.4%	4	5.6%
Compensatory strategies ^a , N (%)	22	17.2%	11	10.5%	9	19.1%	7	9.9%
Non oral feeding, N (%)	32	25%	5	4.8%	6	12.8%	3	4.2%
Others (PPIs), N (%)	3	2.3%	4	3.8%	1	2.1%	4	5.6%

^aChanges in positioning or feeding rhythm, changes/modifications to utensils (including bottle/nipple systems)

Table 5: Risk factors for penetration/aspiration: logistic regression model

Penetration/aspiration		OR ^a	CI ^b 95% para OR		P-value
			Inferior	Superior	
Age	<6 m	2.001	1.026	3.903	0.042
Predisposing factors	Any predisposing factor	5.05	2.079	12.346	0.000
	No predisposing factors	0.198	0.081	0.481	0.000
	Neurologic	1.99	1.01	3.921	0.047
	Esophageal atresia	2.649	0.902	7.774	0.076
Referral	Desaturations	1.65	0.662	4.113	0.283
	Gagging	2.288	1.231	4.252	0.009
FEES findings	Pharyngeal pooling	11.235	3.143	40.158	0.000
	Residues	7.893	4.021	15.492	0.000
	Altered sensitivity	5.682	2.739	11.765	0.000

^a Odds ratio

^b Confidence Intervals