

Studies	Investigated tools	Comparisons	Measurements properties of investigated tools			Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
			Validity (correlation or p-value)	Reliability	Responsiveness (SRMs)				
<i>Instrumental examinations</i>									
Murono et al. ⁵⁸	VFSS (PAS)	VFSS (PAS) vs. Physiologic swallowing components	LipC: r=0.29; LingE: r=-0.29; TPS: r=-0.29; BP: r=-0.14; BT: r=0.37; IPS: r=0.01; SPE: r=0.00; LaryE: r=NC; AHE: r=0.04; LaryC: r=0.07; PC: r=0.58 ^q ; PESO: r=0.39; TBR: r=0.30; EI: r=0.21; Or: r=0.10; PR: r=0.25	ND	ND	ND	ND	ND	ND
Hanayama et al. ⁴⁵	VFSS	VFSS abnormalities vs. Swallowing-related symptoms	Pps1: Nct: r=0,424 [*] ; Pps2: Nct: r=0,544 [*] ; CoE r=0,399 [*] ; H: r=0,356 [*] ; Nc: r=0,412 [*] ; SuP: Nct: r=0,402 [*] ; H: r=0,474 [*] ; Nc: r=0,373 [*]	ND	ND	ND	ND	ND	ND
Higo et al. ⁵⁹	VFSS (PAS)	Items PAS vs. Aspiration	BT: p=0.696; BH: p=0.318; VPS: p=0.456; TBM: p=0.227; PC: p=0.190; LE: p=0.001; UO: p=0.067; BSP: p=0.835	ND	ND	ND	ND	ND	ND
Briani et al. ¹⁰	VFSS	Man.; FEES	ND	ND	ND	FEES: 53.0 VFSS: 92.0 Man.: 80.0	FEES: 85.0 VFSS: 0.0 Man.: 20.0	ND	ND
Kidney et al. ⁵¹	VFSS (DOSS/ PAS)	DOSS vs. PAS	r= -0,84	DOSS: k=0.67 ³ ; k=0.95 ⁴ APRS: k=0.89 ³ ; k=1.00 ⁴	ND	ND	ND	ND	ND
Pilz et al. ⁴⁸	FEES	FOIS	NC	k >0.61 ^{3,4}	ND	ND	ND	ND	ND
Aydogdu et al. ¹⁴	sEMG (DL)	sEMG (DL) vs. Degree of Dysphagia	ALS: r=0.77 ¹ ; PM/DM: r= 0.78 ¹ ; MG: r=0.82 ² ; DM1: r= 0.33	ND	ND	ALS: 96.8 PM/DM: 81.8 MG: 87.7 DM1: 80.0	ALS: 81.7 PM/DM: 66.7 MG: 85.0 DM1: 37.5	ALS: 96.5 PM/DM: 90.0 MG: 94.3 DM1: 70.6	ALS: 79.5; PM/DM: 50.0 MG: 70.8; DM1: 50.0
Archer et al. ⁴⁶	sEMG	Dysphagic DMD vs. Nondysphagic DMD vs. healthy controls	Peak amplitude between dysphagic DMD and healthy control: masseter (p<0.01); orbicularis oris (p<0.05); submental (p<0.05)	Amplitude ⁶ : 29.12 ± 21.69 %; MVC duration ⁶ : 0.69 ± 0.62 s; Relative timing ⁶ : 0.40 ± 0.24 s.	ND	ND	ND	ND	ND
Cosentino et al. ⁵⁷	sEMG	sEMG vs. FEES (PAS) and DOSS	DOSS: SHEMG (r=0.55); LPM (r=0.59); SHEMG-D (r=-0.48). PAS: SHEMG (r=0.48), LPM (r=-0.70), and SHEMG-D (r=0.52).	ND	ND	ND	ND	ND	ND
Hiraoka et al. ⁵⁶	MTP	MTP vs. VFSS	BFOTT (r = -0.64, p<0.01); PTT (r= -0.64, p<0.01)	ND	ND	ND	ND	ND	ND
Mano et al. ⁵⁵	MTP	MTP vs. VFSS (PAS and presence of residue)	Penetration: p=0.018; OR: p>0.05; PR: p>0.05; SS: <0.001	ICC = 0.986 (p<0.001) ⁵	ND	ND	ND	ND	ND
Plowman et al. ⁵³	VCA	VCA vs. VFSS (PAS) + Safe/penetrator/aspirators	Safe vs. unsafe swallows: CVA (p<0.0001), PEFRT (p<0.0001), and PEFR (p<0.004).	ND	ND	CVA: 91.3 PEFRT: 82.6 PEFR: 73.9	CVA: 82.2 PEFRT: 73.9 PEFR: 78.3	ND	ND
Olthoff et al. ⁵⁴	RT-MRI	RT-MRI vs. FEES, VFSS	CP vs. PTT (r=0.67, p=0.0031)	Bolus transport: RT-MRI α=0.39 ³ ; VFSS α=0.55 ³ ; FEES α=0.67 ³ . Retention: RT-MRI α=0.51 ³ ; VFSS α=0.52 ³ ; FEES α=0.52 ³ .	ND	ND	ND	ND	ND

Non-instrumental examinations

Mari et al. ⁵⁰	3SwT	3SwT vs. VFSS	ND	ND	ND	52.0	86.0	76.0	68.0
Archer et al. ⁴⁷	SSQ	Dysphagic DMD vs. Non-dysphagic DMD vs. healthy controls	Total questionnaire score: p<0.001 between dysphagic DMD and healthy control; p<0.05 between dysphagic DMD and non-dysphagic DMD; p<0.05 between non-dysphagic DMD and healthy control.	ND	ND	78	83	ND	ND
Paris et al. ⁴⁹	V-VST	V-VST vs. VFSS	ND	ND	ND	93	80	ND	ND
Cox et al. ⁷	Standard Questionnaire	Standard questionnaire vs. VFSS	ND	ND	ND	IP: 70.0 AR: 63.0	IP: 44.0 AR: 58.0	IP: 92.0 AR: 65.0	IP: 44.0 AR: 55.0
Plowman et al. ⁶⁴	EAT-10	EAT-10 vs. VFSS (PAS) + Safe/penetrator/aspirators	aspirators vs. safe swallows (p<0.001) and aspirators vs. penetrators (p<0.001).	ND	ND	Cut-off 8: 85.7 Cut-off 3: 88.0	Cut-off 8: 71.9 Cut-off 3: 56.7	Cut-off 8: 42.9 Cut-off 3: 52.4	Cut-off 8: 95.5 Cut-off 3: 89.7
Wada et al. ⁴⁴	NdSSS	NdSSS vs. VFSS (PAS; VDS)	DMD: PAS ¹ : r=0.22; PAS ² : r=-0.12; VDS ¹ : r=-0.57 [‡] ; VDS ² : r=-0.52 [‡] ; ALS: PAS ¹ : r=-0.51 [‡] ; PAS ² : r=-0.49 [‡] ; VDS ¹ : r=-0.65 [‡] ; VDS ² : r=-0.61 [‡]	DMD: k=0.95 ³ ; k=1.00 ⁴ ; ALS: k=0.98 ³ ; k=0.98 ⁴	DMD: 0.65; ALS: 1.21	ND	ND	ND	ND

Abbreviations: sEMG: Surface electromyography; FEES: Fiberoptic endoscopic evaluation of swallowing; PAS: Penetration-aspiration scale; DOSS: Dysphagia Outcome Severity Scale; SHEMA: submental/suprahyoid activity; LPM: laryngeal-pharyngeal movements; SHEMA-D: duration of the SHEMA activity; ND: no data; MTP: maximal tongue pressure; BFOTT: Bolus formation and oral transit time; PTT: Pharyngeal transit time; α : Krippendorff α ; EAT-10: Eating Assessment Tool; VCA: Voluntary Cough Airflow; CVA: Cough volume acceleration; PEFRT: peak expiratory flow rate; PEFR: peak expiratory flow rise time; CP: cricopharyngeal propulsion; ICC: intraclass correlation coefficient; NdSSS: Neuromuscular Disease Swallowing Status Scale; VFSS: Videofluoroscopic swallow study; VDS: Videofluorographic dysphagia scale; DMD: Duchene muscular dystrophy; ALS: amyotrophic lateral sclerosis; k: Kappa's Cohen; LipC: lip closure; LingE: lingual elevation; TPS: tongue to palatal seal; BP: bolus preparation/mastication; BT: bolus transport/lingual motion; IPS: initiation of pharyngeal swallow; SPE: soft palate elevation and retraction; LaryE: laryngeal elevation; AHE: anterior hyoid excursion; LaryC: laryngeal closure; PC: pharyngeal contraction; PESO: pharyngoesophageal segment opening; TBR: tongue base retraction; EI: epiglottic inversion; Or: oral residue; PR: pharyngeal residue; n/a: not applicable; DM1: myotonic dystrophy type 1; PM/DM: polymyositis/dermatomyositis; MG: myasthenia gravis; DL: Dysphagia limit; OR: oral residue; PR: pharyngeal residue; SS: Session of swallowing; MVC: maximum voluntary contraction; SSQ: Sydney Swallow Questionnaire; V-VST: Volume-Viscosity Swallow Test; Pps1: pooling in the pyriform sinus; Pps2: pooling in the pyriform sinus after repeated swallow; Nct: need to clear throat; CoE: coughing while eating; H: hoarseness; Nc: nocturnal cough; SuP: supraglottic penetration; Man.: pharyngo-esophageal manometry; APRS: Aspiration-Penetration Rating Scale; IP: dysphagia due to impaired propulsion; AR: aspiration-related dysphagia; BH: bolus holding in the oral cavity; VPS: velopharyngeal seal; TBM: tongue base movement; LE: laryngeal elevation; UO: upper esophageal sphincter opening; BSP: bolus stasis at the pyriform sinus; 3SwT: 3-ounce water swallow test.

¹ VFSS with semi liquid; ² VFSS with jelly; ³ Inter-rater reliability; ⁴ Intra-rater reliability; ⁵ test-retest reliability; ⁶ Due to the small sample size, differences between the raw data were examined descriptively, examining mean differences and standard deviation between the first and second tests.

‡ Statistically significant correlation (p<0,001); † Statistically significant correlation (p<0,01); * Statistically significant correlation (p<0,05).