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Effect of Swallowing Rehabilitation in Patients with Parkinsonian Disorders: A Retrospective Study

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Purpose
Although conventional swallowing rehabilitation has been used in dysphagic patients with Parkinsonian disorders, there is still lack of evidence. The aim of this study is to investigate the effect of swallowing rehabilitation in these patients.

Methods
Medical records of 254 patients with Parkinsonian disorders who underwent videofluroscopic swallowing study (VFSS) from March 2016 to January 2019 were reviewed. Among them, 222 patients were excluded by 1) no follow up VFSS data between 60 and 120 days, 2) received less than two sessions of conventional swallowing rehabilitation, and 3) any other neurological problems affecting dysphagia. Finally, 32 patients were included in this study. Patients were evaluated using Penetration-Aspiration Scale (PAS), Videofluoroscopic Dysphagia Scale (VDS) measured from the VFSS, American Speech–Language–Hearing Association's National Outcome Measurement System (ASHA NOMS) swallowing scale, and Swallowing Disturbance Questionnaire (SDQ).

Results
Patients received 8.97 ± 5.46 swallowing rehabilitation sessions for 82.98 ± 15.46 days. There was a significant decrease in PAS score from 8 (IQR 5.25-8.00) to 5 (IQR 2.00-7.75) (P = .003). The VDS score was significantly decreased from 49.67 ± 15.10 to 43.58 ± 17.45 (P = .008). Especially when classified as swallowing stage, pharyngeal phase score in VDS significantly changed from 37.97 ± 12.31 to 32.23 ± 14.41 (P = .002) after treatment but not in oral phase (P = .750). Among the VDS items, only pharyngeal transit time was significantly decreased (P = .011). There were no significant changes in ASHA NOMS and SDQ score (P = .224 and P = .806, respectively).

Conclusion
The swallowing rehabilitation may improve objective swallowing function, especially in the pharyngeal phase, in patients with Parkinsonian disorders. Our findings are preliminary and require further prospective study.

Table 1. Patients' demographics and baseline characteristics (N=32)

Male/female (n)		18 / 14
Age		76.59 ± 8.37
Disease duration (mo)		85.97 ± 50.23
Diagnosis	idiopathic Parkinson disease (IPD)	14
	progressive supranuclear palsy (PSP)	7
	Multiple system atrophy (MSA)	3
	vascular Parkinsonism (VaPism)	2
	drug-induced Parkinsonism (DIP)	2
	corticobasal degeneration (CBD)	1
	other Parkinsonism	3
Hoehn & Yahr stage	2	2
	2.5	3
	3	7
	4	11
	5	9

Table 2. Patients' swallowing rehabilitation information (N=32)

VFS initial-follow up duration (days)	82.98 ± 15.46
Swallowing rehabilitation sessions	8.97 ± 5.46
Application of FES O / X	17 / 15

VFS, videofluroscopic swallowing study; FES, functional electrical stimulation

Table 3. Changes in the outcome variables before and after swallowing rehabilitation

		Initial evaluation	Follow-up evaluation	Changes Initial – Follow up
PAS††		8.00 (5.25-8.00)	5.00 (2.00-7.75)	.003*
VDS†	Total score	49.67 (15.10)	43.58 (17.45)	.008*
	- Oral phase score	11.70 (5.55)	11.34 (6.27)	.750
	- Pharyngeal phase score	37.97 (12.30)	32.23 (14.41)	.002*
ASHA NOMS††		6.00 (5.00-6.00)	5.50 (4.25-6.00)	.224
SDQ†		20.27 (6.73)	20.65 (6.70)	.806

VFS, videofluroscopic swallowing study; PAS, Penetration-Aspiration Scale; VDS, videofluoroscopic Dysphagia Scale; ASHA NOMS, American Speech–Language–Hearing Association's National Outcome Measurement System; SDQ, Swallowing Disturbance Questionnaire; †Mean (SD); ††Median (IQR); *p<.05