P-20

Development of an ICU-Based Swallowing Rehabilitation Algorithm for Critically Ill Patients

Jung Il Chung[1], Won Kim[1], Young Jin Song[1], Daeyoung Kim[1], Jaeseul Jung[2], Young-Joong Jung[2], Suk-Kyung Hong[3], Ye Rim Chang[3], Seungwoo Cha[1*] (miracleofs@naver.com)

[1]Department of Rehabilitation Medicine, Asan Medical Center, University of Ulsan College of Medicine
[2]Department of Nursing, Asan Medical Center
[3]Division of Acute Care Surgery, Department of Surgery, Asan Medical Center, University of Ulsan College of Medicine

Introduction

❖ Dysphagia is highly prevalent in critically ill patients and is associated with aspiration, prolonged hospitalization, and poor functional outcomes.

❖ Early rehabilitation is essential, but swallowing rehabilitation in the ICU is inconsistently implemented due to lack of standardized protocols.

❖ Most patients receive rehabilitation after ICU discharge, potentially delaying intervention

❖ **Aim of the study**
- To develop a structured ICU-based swallowing rehabilitation algorithm
- To compare swallowing-related outcomes between patients receiving ICU-based intervention and those managed with conventional ward-based rehabilitation.

Methods

❖ Single-center, retrospective comparative cohort study

❖ **Study population**
- ICU-based group
  (Jan-Jul 2025, ICU-based rehabilitation)
- Ward-based group
  (Jan-Dec 2024, post-ICU rehabilitation)

❖ **Exclusion**
- No swallowing evaluation (transfer / death)
- ICU readmission

❖ **Variables**
- Baseline
  - Demographics, comorbidities, reasons for ICU admission, illness severity (APACHE IV), ICU/hospital length of stay
- Rehabilitation
  - Time to initiation, number of sessions
- Functional outcome
  - Dysphagia severity (VFSS or FEES)
  - Functional oral intake at discharge (ASHA NOMS)

Results

Figure 1. Algorithm for swallowing rehabilitation in intensive care unit

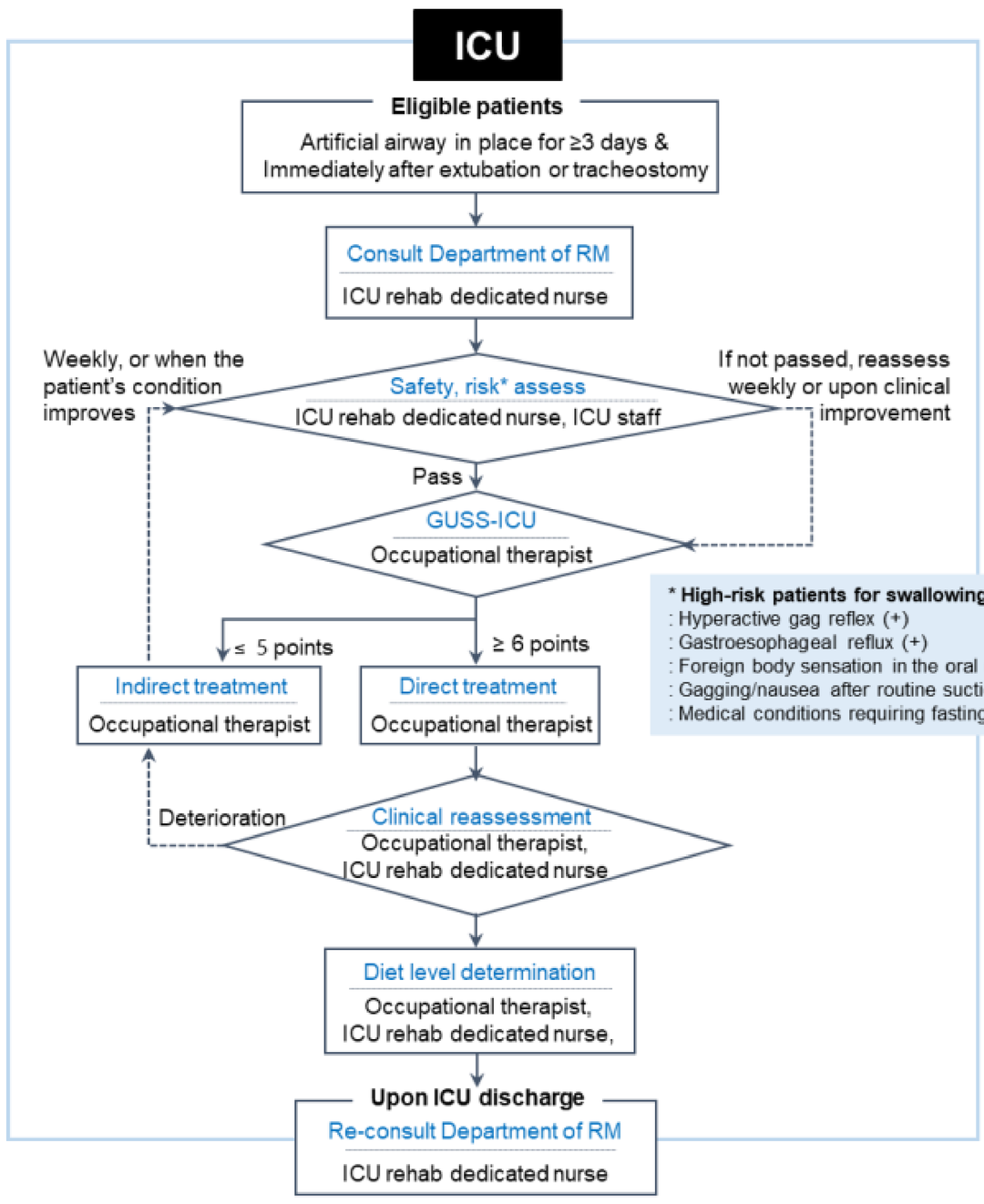

Table 1. Baseline characteristics according to study group (ICU-based swallowing rehabilitation vs. ward-based swallowing rehabilitation)

	ICU intervention group (n=35)	Ward intervention group (n=34)	*p*-value
Age	63.5 ± 15.1	64.9 ± 18.1	0.394
Sex			0.802
Male	24 (69%)	22 (65%)	
Female	11 (31%)	12 (35%)	
Reason for ICU admission			0.314
Postoperative care	9 (26%)	11 (32%)	
Respiratory failure	12 (34%)	5 (15%)	
Shock	8 (23%)	11 (32%)	
Trauma	6 (17%)	7 (21%)	
Comorbidities			
Hypertension	19 (54%)	23 (68%)	0.326
Diabetes mellitus	10 (29%)	12 (35%)	0.611
Cardiac disease	6 (17%)	7 (21%)	0.766
Chronic kidney disease	8 (23%)	5 (15%)	0.540
Chronic liver disease	3 (8.6%)	1 (2.9%)	0.614
Cerebrovascular disease	4 (11%)	3 (8.8%)	1.000
Cancer	13 (37%)	11 (32%)	0.802
APACHE IV	68.2 ± 21.0	69.6 ± 16.7	0.834
Hospital stay, days	70.8 ± 50.2	61.4 ± 37.8	0.601
ICU stay, days	30.0 ± 19.5	27.9 ± 20.1	0.509
Days from ICU admission to swallowing rehabilitation	12.6 ± 5.2	17.6 ± 66.6	< 0.001*
Sessions of swallowing rehabilitation	14.7 ± 13.1	9.0 ± 8.0	0.042*
Swallowing evaluation			0.334
FEES	22 (63%)	26 (76%)	
VFSS	13 (37%)	8 (24%)	
ICU activity scale			0.087
1-2	19 (54%)	10 (32%)	
3-6	16 (46%)	21 (68%)	

Values are presented as mean ± standard deviation or number (%). *p < 0.05. APACHE IV: acute physiology and chronic health evaluation IV, FEES: fiberoptic endoscopic evaluation of swallowing, ICU: intensive care unit, VFSS: videofluoroscopic swallowing studies.

Table 2. Swallowing outcomes according to study group

	ICU intervention group	Control	*p*-value
Dysphagia evaluation			0.036*
No or mild dysphagia	15 (43%)	6 (18%)	
Moderate or severe dysphagia	20 (57%)	28 (82%)	
Days from ICU admission to Dysphagia evaluation	33.8 ± 17.8	30.8 ± 20.9	0.293
ASHA-NOMS at discharge			0.592
1-3	8 (23%)	10 (29%)	
4-7	27 (77%)	24 (71%)	

Values are presented as mean ± standard deviation or number (%). *p < 0.05. ASHA-NOMS: American Speech-Language-Hearing Association National Outcome Measurement System, ICU: intensive care unit.

Conclusion

❖ Implementation of a structured ICU-based swallowing rehabilitation algorithm
→ **Earlier initiation & greater intensity of therapy** compared with conventional ward-based rehabilitation

❖ Structured ICU-based swallowing rehabilitation → improved instrumental swallowing outcomes, but no significant improvement in functional oral intake at discharge
- Suggesting multifactorial determinants of feeding in critically ill patients

❖ Future directions
- Larger prospective studies, long-term follow-up warranted