소아재활

발표일시 및 장소: 10 월 19 일(토) 10:20-10:30 Room D(5F)

OP4-1-3

Oral feeding challenges in children with tracheostomy can improve feeding outcome

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Objective

Although oral feeding of thicker fluid is reported to be beneficial compared to tube feeding, the oral feeding outcome without fluid restriction in children with tracheostomy is unreported. Our study compared exclusive tube feeding with attempted oral feeding regarding feeding outcome and the occurrence of pneumonia in children with aspiration who had tracheostomies.

Methods

Forty-seven children (age <7 years) with tracheostomies who demonstrated aspiration on thin fluid on videofluoroscopic swallowing study (VFSS) were included in this study. They were divided into an oral feeding (OF) and non-oral feeding (NOF) group at the time of VFSS. The main outcome was the feeding status (full oral feeding [FOF], partial oral feeding [POF], or NOF) 1 year after the initial VFSS. Secondary outcomes included the occurrence of pneumonia and days of hospitalization related to pulmonary complications within 1 year after the VFSS. Penetration-aspiration scale (PAS) and pharyngeal transit time (PTT) for the initial and follow-up VFSS were also obtained.

Results

Data were obtained for 47 children (median age: 49.75 months, interquartile range [IQR]: 24.08-79.42) who had tracheostomies and confirmed aspiration of fluid on initial VFSS between 2011 and 2017. Seventeen children were assigned to the NOF group (median age: 61.75 months, IQR: 31.58-99.04), and 30 children to the OF group (median age: 35.42 months, IQR: 22.58-73.29). The characteristics of each group at the time of the VFSS are presented in Table 1. Initial feeding status before VFSS was not different between the OF and NOF groups (p=0.152); however, there was a difference regarding the presence of myopathy/motor neuron disease comorbidities (p=0.041). The incidence of pneumonia and pulmonary inpatient days 1 year after the VFSS was not significantly different between both groups. The OF group showed a higher probability of oral feeding after 1 year (POF vs. NOF; OR 35.714, p=0.002, FOF vs NOF; OR 125, p=0.001). The initial PAS and follow-up PAS were significantly different only in the OF group (p=0.003). There was no difference in the initial PTT between the OF and NOF groups (p=0.153), but the OF group showed a shorter PTT in the follow-up VFSS (p=0.003).

Conclusions

In infants and young children with tracheostomy, oral feeding challenge improved the feeding outcome without an increased risk of pneumonia although aspiration was confirmed by VFSS. These results suggest that more aggressive oral feeding challenges could be attempted if aspirates can be removed by tracheostomy.

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Table 1. Characteristics of subjects at the time of the videofluoroscopic swallowing study

Characteristics	NOF group (n=17)	OF group (n=30)	Total (n=47)	p
Female sex, n (%)	4 (23.53)	14 (46.67)	18 (38.30)	0.117 *
Age, median (IQR), months	61.75 (31.58-99.04)	35.42 (22.58-73.29)	49.75 (24.08-79.42)	0.257 **
Comorbidities				
Myopathy/motor neuron disease	8 (47.06)	5 (16.67)	13 (27.66)	0.041 ***
Brain lesion	8 (47.06)	15 (50)	23 (48.94)	0.846 *
Gastrointestinal	2 (11.76)	6 (20)	8 (17.02)	0.692 ***
Cardiac	5 (29.41)	10 (33.33)	15 (31.91)	0.782 *
Otolaryngeal	3 (17.65)	11 (36.67)	14 (29.79)	0.171 *
Pulmonary	11 (64.71)	15 (50)	26 (55.32)	0.33 *
Initial feeding status, n (%)				0.152 ***
NOF	11 (64.71)	10 (33.33)	21 (44.68)	
Partial OF	4 (23.53)	13 (43.33)	17 (36.17)	
Full OF	2 (11.76)	7 (23.33)	9 (19.15)	
Initial PAS, median (IQR)	8 (8-8)	8 (8-8)	8 (8-8)	0.631 **

p-values calculated from * Chi-square test, ** Wilcoxon rank-sum test, or *** Fisher's exact test, where appropriate.
NOF, non-oral feeding; OF, oral feeding; IQR, interquartile range; PAS, penetration-aspiration scale.

Table 2. Outcome assessment 1 year after videofluoroscopic swallowing study according to each group

Characteristics	NOF group (n=17)	OF (n=30)	Total (n=47)	p
Feeding status after 1 year, n (%)				< 0.0001 *
NOF	11 (64.71)	1 (3.57)	12 (26.67)	
Partial OF	5 (29.41)	16 (57.14)	21 (46.67)	
Full OF	1 (5.88)	11 (39.29)	12 (26.67)	
Pneumonia presence within 1 year, n (%)	8 (47.06)	9 (30)	17 (36.17)	0.242 **
Pulmonary inpatient days within 1 year, mean (SD)	5 (8.3)	3.93 (7.59)	4.32 (7.78)	0.304 ***

p-values calculated from * Fisher's exact test, ** Chi-square test, and *** Wilcoxon rank-sum test
NOF, non-oral feeding; OF, oral feeding

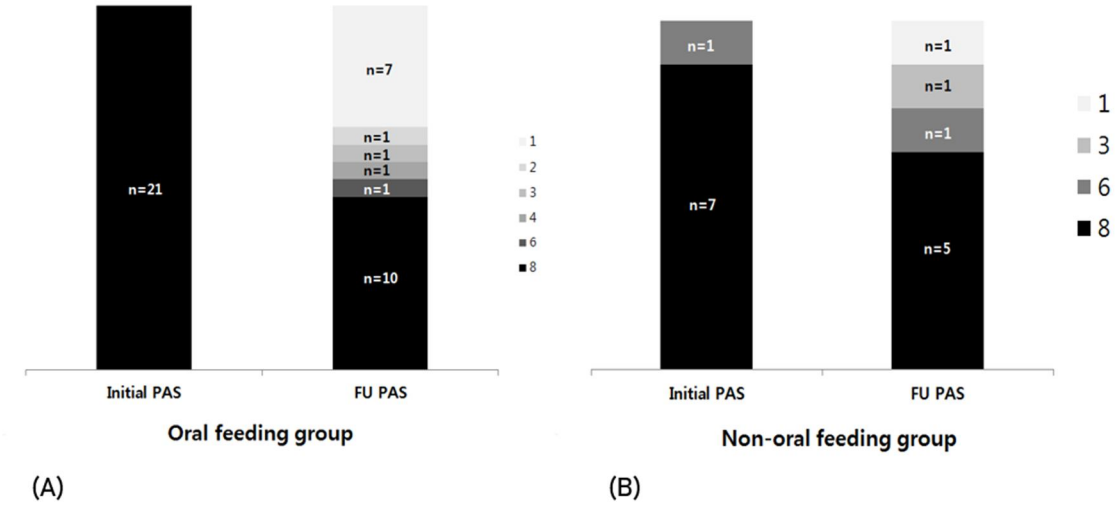

Figure 1. The change in the penetration-aspiration scale (PAS) between the first VFSS and follow-up VFSS. (A) Oral feeding group; (B) Non-oral feeding group. 1) Material does not enter the airway. 2) Material enters the airway, remains above the vocal folds, and is ejected from the airway. 3) Material enters the airway, remains above the vocal folds, and is not ejected from the airway. 4) Material enters the airway, contacts the vocal folds, and is ejected from the airway. 5) Material enters the airway, contacts the vocal folds, and is not ejected from the airway. 6) Material enters the airway, passes below the vocal folds, and is ejected into the larynx or out of the airway. 7) Material enters the airway, passes below the vocal folds, and is not ejected from the trachea despite effort. 8) Material enters the airway, passes below the vocal folds, and no effort is made to eject