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What Information Do Clinicians Use in Recommending Oral versus Nonoral Feeding in Oropharyngeal Dysphagic Patients?

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Abstract

There is little evidence regarding the type(s) of information clinicians use to make the recommendation for oral or nonoral feeding in patients with oropharyngeal dysphagia. This study represents a first step toward identifying data used by clinicians to make this recommendation and how clinical experience may affect the recommendation. Thirteen variables were considered critical in making the oral vs. nonoral decision by the 23 clinicians working in dysphagia. These variables were then used by the clinicians to independently recommend oral vs. nonoral feeding or partial oral with nonoral feeding for the 20 anonymous patients whose modified barium swallows were sent on a videotape to each clinician. Clinicians also received data on the 13 variables for each patient. Results of clinician agreement on the recommendation of full oral and nonoral only were quite high, as measured by Kappa statistics. In an analysis of which of the 13 criteria clinicians used in making their recommendations, amount of aspiration was the criterion with the highest frequency.

Recommendations for use of postures and maneuvers and the effect of clinician experience on these choices were also analyzed.

Keywords

Oral feeding; Nonoral feeding; Videofluoroscopy; Oropharyngeal dysphagia; Deglutition; Deglutition disorders

One of the most important recommendations made by clinicians caring for oropharyngeal dysphagic patients is whether the patient should receive oral nutrition. The recommendation is usually made by a speech-language pathologist based upon the results of a patient evaluation which may include a radiographic study, the modified barium swallow [1], an endoscopic study, and/or a bedside evaluation.

Despite the importance of this recommendation to most dysphagic patients and their quality of life, there is little evidence as to the type(s) of information clinicians use to make this or other recommendations [2]. Usually, information about frequency and amount of aspiration is used in this decision-making about introduction of oral intake [3–8]. Recently, the presence of penetration (entry of food or liquid into the airway and out again during a swallow viewed radiographically) has been used as a rationale for the nonoral feeding decision by some clinicians [6]. Other data are likely also used to make the nonoral feeding recommendation but have never been defined. No written guidelines exist for making this decision. This study represents a first step toward identifying the data used by clinicians to make the nonoral/oral recommendation for dysphagic patients. In this study, 23 clinicians were involved in identifying the information they typically used to make this recommendation. There were two parts to the study. Part I identified the important variables and Part II assessed these variables in the clinical setting. This project was approved by the Northwestern University Institutional Review Board.

Part I

In Part I several small groups of clinicians participated in one of four think-tank sessions to discuss the information they used in making the decision to recommend oral or nonoral nutrition. These discussions were held in 1-h telephone calls where clinicians were encouraged to talk freely about the types of information they utilized to make this recommendation. At the end of four 1-h telephone calls, there were a total of 46 variables identified by clinicians as variables they might use in making the recommendation. Table 1 presents these 46 variables. The list of 46 variables then was sent to the clinicians to rank the top ten variables that were most important in their decision-making with 1 being most important and 10 being least important. Based upon these judgments, the 13 variables that were considered most critical by the clinicians were identified (there were four variables ranked as 10 bringing the total to 13.) These were (1) amount of aspiration, (2) acuity of medical condition, (3) history of pneumonia, (4) alertness, (5) cough ability, (6) frequency of aspiration, (7) respiratory status, (8) patient wishes, (9) secretion management, (10) silent aspiration, (11) recovery prognosis, (12) ability to complete postures/maneuvers, and (13) diagnosis.

Part II

In Part II a videotape containing 20 videofluorographic studies of dysphagic patients, representing a range of severities, ages, and diagnoses, and several normal subjects were copied onto a master file and sent to each clinician along with a short description of each patient's medical history and etiology for aspiration or dysphagia. On average, these gave only the most basic information. Between the information shown on the videotape and the short discussion

of the patient, the clinician received data on the 13 variables for each patient. Each clinician was then asked to integrate all of this information to judge each of the 20 subjects as to whether they would recommend each individual become oral, partially oral with nonoral feeding, or nonoral. In this way, we could examine the level of agreement of the 23 clinicians in making the judgment of oral intake status and define the information they used to make their recommendation as done in normal clinical care. Part II data consisted of clinician characteristics and clinician assessments of the 20 patients. Clinicians were also asked what diet consistency(ies) applied if they recommended limited oral, whether dental status affected their decision, and whether they would recommend postures or maneuvers.

Statistical Methods

Descriptive statistics (mean, median, standard deviation, minimum, maximum) are provided for the clinician characteristics.

For the clinician assessments, frequencies and percents are given for all items. Multirater Kappa statistics [9] are given to determine the amount of agreement among the 23 clinicians. Kappa values near 0 indicate no agreement. Kappa values near 1 indicate agreement. Agreement is calculated by looking at the 23 clinician ratings for one patient and getting a measure of how different these ratings are. These difference measures are then totaled over the 20 patients. If there is a lot of difference in clinician ratings stratified by patient, then Kappa will be low. Conversely, if there is no difference in clinician ratings, Kappa will be high. Landis and Koch [10] relate strength of agreement to the Kappa statistic as follows:

Negative or zero: Poor or nonexistent

0.0–0.2: Slight

0.2–0.4: Fair

0.4–0.6: Moderate

0.6–0.8: Substantial

0.8–1.0: Almost perfect

In the tables giving the statistics for the clinician assessments, a Kappa statistic together with its qualitative strength rating is given for each category of response. Kappa statistics are corrected for chance agreement. In relating clinician characteristics to clinician assessments, the Mantel-Haenszel test [11] is used by calculating a statistic that is stratified by patient.

Results

Table 2 presents the characteristics of the 23 participating clinicians, including their years of experience, numbers of videofluorographic studies completed per month in the last year, and the number of years they have spent in treating dysphagic patients. The typical clinician in this study had a mean of 14.6 years of experience in swallowing and conducts an average of 20 radiographic studies per month.

When patient recommendations for oral or nonoral feeding as made by clinicians were examined, clinicians could answer with full oral, limited oral, nonoral only, could not decide, or did not answer. Clinicians were also asked to circle as many of the 13 criteria that they used in making each of their recommendations regarding oral vs. nonoral feeding for each of the 20 patients. We examined how frequently each criterion was used and whether there was agreement among clinicians in the use of the criteria (Table 3). The amount of aspiration was the criterion with the highest frequency used among clinicians. The next two most frequently used criteria were frequency of aspiration and medical diagnosis. The history of pneumonia

was used in 40% of the assessments with a rank of 4 among the 13 criteria and had the best agreement.

Table 4 presents the clinician agreement on recommendations. There was substantial agreement on the full oral or nonoral recommendation but not as much for limited oral. Dental status was not a factor in the recommendations. There was fair agreement on whether a posture or maneuver was recommended (Table 4).

Table 5 presents the frequency with which the various recommendations for use of specific postures and maneuvers were made and the order of their recommendation. A wide range of postures and maneuvers was suggested, although effortful swallow, head turn, chin tuck, super supraglottic swallow, supraglottic swallow, and repeat swallow were most often recommended. Recommendations are classified according to the order in which clinicians reported them (first response, second response, third response, fourth response).

Experience made a difference in clinician classification of oral status (Table 6). Full oral feeding was recommended at the same rate regardless of experience. However, more experienced clinicians recommended limited oral intake more often than nonoral and less experienced clinicians did the opposite. Recommendations regarding postures or maneuvers also varied with years of experience. More experienced clinicians tended to recommend a posture or maneuver less often than less experienced clinicians.

Discussion

This study provided no training for making the decision regarding oral, limited oral, or nonoral feeding. No profession involved in swallowing provides such regular training. Considering that there is little formal clinician training available regarding the criteria used to make the overall recommendation for oral, partial oral with nonoral, or nonoral feeding of a patient, the level of agreement between clinicians seen in this study is surprisingly good. However, when including the variable "limited oral," the experience of the clinicians became important in making the recommendation. Data indicate that less experienced clinicians (<15 years) are less likely to recommend limited oral compared with more experienced clinicians (>15 years or more). It appears that more experienced clinicians will tolerate oral intake in a patient who may aspirate a small amount consistently or exhibit a small amount of residue in the pharynx. This may result from the experienced clinician's observations that many such patients do not develop medical problems as a result. Interestingly, less experienced clinicians recommend more swallow maneuvers and postures than more experienced clinicians, perhaps because the less experienced clinicians have more difficulty selecting the most appropriate posture or maneuver for each patient or perhaps more experienced clinicians have found variable compliance by patients in using these techniques. More experienced clinicians may be more familiar with the risk of the possibility that patients sometimes become complacent about their swallowing and stop using a posture or maneuver at meal time because they think their swallowing has recovered. Less experienced clinicians may be more familiar with swallow maneuvers and postures from their more recent educational experiences than more experienced clinicians who may not have learned as much about using those treatment procedures.

This pilot study indicates the need for systematic training of clinicians in making oral, partial oral, or nonoral recommendation(s). Additional data are needed regarding the information that clinicians use in making this recommendation. These data may vary by medical diagnosis, age, gender, and other characteristics of the patient. The present study did not include enough patient examples to permit such an item-by-item analysis. Further research is also needed regarding data most important in predicting patient success with oral or partial oral feeding.

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Table 1

Patient characteristics initially identified as useful in making a nonoral feeding recommendation

Ability to complete postures/maneuver
Acuity of medical condition
Age
Alertness
Amount of aspiration
Amount of residue
Appetite
Cognition
Compliance
Cough ability
Dehydration
Demands of rehabilitation
Dental hygiene
Dental status
Desire to eat
Diagnosis
Discharge status
Efficiency
Endurance
Esophageal disorders/GERD
Family status
Family wishes
Follows directions
Frequency of aspiration
Gag reflex
History of pneumonia
History of respiratory infections
Independence in feeding
Length of dysphagia
Mobility (bedridden)
No alternative route available for nonoral feeding
Nutritional status (free albumin)
Odynophagia
Oromotor control
Other medical issues
Palliative service
Patient wishes
Presence of caregiver
Recovery prognosis
Respiratory status
Secretion management

Silent aspiration
Time after onset
Ventilator dependent
Voice/dysarthric
Weight

Table 2

Characteristics of the 23 clinicians participating in this study

Clinician characteristic	n	Mean	Median	SD	Min	Max
No. years since receiving CCC-SLP	23	16.1	18.8	10.5	1	35
No. MBS studies per month	23	20.0	17.5	15.2	0.0	60.0
No. MBS studies in average week	23	5.4	4.5	4.0	0.0	17.5
Percent time spent on dysphagic patients	23	57.8	50.0	21.8	20.0	90.0
Educational programs this year	23	1.1	1.0	1.2	0.0	4.0
Educational programs past 3 years	23	3.1	3.0	2.8	0.0	10.0
Educational programs past 5 years	23	5.0	5.0	5.0	0.0	20.0
No. years doing swallowing	23	14.6	15.0	9.0	1.5	30.0
Percent time doing swallowing in acute care setting	23	37.6	30.0	36.8	0.0	95.0
Percent time doing swallowing in rehabilitation setting	23	12.6	5.0	26.8	0.0	98.0
Of the patients you see for MBS who aspirate consistently, what percent of the time do you introduce treatment strategies during the MBS before you recommend oral or nonoral feeding?	23	84.5	90.0	21.8	0.0	100.0
For those with significant pulmonary problems, how many strategies would you introduce?	23	2.7	3.0	1.1	0.0	5.0
Of the patients you see for MBS who have 50% or more of the bolus remaining in the pharynx after the first swallow, what percent of the time do you introduce treatment strategies during the MBS before you recommend oral or nonoral feeding?	23	90.3	95.0	20.5	0.0	100.0
For those with significant pulmonary problems, how many strategies would you introduce?	23	2.6	2.0	1.2	0.0	5.0

Table 3

The 13 variables most frequently used by clinicians in making the oral/nonoral/limited oral recommendation

Frequency rank	Criterion	Frequency (out of 460)	Frequency (%)	Kappa (SE = 0.014)	Agreement rank
1	Amount of aspiration	366	79.6%	0.008	12
2	Frequency of aspiration	324	70.4%	0.059	8
3	Diagnosis	205	44.6%	0.011	11
4	History of pneumonia	186	40.4%	0.243	1
5	Ability to complete postures	163	35.4%	0.228	2
6	Cough ability	161	35.0%	0.137	5
7	Severity of medical condition	147	32.0%	0.153	4
8	Recovery prognosis	123	26.7%	0.063	7
9	Respiratory status	104	22.6%	0.076	6
10	Silent aspiration	103	22.4%	0.222	3
11	Patient wishes	99	21.5%	0.056	9
12	Alertness	98	21.3%	0.038	10
13	Secretion management	54	11.7%	-0.001	13

SE = standard error

Table 4

Clinician recommendations for oral/nonoral/limited oral, use of dental status, and whether a posture or maneuver was used. The specific questions asked of each clinician and their responses are summarized below

Question 1: Which of the following would you recommend?				
Recommendation	N	%	Kappa	Strength
1 = Full oral	264	57%	0.72	Substantial
2 = Limited oral	70	15%	0.17	Slight
3 = Nonoral only	119	26%	0.66	Substantial
0, 4 = No answer/decision	8	2%	0.00	Nonexistent
Total	460	100%		

Question 2: If limited oral, which diet applies?

	N	Kappa	Strength
Thin liquids	43	0.05	Slight
Nectar liquids	70	0.28	Fair
Honey liquids	45	0.14	Slight
Pureed	40	0.13	Slight
Mechanically soft	49	0.19	Slight
Mechanically altered	19	0.09	Slight
Other	31	0.03 ^a	Slight

Question 3: Is your decision based on dental status?

	N	%	Kappa	Strength
1 = No:	413	90.0%	0.03	Slight
2 = Yes:	24	5.2%	0.04	Slight
3 = Missing	23	4.8%	-0.01	Nonexistent
Total	460	100.0%		

Question 4: Posture or maneuver recommended?

	N	%	Kappa	Strength
1 = No:	231	50.2%	0.27	Fair
2 = Yes: ^b	141	30.7%	0.34	Fair
3 or 4 = Missing or no decision	88	19.1%	0.19	Slight
Total	460	100.0%		

^a Kappa for selecting "Other" or not. Not the kappa for which "Other" is recommended

^b If yes, indicate which posture or maneuver (up to 4 responses allowed)

Table 5

Frequency of recommendation to use specific swallow postures and maneuvers

	Frequency of use
First response	
4 = effortful swallow	31
2 = chin tuck (also chin down, head down)	24
7 = head turn	24
14 = SSGS (super supraglottic swallow)	23
12 = SGS (supraglottic swallow; also breath hold)	16
11 = repeat swallow (double swallow, multiple swallow, dry swallow)	12
13 = small sips/small amounts	4
9 = Mendelsohn maneuver	3
1 = back-lying	2
5 = hard swallow	2
6 = head back	2
8 = liquid wash/liquid assist/alternate liquids	2
3 = clearing cough	1
10 = Passy Muir valve use	1
15 = throat clear	0
16 = tongue hold	0
Second response	
4 = effortful swallow	13
11 = repeat swallow (double swallow, multiple swallow, dry swallow)	11
9 = Mendelsohn maneuver	8
14 = SSGS (super supraglottic swallow)	6
8 = liquid wash/liquid assist/alternate liquids	5
13 = small sips/small amounts	5
2 = chin tuck (also chin down, head down)	3
12 = SGS (supraglottic swallow; also breath hold)	3
15 = throat clear	1
1 = back-lying	0
3 = clearing cough	0
5 = hard swallow	0
6 = head back	0
7 = head turn	0
10 = Passy Muir valve use	0
16 = tongue hold	0
Third response	
4 = effortful swallow	4
8 = liquid wash/liquid assist/alternate liquids	4
11 = repeat swallow (double swallow, multiple swallow, dry swallow)	3
12 = SGS (supraglottic swallow; also breath hold)	3
9 = Mendelsohn maneuver	2

	Frequency of use
16 = tongue hold	1
1 = back-lying	0
2 = chin tuck (also chin down, head down)	0
3 = clearing cough	0
5 = hard swallow	0
6 = head back	0
7 = head turn	0
10 = Passy Muir valve use	0
13 = small sips/small amounts	0
14 = SSGS (super supraglottic swallow)	0
15 = throat clear	0
Fourth response	
2 = chin tuck (also chin down, head down)	1
8 = liquid wash/liquid assist/alternate liquids	1
9 = Mendelsohn maneuver	1
11 = repeat swallow (double swallow, multiple swallow, dry swallow)	1
1 = back-lying	0
3 = clearing cough	0
4 = effortful swallow	0
5 = hard swallow	0
6 = head back	0
7 = head turn	0
10 = Passy Muir valve use	0
12 = SGS (supraglottic swallow; also breath hold)	0
13 = small sips/small amounts	0
14 = SSGS (super supraglottic swallow)	0
15 = throat clear	0
16 = tongue hold	0

Table 6

Correlations between clinician characteristics and clinician assessments

(a) Does recommendation depend on the number of years since certification? Yes ^a				
	No. clinicians	No. assessments	Full	Limited
< 15 years	11	219 (100%)	130 (59%)	25 (11%)
> 15 years	12	234 (100%)	134 (57%)	45 (19%)
				55 (24%)

(b) Does recommendation of a posture or maneuver depend on the number of years since certification? (Analysis limited to 372 assessments where question 4 was answered). Yes ^b				
	No. clinicians	No. assessments	No	Yes
<15 years	11	189 (100%)	59 (31%)	130 (69%)
>15 years	12	183 (100%)	82 (45%)	101 (55%)

^a $p = 0.024$, indicating that more experienced clinicians tend to rate the patient as partial oral with nonoral instead of nonoral more often than clinicians with less than 15 years' experience. Both groups recommend patients to be fully oral at the same rate

^b $p = 0.001$, indicating that more experienced clinicians tend to recommend a posture or maneuver less frequently (55%) than clinicians with less than 15 years experience (69%)