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Occupational Therapy's Role in Multidisciplinary Dysphagia Management: A Case Study

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Abstract

Occupational therapists (OTs) are involved in eating, feeding, and swallowing across the lifespan. As a member of the medical team, OTs may address oral cares, promote independence with eating, and evaluate and treat impairments related to eating and swallowing to optimize client/patient satisfaction and safety with mealtime occupations. The aim of the case study is to describe an example of OTs' role evaluating and treating dysphagia within the acute care setting as well as to promote quality interdisciplinary collaboration and patient centered care. The patient's medical records were retrospectively reviewed to obtain information related to their hospital stay. This case exemplifies how an occupational therapist's interdisciplinary collaboration ultimately avoids a percutaneous endoscopic gastrostomy (PEG) tube for alternate nutrition. This case highlights OTs' role at both the entry level and advanced level, within a multidisciplinary structure of care for dysphagia management where collaboration leads to positive outcomes for the patient.

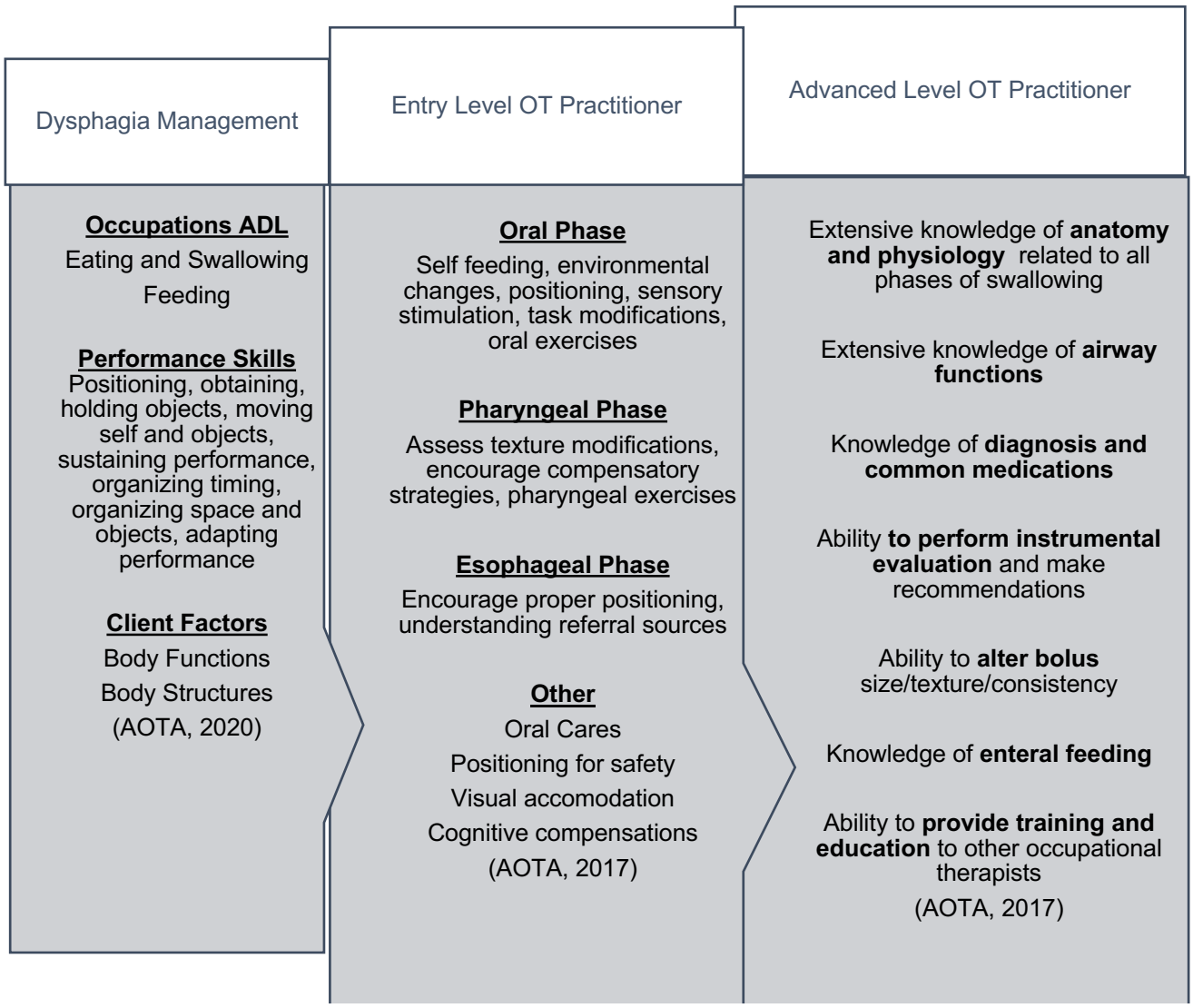
Holistic patient centered care can benefit from interprofessional collaboration to ensure the patients' desires are at the forefront of treatment planning. While not always the primary therapists treating dysphagia, occupational therapists (OTs) are involved in eating, feeding, and swallowing across the lifespan. Dysphagia is a medical term that refers to difficulty swallowing. OTs have several professional resources which help to identify and delineate the roles for dysphagia management and treatment (Figure 1). Official documents from the American Occupational Therapy Association (AOTA) have confirmed that dysphagia evaluation and treatment are within the OT scope of practice (AOTA 2017; AOTA 2020).

The AOTA (2017) official guidance document delineates the scope of practice for entry and advanced level practitioners. Entry level practitioner should understand swallowing processes and evaluation methods to develop and treat dysphagia appropriately. Advanced level practitioners with additional training that have demonstrated competency, can complete evaluations (both clinical bedside and instrumental) to develop and implement a plan of care accordingly (AOTA, 2017). Furthermore, the Occupational Therapy Practice Framework (OTPF) *(4th edition)* is utilized to guide therapists in identifying various constructs to consider within OT practice (AOTA, 2020). The OTPF identifies feeding, eating, and swallowing as activities of daily living (ADL). Additionally, there are various performance skills and client factors that should be considered when addressing this critical ADL. OTs are trained to grade activities to find that "just-right challenge" to bolster participation and therapeutic effects. Additionally, quality of life (QOL) can significantly impact changes to diet and swallowing function (Kim et al., 2020). Addressing all components holistically

during a mealtime ensures occupation is safe and enjoyable to the individual for optimal quality of life (Hasselkus, 2006). Zheng et al. (2014) developed a multidisciplinary rehabilitation team to offer physical, social, and psychological support to patients with dysphagia. The intervention group had statistically significant positive outcomes, with improvement in swallowing and in the number of participants with complete recovery. OTs play an integral part of the interprofessional team to efficiently and effectively improve dysphagia outcomes and satisfaction.

Figure 1

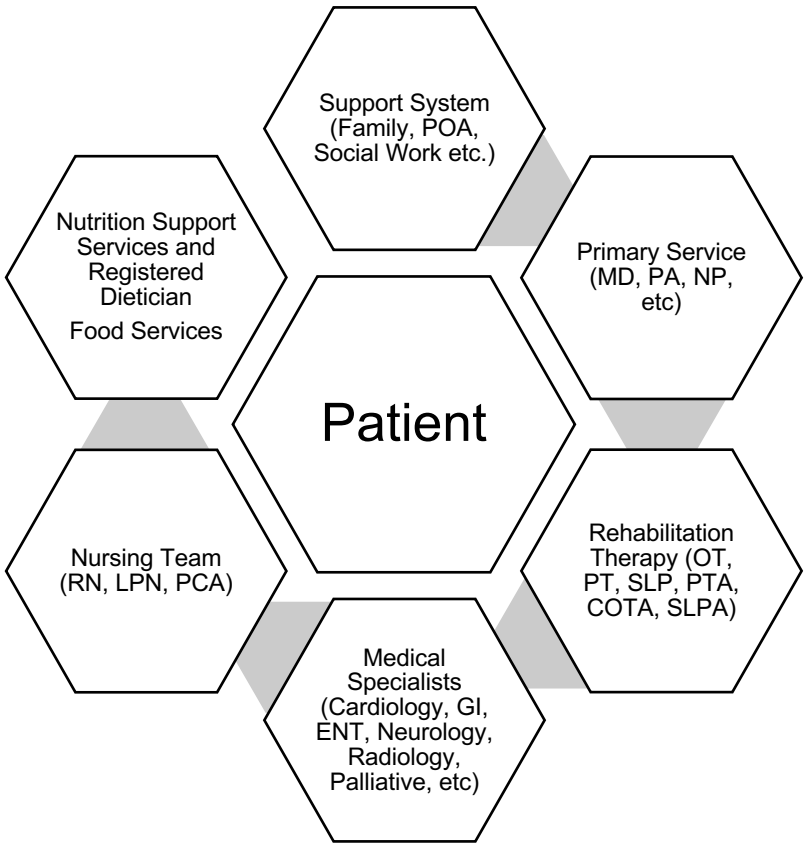
Dysphagia Management as an Entry Level to Advanced Level Practice



Dysphagia management involves various interventions focused on rehabilitation and task modification through compensatory strategies with the main goal to prevent complications of aspiration and/or choking while optimizing quality of life. Patient centered teams extend beyond the patient and any personal support system to include their primary doctors and specialists, registered nurses (RN), rehabilitation therapists (OT, physical therapy (PT), speech language pathologists [SLP]), nutrition teams (registered dieticians [RD]), and other medical professionals. Keeping the patient's goals at the center of care helps to keep the team aligned with patient desired outcomes (Figure 2).

Figure 2

Interdisciplinary Care Team



Multidisciplinary team collaboration that centers around the patient is the best way to facilitate better outcomes (Taylor et al., 2014). Patients that make informed decisions surrounding their care can help to facilitate medical decisions that align with their goals and may ultimately bring clarity and reduce unnecessary medical treatment and intervention. Lack of this collaboration, awareness of dysphagia prevalence, risk factors, and the potential impacts on QOL can lead to costly and preventable adverse events.

Medical consequences linked to aspiration include: increased length of stay, cost of hospitalization, respiratory system damage, infection, and even death (Plowman et al, 2021). Hunter and Rhodus (2020) reported interventions that prevent adverse events in post-acute settings include management of dysphagia. Treatment within the acute phase can mitigate dehydration, malnutrition, and pneumonia (Johnson et al, 2014). OTs at any level are skilled in analyzing and intervening in a variety of factors that affect safety during oral intake, including cognition, vision, ability to self-feed and complete oral cares effectively. Advanced interventions could include specific oral and pharyngeal swallowing exercises, swallowing compensations, and diet modification if necessary. However, the most achievable and critical intervention at any level of expertise is awareness and involvement in the interdisciplinary team. OTs are skilled in activity analysis and can appropriately grade a mealtime activity with physical or cognitive interventions and communicate to the team to adjust as appropriate.

Research on the prevalence of dysphagia within the acute care setting varies depending on the diagnosis and research methodology. This case study explores a

patient experiencing dysphagia following a cardiovascular procedure. Cardiac procedures often have associated independent risk factors related to incidence of dysphagia related to proximity to the vagus nerve branches, prolonged intubation, transesophageal echocardiogram (TEE), potential needs for multiple procedures, and potential for existing weakness based on cardiac conditions (Daly et al., 2016; Bowles & Puntil-Sheltman, 2016; Kagaya et al., 2011; Plowman et al., 2021; Wakabayashi et al., 2017). Intubation during cardiac procedures in addition to other indications for intubation can also pose a risk for impairments to vocal cords which can impact swallowing (Barker et al., 2009; Kagaya et al., 2011). Specific risk factors of developing dysphagia following cardiac procedures were identified in a study by Plowman et. al (2021) include: Pre-operative New York Heart Association Classification of three or higher, re-operative procedure, intubation lasting more than 27 hours, TEE images captured greater than 110, and endo tracheal tube (ETT) size of 8.0 or greater used during intubation. The risk of silent aspiration in conjunction with these risk factors call for additional instrumentation to identify dysphagia, in efforts to combat the potentially avoidable negative impacts. Outside of the medical consequences, there can be an incredible burden on patients and caregivers related to maintenance and management of their condition.

Aim

The aim of this case study was to describe occupational therapy's role in dysphagia management within the acute care setting. This specific case study provides an example of how quality collaboration and patient centered care resulted in positive functional and swallow-based outcomes for a patient experiencing dysphagia following

cardiac procedures. The patient described in the case study was provided occupational therapy services that were self-care and dysphagia focused. All services rendered were completed in accordance with relevant laws, institutional regulations, and practicing governance recommendations.

Methods

A retrospective chart review was completed to assess the patient's medical course, hospital stay, progress with basic self-cares (facilitated by OT), OT specific dysphagia evaluation timing, OT dysphagia evaluation outcomes, treatment sessions, and plan of care during hospital stay during their inpatient hospitalization. The medical institution's institutional review board (IRB) determined that a case study is exempt from approval according to their existing regulations. The patient provided consent to being part of a case study. Additionally, appropriate consent was obtained for a release of information through the institution's compliance office.

Brief Medical History and Course of Hospitalization

The patient was a 72-year-old retired male with a good family support system who previously lived independently in a house with his wife. In his free time, he enjoyed performing in community theater. He had no prior history of dysphagia and previously ate a regular diet. He was admitted following an outpatient appointment which resulted in the discovery of a Stanford Type A dissection and an asymptomatic aberrant right subclavian artery Kommerell Diverticulum. He initially underwent right carotid to subclavian artery bypass, followed by aortic root replacement, resection and replacement of ascending aorta, and total aortic arch replacement the following day. During the initial procedure he was intubated using an endotracheal tube (ETT) of 8.0

mm. For the procedures on the following day, he was intubated for a total of 3 days with an ETT size of 8.0mm. Following his procedures, he was admitted to the intensive care unit (ICU) for several days. Functional OT was consulted the day he was extubated. At that time, he required total assist for upper and lower body dressing, bathing, toileting, and oral cares.

OT Dysphagia team was consulted the next day, following extubation. He presented with mild delirium, which resulted in concerns related to safety with oral intake. Due to the nature of his medical procedures, there were identified risk factors for dysphagia and aspiration such as prolonged intubation (>27 hours), ETT size (8.0 mm), multiple TEEs with 100+ images captured, weakness, and decreased activity tolerance (Plowman et. al. 2021). At the time of the clinical bedside evaluation of swallowing, he required 6 liters of oxygen delivered through nasal cannula. He presented with a weak voice, cough, and throat clear. He was alert, but fatigued, and demonstrated grossly intact but weak oral motor function. Brief oral trials of ice chips and sips of honey thick liquids both resulted in weak cough and throat clear. An overview of his diet progression and general POC is included in Figure 3. It was recommended that he remain NPO (nil per os, Latin for nothing through the mouth) until a Video Fluoroscopic Swallow Study (VFSS) could be tolerated.

Participation in a VFSS would require activity tolerance to remain upright for the study and follow instructions to take sips/drinks and bites of foods. Until then, the POC focused on basic exercises including effortful swallowing with ice chips following thorough oral cares, and tongue strengthening exercises completed when clinically indicated based on their level of alertness and ability to participate. Otorhinolaryngology

was consulted following the clinical bedside evaluation to assess vocal cord function and potential trauma following intubation. They utilized a flexible fiberoptic scope to assess his upper airway. During the assessment, they revealed vocal cord impairment resulting in incomplete glottic closure and witnessed aspiration of secretions. Vocal cord injection was initially deferred with a plan to re-assess as the patient progressed, if necessary.

The patient was transferred to the progressive care unit (PCU) after spending 9 days in the ICU. OT dysphagia continued to work with patient until he was ready to participate in a VFSS. During this timeframe he was motivated to continue working with the dysphagia therapist, but he was concerned about aspirating his secretions and was fearful of the unknown related to eating. Seven days after his initial bedside evaluation, he was alert, demonstrated improved activity tolerance and participation in therapy sessions, and was agreeable to completing a VFSS. Initial VFSS resulted in continued recommendations for NPO diet, diligent oral cares to combat risk for aspiration pneumonia, continued exercises, and additional plan to begin working on task based swallowing exercises through therapeutic feeds of pureed consistency. Through continued work with PT, OT, and his dysphagia OT, the swallow exercise plan was graded as his functional status and endurance improved. The use of an online exercise program application with family support and training allowed for the patient to work on exercises outside of therapy times. His family provided consistent emotional support as well as provided comfort and encouragement through assistance with exercises, daily visits, and facilitating the patient's leisure activities (i.e., listening to music). Music and singing became part of his day, which appeared to be a highlight for him and his family.

Over the course of his hospital stay, the patient progressed from a global physical standpoint as he worked with OT on ADL's and PT on mobility. From a swallowing and oral motor standpoint, his endurance began to improve. Careful use of therapeutic feeds became well tolerated with the patient demonstrating less fear, more independence with oral cares, and increased motivation for eventual diet initiation. Due to his NPO status, primary medical service collaborated on the potential need for alternative source of nutrition via percutaneous endoscopic gastronomy (PEG) tube placement based on his dysphagia. Primary barriers to oral nutrition included significant fatigue, weakness, and semi-regular nausea which made participation and desire to eat difficult at times. Following discussion with the patient and dysphagia OT the primary medical service agreed to re-assess the need for a PEG following repeat VFSS to see if there was any significant clinical improvement.

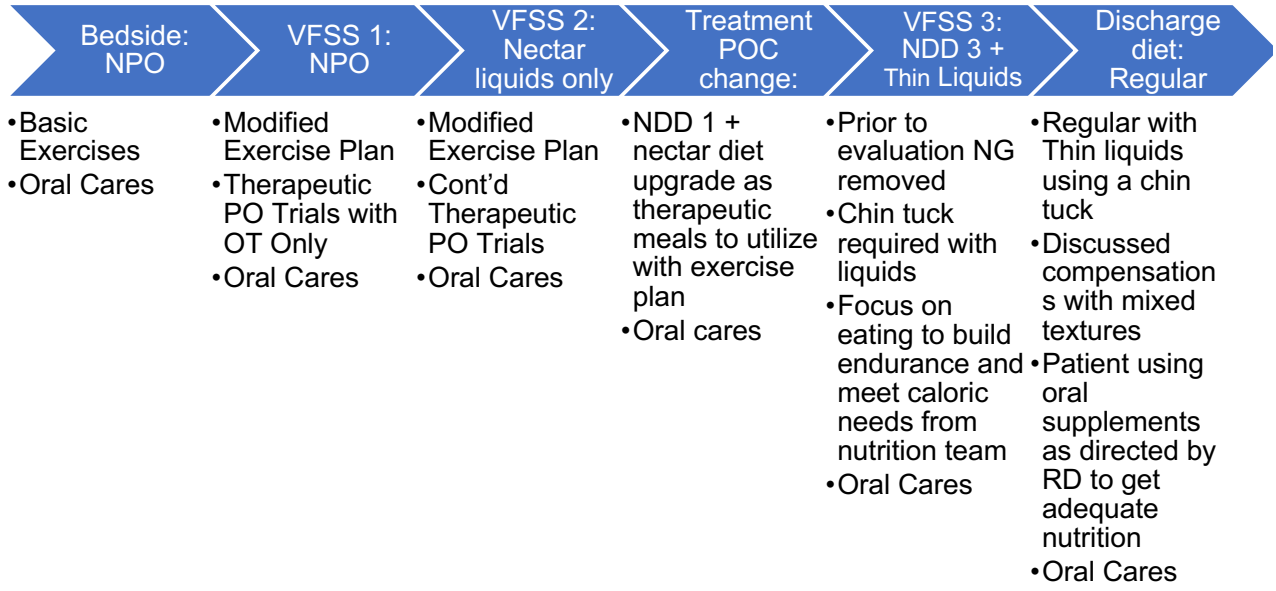
A second VFSS revealed improvements, which allowed for occupational therapy to progress his diet to nectar thick liquid in effort to increase endurance and strength with the continued used of task-based exercises. Throughout treatment sessions his endurance and strength improved resulting in additional repetitions of exercises and therapeutic feeds. Additional collaboration was done with the medical team to begin a pureed diet several days later as the patient's tolerance and comfort in feeding improved. This was in line with the patient's temporary goals to continue addressing swallowing function with the aim of improving tolerance of oral intake in efforts to wean from their nasal gastric (NG) tube. Based on his time in the hospital and improved status, the topic of potential PEG placement was brought up again due to limited oral intake. Through conversation with the primary medical service, the nutrition team, and

the patient, OT advocated for an additional VFSS based on his improvements at the bedside.

A final VFSS was completed the following week resulting in improvements to all previously impaired components of swallowing. Nausea remained a large barrier to intake. OT dysphagia collaborated with the team, patient, and RN to discuss the possibility of removing the NG prior to evaluation. The patient remained motivated but was concerned with the potential of a PEG. While the patient was nervous to have the NG removed due to fatigue and nausea, he ultimately decided to have it removed with the understanding that if adequate oral nutrition could not be achieved, it could be replaced. Following the VFFS he was able to begin an oral diet of national dysphagia level 3 diet (advanced) with thin/regular liquids with compensatory techniques that were observed to prevent aspiration. Over the coming days his nausea subsided, and he was able to achieve adequate caloric intake, with oral supplements monitored by a registered dietician. OT dysphagia provided education on using energy conservation techniques, having smaller meals more frequently, and focusing on task-based eating/exercises over his non-bolus-related swallowing exercises. Once he was more confident in his abilities to maintain sufficient intake with this diet, he was agreeable to advance to a regular diet with thin liquids utilizing a chin tuck within a matter of days.

Figure 3

Diet Progression and Plan of Care



Outcome Measures

General diet progression was tracked throughout the hospitalization with goals to return to his baseline diet of regular with thin liquids. The following scales were utilized to help characterize the impact of his swallowing impairments: aspiration penetration scale (APS), the functional oral intake scale (FOIS), and swallowing performance status scale (SPSS). The APS is a an 8-point scale that is used to characterize airway invasion of various consistencies during VFSS evaluation (Rosenbek et al., 1996). The FOIS is a 7-point ordinal scale that assesses functional oral intake based on their recommended diet (Crary et al., 2005). The SPSS is a 7-point scale utilized as a measure of swallowing function characterized by the severity of the impairment, need for modified diet, and aspiration witnessed on the evaluation (Barry et al., 2014).

Table 1

Video Fluoroscopy Outcome Measures Across all Studies

Video Fluoroscopic Swallow Study **Outcome Measures**		1st	2nd	3rd	D/C
Aspiration Penetration Scale (Rosenbek et al., 1996) 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	Thin	6	5	2	-
	Nectar	6	2	1	-
	Honey	6	5	-	-
	Puree	3	1	1	-
	Solid	-	-	1	-
Functional Oral Intake Scale (Crary et al., 2005) 1. No oral intake 2. Tube dependent with minimal/inconsistent oral intake 3. Tube supplements with consistent oral intake 4. Total oral intake of a single consistency 5. Total oral intake of multiple consistencies requiring special preparation 6. Total oral intake with no special preparation, but must avoid specific foods or liquid item 7. Total oral intake with no restrictions		1	2	5	7
Swallow Performance Status Scale (Barry et al., 2014) 1. Normal swallow 2. Within functional limits: abnormal oral or pharyngeal stage; able to eat regular diet without modifications or swallowing precautions 3. Mild swallowing impairment: mild dysfunction in oral or pharyngeal stage; requires modified diet without need for therapeutic swallowing precautions 4. Mild-moderate impairment: with need for therapeutic precautions: mild dysfunction in oral and pharyngeal stage; requires modified diet and therapeutic precautions to minimize aspiration risk 5. Moderate impairment: moderate dysfunction in oral or pharyngeal stage; aspiration noted on examination; required modified diet and swallowing precautions to minimize the risk of aspiration 6. Moderate-severe impairment requires supplemental enteral feeding support: moderate dysfunction in oral or pharyngeal stage; aspiration noted on examination; requires modified diet and swallowing precautions to minimize the risk of aspiration; needs supplemental feeding support 7. Severe impairment: severe dysfunction with significant aspiration or inadequate oropharyngeal transit to esophagus; NPO; requires primary enteral feeding support		7	6	4	2

Results

The patient demonstrated functional gains and physiologic change with respect to oral intake as he progressed throughout his hospital stay, eventually leading to a return to his baseline diet with the use of some compensatory techniques (Figure 3). A side-by-side comparison of the APS, FOIS, and SPSS are included in Table 1 to demonstrate the progression of his swallowing improvement. During the initial VFSS, aspiration was observed with thin, nectar, and honey and penetration was observed with puree. On the final VFSS there was no aspiration captured with any material and penetration was observed with thin liquids which resolved with a chin tuck. Overall, his FOIS score progressed from “1. No oral intake”, to “7. Total oral intake”. His SPSS progressed from a “7. Severe impairment” to “2. Within functional limits”, given the use of a chin tuck as a precaution to safely consume thin liquids. The patient returned to his baseline diet consistencies and adequately maintained oral nutrition with supplements directed by the RD, avoiding unnecessary PEG placement.

Discussion

This case study demonstrates how both entry and advanced level OTs can have a profound impact on preventing aspiration through safe swallowing practices, rehabilitation, quality oral cares, and holistic assessment of the client and their environment to grade tasks appropriately. For occupational therapists, analyzing performance deficits in feeding, swallowing and/or eating, understanding the relationship between dysphagia, posture, breathing and positioning aides in selecting appropriate assessment tools and interventions (Dismukes et al., 2018). In addition to the direct treatment of swallowing deficits practitioners can focus on grooming tasks,

such as oral cares, to prevent aspiration, which has been identified as the only modifiable risk factor that applies patients (Baker & Quinn, 2018). Hospital Acquired Pneumonia is tied with surgical site infection for the #1 hospital-acquired infection in the U.S. (Magill et al., 2018). A stringent oral hygiene program is essential for patients at risk of aspiration given that the mouth is the most common location of bacteria.

This case study builds on foundational occupational therapy knowledge and allows for expansion of OT's role within a multidisciplinary team specific to evaluating and managing dysphagia. The OT provided clinical and instrumental evaluation of dysphagia in efforts to identify swallowing deficits in efforts to help mitigate risk of silent aspiration risks following cardiac surgery. Next, through the collaborative process of treatment planning and re-evaluation, the patient was able to advocate for his goals with facilitated conversations between the multidisciplinary team, the patient, and their family. This collaboration highlighted an example of effective use of swallowing exercises in conjunction with task based swallowing activities resulting in overall improvement in swallow function. Most importantly, it provides an example of a patient's role in supporting his quality of life and avoiding unnecessary medical procedures, such as a PEG placement.

Limitations

The retrospective design could be considered a limitation since additional outcome measures to capture patient perspective during their hospitalization experience were not completed, which could have bias. This case study was completed with a single subject design lending limited ability to generalize intervention or specific results

to larger populations. More specifically, this case was completed in the acute care setting without additional data collected along the respective continuum of care.

Future research could assess how medical teams best collaborate amongst rehabilitation sub-specialties of various experience or training levels to determine methods to strengthen team member roles and responsibilities. Furthermore, additional research should center the client/patient experience to assess patient assessment of care team collaboration with respect to positive patient desired outcomes and overall quality of life. Finally, additional research could explore the relationship between OT theories, frames of reference, and model of practice that align with client centered care when evaluating and treating patients with dysphagia within acute care.

Conclusion

In addition to traditional intervention for dysphagia which often is done by an advanced level practitioner, elements of dysphagia management may be addressed by occupational therapy practitioners of all levels of practice experience in acute care. All patients can benefit from interventions that support the reduction of aspiration and/or mitigate risk of aspiration pneumonia. Every OT should include a comprehensive oral hygiene program in their therapy routine. Additionally, all practitioners may advocate for a role within this area of acute practice. Occupational therapy practitioners have a role in collaborating with patients in acute care to ensure successful eating and swallowing throughout their hospital stay. Addressing swallowing and eating may be addressed in conjunction with basic self-care and discharge planning sessions during a patient's hospitalization.

Practice Implications

- Practitioners have the unique skill of identifying and assessing the relationship between the patient's desires to eat and quality of life, which may help clients enhance their participation in meaningful occupations surrounding feeding and eating.
- Client centered goals within the medical team guides appropriate dysphagia interventions to aid in avoiding duplicate or unnecessary medical procedures and potential functional risks
- Practitioners have the foundational knowledge and skills to aid in mitigating risks of aspiration and aspiration pneumonia in acute care.
- Examples of how occupational therapy practitioners can contribute to dysphagia management may help clarify the expectations and responsibilities regarding dysphagia prevention, management, and assessment in acute care setting.

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