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# Postural and Spinal Disorders: Do They Affect the Normal Swallow?

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POSTURAL AND SPINAL DISORDERS:  
DO THEY AFFECT THE NORMAL SWALLOW?

by

Jenny Mae Howard

B.S., Southern Illinois University, 2009

A Research Paper  
Submitted in Partial Fulfillment of the Requirements for the  
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POSTURAL AND SPINAL DISORDERS: DO THEY AFFECT THE NORMAL  
SWALLOW?

By  
Jenny Mae Howard

A Research paper Submitted in Partial  
Fulfillment of the Requirements  
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## Postural and Spine Disorders: Do They Affect the Normal Swallow?

Though one may not usually think of posture and the spine as a condition of worry to a speech-language pathologist, it may actually have a significant effect on swallowing and dysphagia, “impaired swallowing” (Schulze-Delrieu & Miller, 1996, p. 125); therefore, making it a growing concern in the field. Because it is not researched a great deal, it is an area where therapists may be making diagnostic and treatment errors. If it is seen that posture has a negative effect on swallowing, therapists can better individualize treatment for the patients. Posture and spinal disorders and deficits could affect the pediatric and geriatric population. This means that a number of different posture disorders such as kyphosis, lordosis, scoliosis, and others, could be causing dysphagia or contributing to its symptoms. If it is found that postural/spinal deficits do negatively affect swallowing, treatment can become more focused on not only the dysphagia, but also the posture problem itself. I am studying postural and spinal deficits and swallowing because I want to understand the repercussions postural and spinal deficits may have on the normal swallow.

### **Dysphagia and the Normal Swallow at a Glance**

So, what is dysphagia? Dysphagia is an impairment of swallowing that can greatly impact a person’s quality of life (Schulze-Delrieu & Miller, 1996). “Swallowing may be impaired because of mechanical impingement on the bolus passage, lack of salivary secretions, weakness in the muscular structures propelling the bolus, or dysfunction of the neuronal networks coordinating swallowing” (Schulze-Delrieu & Miller, 1996, p. 125). As it can be seen, there are many different reasons that dysphagia

may occur, making treatment plans dependent upon the specific reason for the impairment.

The normal swallow is quite an amazing process. To fully understand an abnormal swallow and its surroundings, a person needs to thoroughly examine normal deglutition. The normal swallow consists of certain areas inside the body such as the oral cavity or the mouth, pharynx, larynx or the voice box, and esophagus. The tongue is very important in swallowing because it transfers the food from the anterior section of the oral cavity to the posterior section of the oral cavity and down to the pharyngeal cavity. As the bolus passes through the pharyngeal cavity, it has opportunities to become lodged in the valleculae or the pyriform sinuses which are small spaces in this area (Logemann, 1997). When food becomes lodged in those spaces, patients are at a higher risk for dysphagia because the food may fall into the airway when the epiglottis is not protecting it. Because of the elevation of the hyoid bone, the larynx is anterior and superior to its resting position, which allows the epiglottis to move down to cover the airway. Several different cranial nerves are involved in propelling the bolus inferiorly to the upper esophageal sphincter “(UES)” (Logemann, 1997, p. 20). As a bolus approaches the UES, a signal is sent to the brain to open the UES so the bolus may pass through to the esophageal stage. If for some reason the signal does not reach the brain or reached the brain late, a problem would occur when the UES either does not open or opens late for the bolus to pass (Logemann, 1997). Once the bolus passes into the esophagus, it is now in the esophageal stage of the swallow (Crary & Groher, 2003). “It courses through the chest ventral to the lungs and around the aorta of the heart” (Crary & Groher, 2003, p. 20). The UES is the superior portion of the esophagus, but the lower esophageal sphincter

(LES) is the inferior portion (Crary & Groher, 2003). A disruption of any of these stages can cause some form of dysphagia which could result in aspiration, when a liquid or bolus enter the lungs, for the client.

Now, how does the spine have an affect on deglutition? Well, think of the neck and spine. Think of an x-ray. Think of a videofluoroscopy. Certain parts of the neck and spine directly affect the physical anatomy of the structures involved in swallowing. If the physical anatomy of the swallowing process is changed, does that change the way deglutition takes places for the good or the bad? By looking at a large number of spine and posture disorders and how they affect the normal swallow, we will be able to see the answer.

### **Posture and Spine Disorders Due to a Genetic Disorder**

Of approximately 4 million babies born annually, three to four percent will have a genetic disease or major birth defect. In fact, of all the people in hospitals around the United States, roughly ten percent of adults and thirty percent of children are there because of a problem related to a genetic disorder (Nussbaum, McInnes, & Willard, 2007). Many of those genetic disorders affect the spine and posture of a person. Some disorders are evident at birth, such as spinal muscular atrophy, but others, may not be as evident until later in life, such as a bony protruberance on the spine. Genetic disorders which affect the spine can all vary greatly as they are all different in exactly how they affect the spine. This means they could all affect the normal swallow in different ways.

In a case report by Ilbay, Evliyaoglu, Etus, Ozkarakas, and Ceylan (2004), a young patient presented with a case of dysphagia. The patient was 11-years old and suffering from dysphagia while eating solid foods. He had been experiencing this

problem for five years. “In his physical examination, a midline hard mass was palpated in the retropharyngeal region” (Ilbay, et al., 2004, p. 129). Next, a radiological examination was performed on the patient. The patient was found to have an “abnormal bony protuberance of atlas” (Ilbay et al., 2004, p. 129). The dysphagia the patient was experiencing was being caused by the bony protuberance. This can be shown because of the compression the cervical spine was under by the anterior hyperostosis. The patient’s congenital abnormality is very rare since he shows no family history or has not suffered from any type of trauma. This type of change, morphological in its nature, is thought to be rare in people of a younger age, especially children (Ilbay et al., 2004). However, this type of cervical spine problem causing dysphagia is often found in the elderly population. The next step taken was to remove the bony protuberance through a surgical procedure. Once the bony protuberance was removed, all signs and symptoms of the dysphagia ceased (Ilbay et al., 2004). In this case, a postural or spinal disorder played a major part in causing the patient’s dysphagia. This conclusion was made because the dysphagia disappeared after the bony protuberance was removed. If another factor had been causing the dysphagia, the problem would have continued to take place after the bony protuberance had been removed.

A genetic disorder that is noticed at birth is the Freeman-Sheldon syndrome which is also known as the whistling face syndrome or cranio-carpo-tarsal dysplasia. This disorder is very uncommon and according to literature, there have only been around 60 cases reported in the last 75 years. This syndrome most commonly causes “multiple joint contractures” (Song, Sarwark, Sauntry & Grant, 1996, p. 272). This case report studies a 13-year old patient with Freeman-Sheldon syndrome and specifically “scoliosis and

multiple joint contractures” (Song et al., 1996, p. 272). At 10 years of age, the patient had a surgical procedure to correct the scoliosis that had been worsening in the thoracic and lumbar area over the past year. When the patient was 12 years of age, a difference in her eating pattern was noticed. “She experienced progressive inability to eat solid foods and could only tolerate foods put through a blender and liquids” (Song et al., 1996, p. 273).

“A swallow study revealed motor dysfunction with reduced rate, range and strength of movement of the oral musculature. There were mild residuals after swallowing on the tongue base posterior pharyngeal wall and pyriform sinus. Magnetic resonance image (MRI) showed basilar invagination with impingement of the odontoid onto the cervicomedullary junction” (Song et al., 1996, p. 273).

Remarkably, the MRI found an infolding of the base of the neck where the second vertebrae moves forward to strike the cervicomedullary junction which is a junction between the cervical spine, brain stem, spinal cord, and base of the skull (Song et al., 1996). Since the swallow study showed a concern for dysphagia and the MRI showed cervical abnormalities, the patient was first fitted with a halo traction for a short time period. Next, the patient underwent surgery to remove the atlas and the foramen magnum (Song et al., 1996). After a recovery period, the follow-up appointment showed that the patient was completely clear of all dysphagia and able to eat all types of food safely (Song et al., 1996). “The cause of dysphagia was determined to be secondary to basilar compression by the odontoid process” (Song et al., 1996, p. 274).

With this case study and review of the Freeman-Sheldon syndrome, it shows support toward the claim that a postural or spinal disorder caused the patient’s dysphagia. Evidence of this comes from the finding that after the surgery was performed to remove

the cervical abnormality, the dysphagia no longer continued. However, Song et al. (1996) did state that this was a rare case and feeding problems usually occur due to microstomia, which means a small mouth.

Bar-On, Harari, Floman, Bar-Ziv and Maayan (1998) described a 43-year old woman with familial dysautonomia, diagnosed at birth, who suffered from severe scoliosis. She had previously suffered from pneumonia as a child, but had not experienced any difficulties since the age of 16. However, she was currently experiencing severe dysphagia and aspiration, causing her to cough, while eating any solid foods. Because of this, she was only eating liquids and soft foods (Bar-On et al., 1998). “On physical examination, she was found to have severe lordoscoliosis, generalized wheezing, and decreased air entry to the right lung” (Bar-On et al., 1998, p. 405). “Additional studies performed included a milk scan which revealed abnormally delayed esophageal transit and aspiration to the lungs. A barium swallow showed the esophagus crossing the scoliotic spine from right to left” (Bar-On et al., 1998, p. 406).

The course of action for the patient included surgery to fix the esophageal compression (Bar-On et al., 1998). They performed a bronchoscopy which showed that the trachea and bronchus had narrowed greatly (Bar-On et al., 1998). Although the surgery was completed and considered a success, the patient reported no difference in the severity of the dysphagia. Still, the patient is seeing some improvements such as, her symptoms steadily decreasing, a fewer number of aspiration instances and no seizures. She now takes in all fluids through a gastrostomy tube. While the surgery for postural deficits that contributed to esophageal compression did not completely alleviate

dysphagia, it did result in a decrease in aspiration , which is a significant improvement. (Bar-On et al., 1998).

This case study by Bar-On et al. (1998), supports the claim that because the patient had a genetic cervical spine disorder, she then suffered from dysphagia and aspiration. This case study shows that even with a specialized treatment for the dysphagia, if the spinal/postural deformity is severe enough, it could continue to cause dysphagia.

Not all of the literature substantiates the contribution of postural deficits on dysphagia. Stubgen (2008) documents refuting evidence towards the claim that a genetic postural or spinal disorder can cause problems with the normal swallow. Stubgen (2008), “identified a group of patients with rigid spine syndrome (RSS), some of whom complained of oropharyngeal dysphagia” (p. 111). “RSS is a group of childhood-onset muscle disorders characterized by marked limitation of flexion of the spine; contractures of limb joints, especially the elbows; mild and nonprogressive proximal weakness; a progressive scoliosis...” (Stubgen, 2008, p. 111). The study took a closer look at the origin and pathophysiology of the swallowing complaints and possible aspiration. This authors examined nine patients, over a number of years, who were diagnosed with RSS (Stubgen, 2008). Seven of those patients were males and two were females ranging in ages from 11 to 36 years of age. The patients were all of South African Afrikaner descent (Stubgen, 2008). A questionnaire was administered regarding dysphagia symptoms and results of the study found that two patients complained of a cough, though not always because of food; four patients reported of a history of dysphagia, such as trouble swallowing pills and choking on liquids or foods; and three patients reported of a history

pneumonia, though were not sure the cause was from aspiration. The barium swallow study showed that six out of the nine patients were normal. This even includes some of the patients who complained of dysphagia and a cough. Of the three patients that were found to have an abnormal barium swallow, two had complained of dysphagia and one “had a history of acute bronchopneumonia” (Stubgen, 2008, p. 113). “It is possible that dysphagia resulted from surgical procedures to the neck such as corrective cervicothoracic spinal fusion surgery or tracheostomy” (Stubgen, 2008, p. 114). The patients that presented with a cough were not found to have any dysphagia or abnormalities in their swallow study which leads to believe that the cough related more to respiratory problems and not silent aspiration. Even though some of the patients were found to experience dysphagia, it was mainly due to muscle abnormalities and was not caused by a genetic abnormality of the spine.

The research stated above shows that dysphagia can result because of a spine or postural disorder caused by or part of a genetic disorder. However, much of the research states that this is not always a common outcome related with each of these disorders. The refuting evidence shows that while the patients were suffering from a type of spinal or postural disorder, it did not necessarily affect their swallow. With the patients that were experiencing dysphagia, the researchers could not rule out that the dysphagia was due to corrective procedures the patients had in the past. It would seem that while dysphagia is seen in some patients with postural and spinal disorders, it may not be present in others because every person and every disorder is different and unique in its own way.

### **Posture and Spine Disorders as an Acquired Disorder**

One day a man is driving down the road on a normal day, and then, all of the sudden, his car is hit. When paramedics reach the man, he tells them, “I feel nothing from my shoulders down.” When someone suffers a trauma, mild or severe, many different processes in the body can be affected by it. Because each trauma to the spinal area is different, each person may have different symptoms and problems.

Mann, Brewer, and Sheth (1984) studied a case of a 62-year-old male who had been having swallowing difficulties for the past four years. He reported that, “Solid food seemed to stick in the upper part of the esophagus” (Mann et al., 1984, p. 57). The patient was not experiencing any type of pain in any regions such as neck, shoulder, heartburn, or chest. He had, however, previously been in an accident where his neck and back were injured. Upon a radiologic examination, the patient was found to have “old traumatic injury to the upper dorsal spine with compensatory curve of the cervical spine. The cervical spine showed marked lordosis with compression fracture of the 4<sup>th</sup> cervical vertebra” (Mann et al., 1984, p. 57). The patient did not have any osteophytes present, which can sometimes be a cause for dysphagia. Next, the patient was given an esophagogram which showed “marked displacement and tortuosity of the cervical esophagus with delay in the passage of barium” (Mann et al., 1984, p. 57).

In older patients with dysphagia problems, hypertrophic spurring of the cervical spine can often be the cause of the problem (Mann et al., 1984). Exostosis, arthritis, arthrosis, spondylosis, and degenerative disc disease of the cervical spine are all ways to also describe hypertrophic spurring or symptoms related to it (Mann et al., 1984). In this case, however, the patient did not present with any of these problems (Mann et al., 1984). Since the results showed that the patient was experiencing dysphagia, his treatment

options were presented to him. He declined the option for a surgical procedure. He used specific postural techniques to help improve his swallowing. The technique he learned was to “flex his neck forward during swallowing” (Mann et al., 1984, p. 58). This compensatory, postural strategy enabled improved swallow of solid foods and increased weight gain in the patient. (Mann et al., 1984).

“Anterior cervical spine surgery can result in denervation, esophageal perforation and airway obstruction, as well as postoperative hematoma formation, edema and infection” (Daniels & Mahoney, 1998, p. 470). In a case documented by Daniels and Mahoney (1998), a 64-year-old patient underwent “a left anterior cervical corpectomy with C5-C6 and C6-C7 disectomy and iliac bone grafting” (Daniels & Mahoney, 1998, p. 470). The patient was experiencing dysphagia after the surgery; however, it was deemed transient and another surgery was performed as needed for a different issue. After the second surgery, dysphagia was still present, along with edema and dysphonia. A swallow study, at six weeks postsurgery, showed that the patient had significant pooling in the valleculae, pharyngeal wall, and pyriform sinuses, and the patient was experiencing silent aspiration. (Daniels & Mahoney, 1998).

Dysphagia therapy for the patient focused on learning the super-supraglottic and Mendelsohn swallowing maneuvers, among other techniques to deal with dysphonia. Since the patient had undergone cervical spine surgery, head rotation postures were not used. One month after the strategies were in place, the patient’s dysphagia had improved, yet, was still evident (Daniels & Mahoney, 1998). A follow-up exam was performed six months postsurgery that revealed the patient had not suffered any complications. The

patient also showed no evidence of aspiration and was discharged from therapy services (Daniels & Mahoney, 1998).

This case study by Daniels and Mahoney (1998), supports the claim that cervical trauma of some kind, in this case cervical spine surgery, can affect the normal swallow in a negative way, therefore, causing or helping to cause dysphagia. Evidence of this comes from the fact that the patient was not experiencing any dysphagia symptoms prior to the cervical spine surgery. Transient dysphagia can be common after cervical spine surgery; however, the patient's dysphagia continued to be persistent for a longer period of time.

In a case study by Ortega-Martinez, Cabezudo, Gomez-Perals, and Fernandez-Portales (2005), a 26-year-old patient had surgery to remove a cervical schwannoma. "Complete C4 and C5, and partial C3 laminectomy was performed and the tumour was totally removed" (Ortega-Martinez et al., 2005, p. 175). Over the next eight years, the patient developed a type of swan neck deformity. The patient was also suffering from anterior osteophytes as a result of the laminectomy and the instability caused by it (Ortega-Martinez et al., 2005). The osteophyte, often known for causing dysphagia, became so large that it was "compressing the oesophagus and causing progressive mechanic dysphagia" (Ortega-Martinez et al., 2005, p. 175). As the osteophyte grew larger, the patient did not feel any cervical pain; however, the dysphagia did increase in severity which became intolerable to the patient (Ortega-Martinez et al., 2005). The patient decided to undergo surgery, osteophyctomy, to remove the osteophyte. He has not experienced any dysphagia symptoms up to 12 months postsurgery (Ortega-Martinez et al., 2005).

Although, osteophytes can often form because of a degenerative disease or because of aging, for this particular patient, the osteophyte formed because of a surgical procedure: laminectomy. It is evident that the osteophyte, due to a trauma event such as surgery, is what was causing the dysphagia to occur. This would lend support to the claim that a trauma of some kind to the cervical spine can cause disruption to the normal swallow.

McGarrah and Teller (1997), reported on a case study of a man experiencing dysphagia while eating solids. Forty years prior, the patient had sustained a cervical and lumbar spine injury due to his parachute not opening during a jump. He did not have any surgery at that time. The patient did wear a cervical collar for months, though. Upon physical examination, the patient showed “decreased range of motion of the neck” (McGarrah & Teller, 1997, p. 858). The examination also showed that the patient was experiencing pooling in the valleculae and pyriform sinuses. The patient was found to have “extremely large anterior cervical osteophyte at the level of C3-5 with anterior displacement of the larynx” (McGarrah & Teller, 1997, p. 858). A modified barium swallow confirmed what was seen in the physical examination for pooling in the valleculae and pyriform sinuses because of compression of the hypopharynx due to the osteophyte; however, the patient was not experiencing any aspiration. The patient decided against a surgical procedure to remove the osteophyte, even though that is the usual treatment. Instead, the patient wanted to use “conservative medical management and nonsteroidal anti-inflammatory drugs” (McGarrah & Teller, 1997, p.858).

This case study supports the claim that a postural or spinal disorder, due to trauma of some kind, can cause disruption to the normal swallow or dysphagia. This case is a

little bit different, though, because the dysphagia is not necessarily caused from the fall itself, but rather, from the lack of treatment for the fall over a period of time. This can be evidenced by the fact that the dysphagia did not present itself until years after the accident. It was because the patient did not get surgical treatment for his trauma that he developed decreased motion of his neck and displacement of his larynx.

Refuting evidence for this claim could come from a number of different places. The last article mentioned by McGarrah and Teller (1997), could very easily be used as refuting evidence as well as supporting evidence because it was not necessarily the trauma to the cervical spine that caused the dysphagia. It was the non-treatment of the trauma, over time, that caused the dysphagia to develop. It is also likely that not all patients who experience trauma to the spine experience dysphagia due to that trauma. For example, one patient who experienced a laminectomy could have problems with dysphagia, while another patient would not. Every person and trauma to the spine is different. For speech-language pathologists, it is important to be aware of the possibility of relationship when working with patients experiencing dysphagia with histories of spinal trauma.

### **Posture and Spine Disorders Due to the Aging Process**

“Posture is the alignment of the body parts in relation to one another at any given moment” (Kauffman, 1987, p. 13). Throughout a person’s life, good posture is not always the main focus. In fact, many people do not think about their posture until something is wrong. “Postural changes associated with aging are a combination of primary and secondary aging factors. Primary aging is defined as those effects that result simply from the passage of time; in contrast, secondary aging changes are due to environmental

influences such as nutrition, injury, disease, and hypokineses” (Kauffman, 1987, p. 14). According to Kauffman (1987), changes in the cervical spine, most being degenerative, are very common in the elderly population. Changes in the cervical spine could increase the incidence of dysphagia among the elderly. “Dysphagia in the elderly is common, with more than 10% of people older than 50 years reporting some degree of swallow dysfunction and its prevalence increasing with age” (Andrews, Fraser, Heddle, Hebbard, & Checklin, 2008, p. 656).

Leigh, Cho, Barcenas, and Paik (2010), reported on a case of an 80-year-old woman who suffered from dysphagia, resulting in aspiration pneumonia, previously due to a stroke. She was put on a puree diet post-stroke. Upon examination, the patient was found to have severe osteoporosis, thoracic kyphosis, and cervical hyperlordosis (Leigh et al., 2010). “A videofluoroscopic swallowing study showed preserved movement of the larynx. However, the hyperlordotic curvature of the cervical spine prevented epiglottic closure and bolus passage, which resulted in supraglottic pooling and aspiration of food residues; even puree-type food was aspirated during our examination” (Leigh et al., 2010, p.1). Since the patient was experiencing aspiration even with the modified diet, therapeutic swallowing maneuvers were implemented. However, these did not help to improve dysphagia as they only increased the patient’s neck pain and impeded food transport. It was decided that the best course of action for the patient was to perform an endoscopic gastrostomy, or feeding tube, for enteral feeding. Because of the patient’s previous stroke, she was already experiencing dysphagia; however, her dysphagia worsened as “mechanical obstruction caused by degenerative change of the cervicothoracic spinal curvature” (Leigh et al., 2010, p.1) took place. This case study

supports the claim that postural and spinal disorders due to the aging process can negatively affect the normal swallow. This patient was previously experiencing problems with swallowing because of a stroke; however, the problem worsened when her cervical hyperlordosis became severe enough. Because of her age and the condition, swallowing techniques could not be implemented.

A case report by Goyal, Narlawar, and Garrett (2005), describes an 81-year-old woman suffering from kyphosis, among other problems. The woman had been suffering from dysphagia for a long period of time. A barium swallow was performed to find what was causing the dysphagia. The barium swallow was difficult to complete due to the level of kyphosis, her age, and weakness (Goyal et al., 2005). After a few attempts, the procedure had to be modified due to reflux flooding the mouth when she swallowed. To compensate for this, the patient was put in a reclined position. Results of the MBS indicated the patient developed a severe enough case of kyphosis of the cervical spine to change the course of her esophagus, in turn, disrupting the normal swallow and causing dysphagia. (Goyal et al., 2005, p. 521). Because of this bend, there were different treatment options that were offered to her such as conservative management or surgical options. The treatment option of conservative management was chosen in the best interest of the patient (Goyal et al., 2005). This case study strongly supports the claim that postural and spinal disorders due to the aging process can negatively impact the normal swallow.

The supporting evidence shows that when the aging process affects the cervical spine and distorts posture in a severe manner, the patient could suffer from dysphagia due to the posture distortion. When posture of the cervical spine is distorted, it can cause the

internal structures to move in a way that would disrupt the transit of liquids and boli, possibly resulting in aspiration. The refuting evidence shows that even though a patient may have a postural or spinal distortion due to the aging process, it may not necessarily affect their swallowing in a negative way. There could also be other contributing factors affecting the swallowing process and posture distortion may not be the real cause of the dysphagia.

### **Dysphagia Treatment For Postural and Spinal Disorders**

Though a great deal of research still needs to be done to show major support toward the previous claims, it has been shown that postural and spinal disorders of different origins and severities can cause a disruption to the normal swallow. Because of this factor, speech-language pathologists need to consider that typical dysphagia therapy may not be the best method of treatment, and they may need to consider developing a more individualized plan of care for patients with postural and spinal disorders. Treatment options have been previously mentioned throughout the paper; however, this section will take a closer look at those options.

In the previously mentioned case study by Mann, Brewer, and Sheth (1984), a 62-year-old patient was experiencing dysphagia, but he was not experiencing any type of pain. However, many years prior, he was involved in an accident where he suffered injuries to his neck and back. After much consideration, it was determined that the patient was suffering from dysphagia due to the lordosis of the cervical spine. Because the patient refused any type of surgical procedures, he was taught swallowing maneuvers to decrease the dysphagia. In this case, because the patient still had enough muscle tone to correctly perform the swallowing technique of flexing his neck forward during

swallowing, he was able to safely eat solid foods more easily (Mann et al., 1984). This type of treatment option is the preferred treatment route; however, it may not always be successful due to different contributing factors such as age, muscle tone, and flexion.

Another treatment route is the option of surgery to fix or remove what is disrupting the normal swallow. In a previously mentioned case report by Ortega-Martinez et al. (2005), the patient underwent surgery for a laminectomy. Eight years after the laminectomy was completed, the patient started noticing signs of dysphagia. The patient had developed a large osteophyte due to cervical instability after the surgery. Because the osteophyte was the main cause of the dysphagia, the best course of action for the patient was to have the osteophyte surgically removed. Once the osteophyte was removed, the patient noticed decreased pain and the dysphagia discontinued (Ortega-Martinez et al., 2005). In this case, surgery was the best option to fix the dysphagia problem. No matter what kind of swallowing maneuvers or postural change the patient would have made, it would not have helped to reduce the symptoms due to the osteophyte.

Matz, Wolff III, and Hadley (2003), analyzed management of kyphotic deformities of the cervical spine and documented surgical procedures as treatment. In the study, the researchers documented treatment for 78 patients that showed cervical spine instability and cervical kyphosis to a certain degree. Out of the 78 patients, 10 of those patients were having difficulties with eating and drinking because of their severe cervical deformities. All of these patients underwent corrective surgical procedures for their cervical kyphosis. The authors advocate surgical correction of cervical kyphosis can be a

successful surgery (Matz et al., 2003). However, each patient and their contributing factors needs to be taken into consideration before surgery is chosen.

Myofascial release is a treatment technique not traditionally associated with a speech language pathologist, but is a common practice among occupational therapists and physical therapists. Myofascial release “can be implemented to alleviate pain and muscle spasm, which improves soft tissue extensibility” (Paolini, 2009, p. 32). Because the field of speech pathology is ever changing and growing, it is becoming introduced as a treatment technique in speech-language pathology. So, when discussing postural and spinal disorders as a cause for dysphagia, it makes sense to pause to consider myofascial release as a possible co-treatment method. Since myofascial release has no affect on actually curing the postural or spinal disorder, it should be used in conjunction with regular dysphagia therapy or treatment method (Paolini, 2009). By alleviating the patient’s neck pain, it may prove useful for helping the patient to successfully use a swallowing maneuver that involves moving the head or neck in a certain manner. The Myofascial release treatment may not actually fix the problem, but it is helping the patient to effectively use the chosen treatment technique such as chin tuck or head rotation (Paolini, 2009).

Patients with dysphagia as a result of a postural or spinal disorder need individualized treatment plans possibly differing from the commonly used dysphagia treatment options. Treatment may also need to be combined to best utilize different assests from each technique. For the speech language pathologist, this means a need to continue to examine evidence to determine what treatment technique or specific

combination of techniques has been documented to be beneficial to specific etiologies with dysphagia.

### **Clinical Implications and Future Research**

As speech language pathologists in the medical setting, dysphagia is a commonly seen issue. Speech language pathologists are trained to look for the etiology in every case, then, from that etiology, trained to pursue the most effective and efficient treatment option. Since speech language pathologists are not specifically trained in postural and spinal disorders, it may be difficult to know which course of action may suit the patient best. Every patient is unique. Research in the area of postural or spinal disorders has indicated disorders due to genetic causes, due to a trauma of some kind, and due to the aging process can cause disruption in a patient's normal swallow. Most of the research has been case study reports indicating that incidence rates are not widespread. One patient with scoliosis may experience dysphagia, while another patient may not. From the research gathered, we can hypothesize that the more severe the postural or spinal disorder due to any type of cause, the more likely the patient will experience some type of disruption to the normal swallow.

Future research in the area of postural and spinal disorders and their effect on the normal swallow is necessary. A great deal of the research available is either outdated or simply case reports. Researchers should look at large groups of people with the same type of postural or spinal disorder to see if there is a relation to any certain disorder be it genetic, traumatic, or aging related. Different levels of severity in postural or spinal disorders and their relation to dysphagia should also be heavily researched. By looking

into large groups, it will be easier to see a pattern or similarities between issues rather than looking through a hundreded different single person case studies.

Through futher research with more conclusive findings, more patients may be properly treated for their dysphagia problems. This would cut down on unnecessary continued therapy if a certain method is not appropriate and possibly increase effectiveness and effeciency in the workplace.

### **Conclusion**

The trend observed is that the presence of dysphagia is linked to severity of the disorder, trauma, or postural disturbance. No two cases will likely be the same. However, there are consistent reports in the literature that postural deficits can negatively impact an individual's ability to swallow. Just as presentation of deficits are individualized so are treatments. Treatment methods discussed in case study literature included compensatory strategies, therapeutic exercise, and surgical procedure. A great deal of further research needs to be done to conclusively state the frequency of dysphagia as a result of postural and spinal disorders. Clinicians need to take a special look at how patients with dysphagia and a postural or spinal disorder react to treatment.

## REFERENCES

- Bar-On, E., Harari, M., Floman, Y., Bar-Ziv, J., & Maayan, C. (1998). Compression of the esophagus by the spine and the aorta in untreated scoliosis. *Archives of Orthopaedic And Trauma Surgery*, 117(6-7), 405-407.
- Crary, M. A., & Groher, M. E. (2003). *Introduction to Adult Swallowing Disorders*. St. Louis, MO: Butterworth-Heinemann.
- Daniels, S. K., & Mahoney, M-C. (1998). Persistent dysphagia and dysphonia following cervical spine surgery. *Ear, Nose & Throat Journal*, 77(6), 470-473.
- Goyal, N., Narlawar, R., & Garrett, A. (2005). Kyphosis, a rare cause of dysphagia. *Age and Ageing*, 34(5), 521-522.
- Ilbay, K., Evliyaoglu, C., Etus, V., Ozkarakas, H., & Ceylan, S. (2004). Abnormal bony protuberance of anterior atlas causing dysphagia. A rare congenital anomaly. *International Spinal Cord Society*, 42, 129-131.
- Kauffman, T. (1987). Posture and age. *Topics in Geriatric Rehabilitation*, 2(4), 13-28.
- Leigh J.H., Cho K., Barcenas C.L., Paik N.J. (2010). Dysphagia aggravated by cervical hyperlordosis. *American Journal of Physical Medicine & Rehabilitation*, September, 1. doi:10.1097/PHM.0b013e3181f71278.
- Logemann, J. A. (1998). *Evaluation and Treatment of Swallowing Disorders* (2<sup>nd</sup> ed.). Austin, TX: Pro-Ed.
- Mann, N. M., Brewer, H. M., & Sheth, B. M. (1984). Upper esophageal dysphagia due to marked cervical lordosis. *Journal of Clinical Gastroenterol*, 6(1), 57-60.
- Matz, P. G., Wolff III, C. L., & Hadley, M. N. (2003). Management of cervical kyphotic deformity. *Seminars in Neurosurgery*, 14(1), 55-60.

- McGarrah, P. D., & Terller, D. (1997). Posttraumatic cervical osteophytosis causing progressive dysphagia. *Southern Medical Journal*, *90*(8), 858-860.
- Nussbaum RL, McInnes RR, Willard HF, et al. Principles of clinical cytogenetics. *Thompson & Thompson genetics in medicine*. 6th ed. Philadelphia: W.B. Saunders; 2001:140.
- Ortega-Martinez, M., Cabezudo, J.M., Gomez-Perals, L.F., & Fernandez-Portales, I. (2004). Anterior cervical osteophyte causing dysphagia as a complication of laminectomy. *British Journal of Neurosurgery*, *19*(2), 174-178.
- Paolini, J. (2009) Review of myofascial release as an effective massage therapy technique. *Athletic Therapy Today*, *14*(5), 30-34.
- Schulze-Delrieu, K. S., & Miller, R. M. (1996). Clinical Assessment of Dysphagia. In A. L. Pearlman, & K. S. Schulze-Delrieu, *Deglutition And Its Disorders: Anatomy, Physiology, Clinical Diagnosis And Management* (p. 125-151). San Diego, CA: Singular.
- Song, H.-R., Sarwark, J. F., Sauntry, S., & Grant, J. (1996). Freeman-Sheldon syndrome (whistling face syndrome) and cranio-vertebral junction malformation producing dysphagia and weight loss. *Pediatric Neurosurgery*, *24*, 272-274.
- Stubgen, Joerg-Patrick. (2008). Rigid spine syndrome: A radiologic and manometric study of the pharynx and esophagus. *Dysphagia*, *23*(2), 110-115.

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