

Case Report

Management of dysphagia following radiation therapy and tracheostomy

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ABSTRACT

Dysphagia (swallowing disorders) have been reported commonly following oral and laryngeal cancers. Patients undergoing radiation therapy usually complaint of deterioration in swallowing functions due to fibrosis. Also, presence of tracheostomy causes aspiration while swallowing by reducing the hyolaryngeal excursion and also leading to inadequate subglottic pressure and fixation of trachea. An 85 year old male with history of supraglottic carcinoma managed by radiation therapy and tracheostomy reported for swallowing assessment. Detailed assessment was performed using clinical swallow examination and instrumental assessment (modified barium swallow) using thin, thick and paste consistencies. Results revealed no overt signs of penetration on clinical swallow while modified barium swallow revealed severe intraswallow aspiration due to incomplete hyolaryngeal elevation on all consistencies (more for liquids). This clearly indicated silent aspiration. Swallowing therapy focused on hyolaryngeal elevation using protective maneuvers. Reassessment was performed following 7 sessions using the above mentioned protocol which revealed improvement in hyolaryngeal elevation (complete hyolaryngeal closure during swallow) and no aspiration on all consistencies. Dysphagia is a common complication following radiation therapy. An instrumental assessment is mandatory to rule out silent aspirations as seen in the present case. Swallowing intervention has an important role to treat dysphagia following radiation therapy and has shown to be effective in the present study and literature. Hence, patients who have indications for radiation therapy should undergo swallowing intervention in order to ensure safe oral intake.

Keywords: Radiation, Silent aspiration, Hyolaryngeal elevation, Manoeuvres, Intervention

INTRODUCTION

Dysphagia is a term used to describe a swallowing disorder. Mechanism of swallowing can be divided into four stages namely oral preparatory, oral, pharyngeal and oesophageal phases. Each stage is interdependent. Individual with head and neck cancer are prone to have dysphagia after radiation therapy as it kills the normal cells with the cancer cells. Fibrosis, which is scarring or stiffness in the throat, oesophagus, or mouth is a common side effects occurring after radiation therapy. Dysphagia

is a common symptom observed following radiation therapy.¹ Reduced hyolaryngeal elevation, reduced cricopharyngeal relaxation and residue of bolus in the valleculae and pyriform sinuses has been frequently reported following radiation therapy.² Tracheostomy is also considered to be a factor which alters the swallowing mechanism by causing inadequate subglottic pressure and fixation of trachea. Although the vocal cords close completely during swallowing in patients with tracheostomy, their duration of closure is significantly shorter. Coordination of deglutitive vocal cord kinetics

and apnea is altered in patients with tracheostomy. All the above mentioned physiological changes in the swallowing mechanism may lead to aspiration. The above mentioned conditions further lead to pneumonitis.

There are various head and neck cancer patients who experience dysphagia post radiation therapy and are on non-oral feeding living a poor quality of life. By using different techniques and manoeuvres, swallowing function can be improved in these patients which will facilitate oral feeding and a better quality of life.

The case study aimed at highlighting the role of speech language pathologist in management of individual with supraglottic cancer treated by chemo radiation therapy by:

1. Describing typical swallowing characteristics.
2. Highlighting specific swallowing manoeuvres used.

Comparing effect of therapy on swallowing functions.

CASE STUDY

Complaint and medical history

An 85 year old male was referred to the department with a complaint of difficulty in swallowing. Review of medical reports revealed history of supraglottic carcinoma which was managed by chemo radiation therapy. Patient had a tracheostomy due to subglottic tracheal stenosis. He was using a one way speaking valve for communication.



Figure 1: Pre therapy status.

Swallowing assessment

Detailed swallowing assessment was done by using clinical swallowing examination and instrumental

assessment of swallowing. Clinical swallow evaluation was done using dysphagia screening checklist. The checklist was prepared based on the features described.³ The checklist is attached as Appendix A. Also assessment was done using dry swallow and food items of varied graded consistencies (milk, biscuit and curd). Clinical examination revealed no aspiration. Four finger test was performed which revealed reduced hyolaryngeal elevation. Instrumental assessment was performed using video fluoroscopy frames. Barium coated biscuit, paste and thin barium were given. Results revealed severe intraswallow aspiration and reduced hyolaryngeal elevation for all consistencies. Patient was suggested to initiate enteral feeding through PEG in view of severe aspiration (Figure 1). Therapy was started to improve the swallowing function.

Swallowing therapy

Therapy plan consisted of head and neck massage to release stiffness and reduce fibrosis, Mendelsohn's manoeuvre to improve laryngeal elevation, supraglottic swallow (voluntary stoppage of respiration) to protect airway and use of chin tuck posture to reduce risk of aspiration. Thermal stimulation was also given over the neck region to stimulate the muscles of larynx. Patient attended 7 therapy sessions. A re-assessment was done after 2 months of therapy.

Reassessment of swallowing

It was observed that the swallowing function had improved over 2 months. A repeat modified barium swallow revealed no aspiration on paste consistency and thick liquids while slight spillage of barium in the trachea was noted for thin liquids. Also, better hyolaryngeal elevation and laryngeal closure during swallow was clearly visible on modified barium swallow (Figure 2).



Figure 2: Mid therapy status.

Table 1: Showing pre and mid therapy progress of the client.

Pre therapy status	Mid therapy status
1. Hyolaryngeal elevation was significantly less	1. Hyolaryngeal elevation improved after therapy
2. Aspiration was present for liquids as well as semisolids and solids	2. Aspiration was not present for semisolids and solids. Mild aspiration in liquids present.
3. Modified barium swallow testing was done which revealed improper closure of larynx resulting into penetration of solid, semisolid and liquid during swallow.	3. Modified barium swallow testing was performed which revealed no aspiration in solids as well as semisolid little bit spillage was observed in liquid. The following image reveals improved hyolaryngeal elevation with no aspiration.

DISCUSSION

The current case revealed presence of silent aspiration without any overt signs of dysphagia. Reduced laryngeal sensitivity and silent aspiration is commonly encountered following radiation of head and neck.⁴ Recurrent episodes of aspiration puts an individual at risk for aspiration pneumonitis and malabsorption in the long run. Further the present case study showed silent aspiration. Research shows that swallowing intervention has been shown to reduce dysphagia following chemo radiation therapy in individuals with head and neck cancers. Similar effects have been seen in the current case.⁵ conducted a review to explore the specific strategies used for swallowing intervention in individuals with dysphagia following radiation therapy. They found Mendelsohn's manoeuvre, Masako exercise and supraglottic swallow to be the most frequently suggested techniques. Mendelsohn's manoeuvre and supraglottic swallow was also carried out in the current case which improved swallowing skills of the patient.

CONCLUSION

Radiation therapy and tracheostomy have detrimental effects on swallowing functions. Silent aspiration with no overt signs of dysphagia is typical and frequently seen as a result of radiation therapy. Instrumental assessments like modified barium swallow and fiberoptic endoscopic evaluation of swallowing can rule out silent aspiration. Hence, it is important to include these in our assessment. Speech language pathologists play an important role in identifying penetration/aspiration these life threatening disorders and suggest non oral feeding. Swallowing intervention is essential and effective in cases who complain of dysphagia following radiation therapy and tracheostomy. Initiating swallowing intervention before radiation therapy may help to preserve the swallowing function.

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