



Case Report

Role of speech-language pathologist in tracheostomy care – A case study

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Received : 29 November 19

Accepted : 19 December 19

Published : 25 February 20

DOI

10.25259/IJMS_19_2019

Quick Response Code:



ABSTRACT

A “tracheotomy” refers to the surgical procedure that creates an opening between the trachea and the midline skin surface of the neck. Indicators for a tracheostomy tube include airway protection, removal of tracheal secretions, and wean from long-term mechanical ventilation. Assessment and management will be overseen by a multidisciplinary team which includes a speech-language pathologist whose involvement in tracheostomy include assisting the patient to tolerate successful periods of cuff deflation and saliva management, re-establishing verbal communication, conducting swallow assessments to re-establish oral intake, providing dysphagia rehabilitation, and providing input into the decannulation decision. This case study is focusing on the 42-year-old male who had the right cerebellopontine angle meningioma for which he underwent retrosigmoid, suboccipital craniotomy, and excision of lesion. Tracheostomy was done following stridor and wheezing, and he is under nasogastric tube for feeding. Assessment and management for swallowing and speech were focussed and results were documented.

Keywords: Tracheostomy, Swallowing, Speech

INTRODUCTION

A “tracheotomy” refers to the surgical procedure that creates an opening between the trachea and the midline skin surface of the neck.^[1] Indicators for a tracheostomy tube include maintenance of airway, protection of the airway from aspiration, removal of tracheal secretions, to wean from ventilation, and for long-term mechanical ventilation. Other indications include neurological deficit, craniofacial anomaly, cardiopulmonary insufficiency, neuromuscular indication, bilateral vocal cord paralysis, and subglottic stenosis.^[2] The presence of a tracheostomy tube may lead to reduction of anterior-superior movement of the larynx, tracheal irritation at rest and during swallowing, reduced laryngeal closure, subglottic air pressure and laryngeal sensitivity, reduction or elimination of airflow through the glottis and blunting of the reflexive cough.^[3] The complex interrelationships between respiration, swallowing, and communication dictate that speech and language pathologists (SLPs) to play an integral role in assessment and management of subsystems, swallowing and speech in patients with a tracheostomy as a part of the multidisciplinary team.^[4]

CASE REPORT

A 41-year-old was diagnosed with right cerebellopontine angle meningioma using magnetic resonance imaging by the neurologist for which he underwent retrosigmoid, suboccipital craniotomy, and excision of lesion was done. Tracheostomy was done since the client had stridor and wheezing,

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Table 1: The oral peripheral mechanism examination.

Articulator	Structure	Function
Face	Eyelid closure – absent in right side, present in left side Abnormal movements – absent Drooling – absent Mouth breathing – present	Deviation to one side Rising of eyebrows – right absent Closing of eyes – right absent
Lips	Drooling – present Symmetry – deviation to left Lip closure at rest – present	Lip spread /i/ – inadequate Lip rounding /u/ – adequate Lip strength against resistance – reduced Range of motion – restricted
Teeth	Alignment – normal Occlusion – normal	Biting/chewing – present in left side
Tongue	Symmetry – deviation to right Tongue coloration – normal	Elevation, retraction, protrusion, lateral movements – inadequate Range of motion – inadequate Strength – inadequate
Hard palate	Structure – normal Color – normal Arch height – normal	Symmetry at rest
Soft palate	Structure – normal Discoloration – absent	Movement (elevation/depression) – could not be assessed Hyponasality/hypernasality/nasal emission – could not be assessed
Jaw	No deviation	Jaw movement – inadequate

3 days post-surgery and breathing were initially supported by the mechanical ventilation through tracheostomy tube, and feeding was aided through nasogastric tube. Language profile and cognition such as alertness and orientation were observed to be adequate.

Informal evaluation

Informal evaluation was done which revealed that the client had good attention and was emotionally stable. Sensory-motor abilities such as texture discrimination were present; the client is ambulatory and has pincer grasp. Memory of past and present events was good.

Respiration – through tracheostomy tube.

Breathing tolerance with occlusion – 3–5 min.

Oral peripheral mechanism examination and cranial nerve examination was done and results are shown in Tables 1 and 2 respectively.

Swallowing profile (baseline assessment)

At present, the client is under nasogastric tube for feeding. He is a known case of tracheostomy. Drooling was absent. Biting and chewing were observed and reported to be present. Swallowing screening was carried out using honey. Gurgitation and weak cough observed to be present. Laryngeal elevation was absent. Similar findings were observed for saliva swallow test.

Repeated saliva swallow test – <3 times within 30 s.

Table 2: Cranial nerve examination.

Cranial nerve	Findings
V trigeminal	SENSORY – reduced sensation (right) MOTOR – inadequate
VII facial	Elevation right eyebrow – absent IOBP – absent Taste sensation reduced on right
IX glossopharyngeal	Weak cough, absent gag reflex
X vagus	Tongue sensation – reduced on right side Absent gag reflex, weak cough, voicing present with reduced loudness
XII hypoglossal	Restricted tongue movement

Modified water swallow test – failed to swallow with choking noted.

The client reported that saliva and honey were struck in lower throat and chest region. Hence, further food consistencies were not attempted suggestive of oral transit dysphagia.

Formal evaluation

Modified barium swallow test was recommended. During testing, oral and nasal regurgitation occurred and hence procedure was stopped.

Recommendation

It is recommended to do detailed audiological evaluation, to continue non-oral feed, and to attend swallowing therapy.

Table 3: Progress in swallowing profile.

Swallowing profile	Pre-therapy	Post-therapy (after 8 sessions)
Breathing tolerance with occlusion	3–5 min	2–3 h
Repeated saliva swallow test	<3 times within 30 s	>3 times swallow in 30 s
Modified water swallow test	Failed to swallow with choking noted	Failed to swallow, choking present

Goals worked on

- The client will be able to establish abdominal breathing pattern adequate for speech production through relaxed, regulated, and modified breathing exercises
- Voluntary breath-holding maneuver will be carried out by occlusion of tracheostomy cannula which indirectly improves subglottic pressure and promotes best airway closure
- Tongue base resistance exercises and Masako maneuver were carried out to improve tongue retraction and improve epiglottis excursion
- To work on improving the range of motion, strength, and coordination of active articulators – lips, tongue, and mandible through isotonic and isometric exercises and to improve the intraoral breath pressure
- To work on swallowing through maneuvers.

Progress in swallowing post therapy is shown in Table 3.

DISCUSSION

SLP plays an important role in decision-making process for cuff deflation, tracheal decannulation and in management of swallowing, voice, and establishing a means of communication. Despite its relevance, lack of a universally accepted protocol for decannulation continues to plague this vital transition. More often assessments are based on subjective clinical impression of the physician. Protocolized decannulation may guarantee consistency and objectivity of care. Warnecke *et al.* in their study performed a mandatory step of fiberoptic endoscopic examination of swallowing in their decannulation process. Similarly, subjective assessment of coughing is the usual norm.^[5] Six strategies have been described to facilitate effective communication with individuals with a tracheostomy including establishing a communication-friendly environment, assessing functional skills, anticipating the individual's needs, facilitating lip-reading, augmentative and alternative communication and educating the person with a tracheostomy, and family and staff about communication strategies.^[2] Swallowing and voicing can be re-established through appropriate rehabilitative exercises.

CONCLUSION

Assessment and management with tracheostomy involves a comprehensive multidisciplinary team approach. Speech Language Pathologist role is to identify risk factors for dysphagia, examination of upper respiratory system, Oral structure and function and perform detailed cranial nerve examination. Based on the findings appropriate manoeuvres or compensatory strategies should be chosen along with family counselling.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Divya PS, Vijay A, Ganesh A. Role of speech language pathologist in tracheostomy care – A case study. *Indian J Med Sci* 2019;71(2):97-9.