

EFFECTIVENESS OF EFA (EXPIRATORY FLOW ACCELERATOR) TECHNOLOGY IN THE PREVENTION OF ASPIRATION PNEUMONIA IN DYSPHAGIA: CLINICAL CASE IN GASTROESOPHAGEAL JUNCTION ADENOCARCINOMA

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Abstract

Background: “Ab ingestis” pneumonia is the second most common cause of nosocomial infections in inpatients and the most common cause of death in patients with dysphagia. Early interdisciplinary rehabilitation protocols could reduce penetration-aspiration episodes.

Aim: This clinical case evaluates the effects of an expiratory flow accelerator (EFA[®]) device - usually aimed to manage airway secretions - in addition to usual care to prevent the penetration-aspiration (PA) risk in bedridden dysphagic low-alert patients, with ineffective cough.

Methods: We analyzed the use of expiratory flow accelerator with a protocol to prevent relapses of PA compared with traditional treatments in cooperative patients.

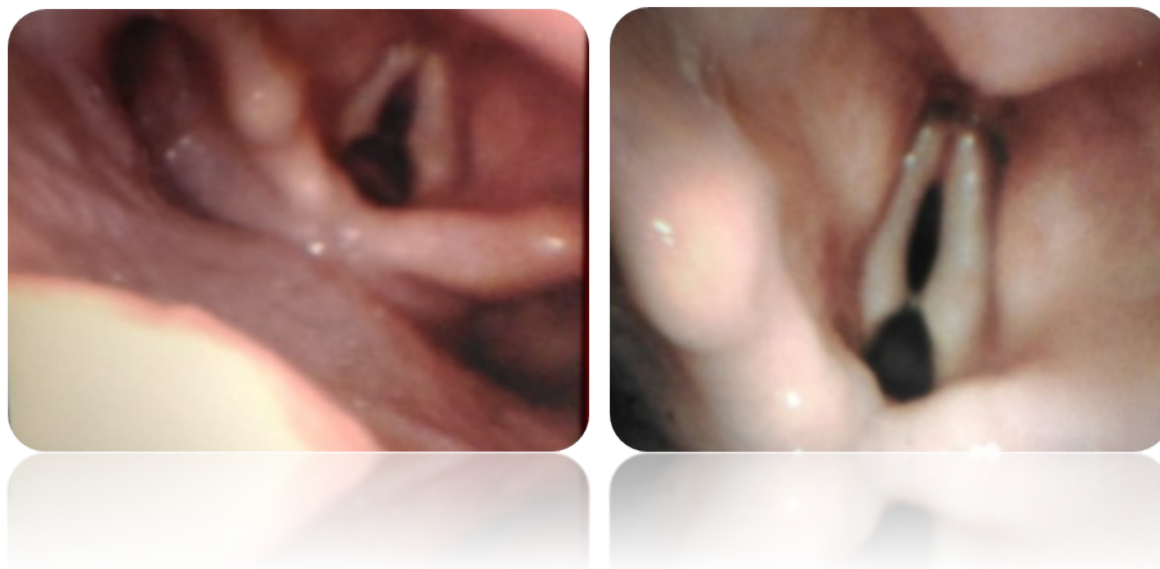
Conclusion This results showed the feasibility and reliability of the EFA[®] to prevent PA episodes in high risk dysphagic patients and provides the framework to design a trial.

Clinical rehabilitation impact: the use of EFA[®] technology could be assessed and used in patients with severe acquired brain injury and ineffective cough.

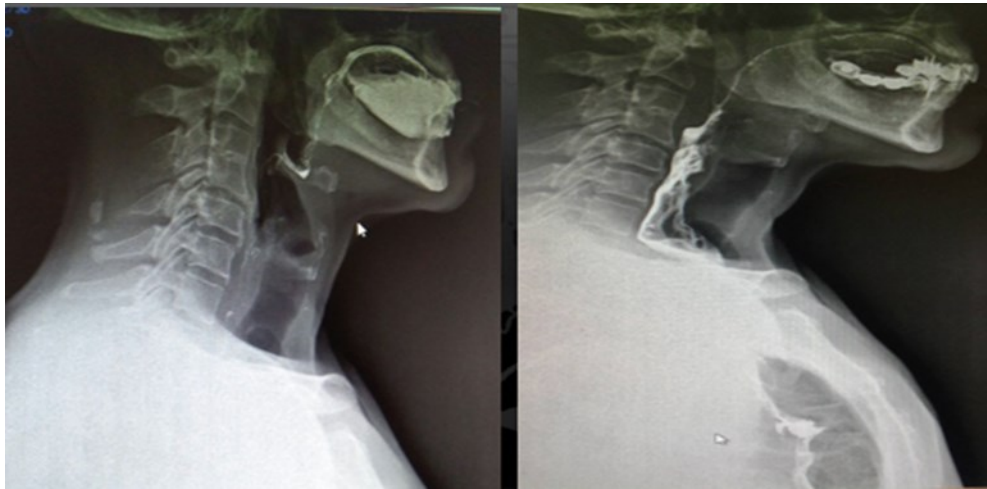
Key words: Dysphagia, aspiration pneumonia, acquired brain injury, expiratory flow accelerator.

Introduction

A 57-year-old male patient suffering from sequelae of esophagectomy surgery for adenocarcinoma of the esophagogastric junction in 2015, is admitted to our complex rehabilitation operating unit in January 2018 after performing new esophagus surgery – colonplasty by transverse colon transposition (October 2017) and subsequent jejunostomy and jpg for the appearance of severe dysphagia. Arrived alert and collaborating, he appeared perfectly oriented in the space-time parameters, visibly malnourished and voiceless. The evaluation of swallowing showed a positive water bolus test (associated with a bubbling voice after taking it), as well as the presence of strongly slowed down and ineffective swallowing acts with the presence of oral stagnation when taking foods with a creamy and solid consistency . By virtue of this initial evaluation, the patient obtained a score of 1 on the DOSS scale indicating the presence of severe dysphagia; moreover, the increased production of airway secretions associated with the partial or total inefficiency of the cough was highlighted. The latter conditions were highlighted by the patient with a distressing sensation of air hunger which entailed the presence of severe tachypnea and a significant increase in the activity of the accessory muscles (results of previous aspiration pneumonia).



The purpose of our study was to verify the efficacy of FREE ASPIRE associated with speech therapy and respiratory rehabilitation in reducing the production of airway secretions, making the work of breathing more advantageous, improving the ventilation perfusion ratio, preventing frequent lung parenchyma infections by inhalation and the consequent reduction of the patient's respiratory effort both from a muscular and emotional point of view.



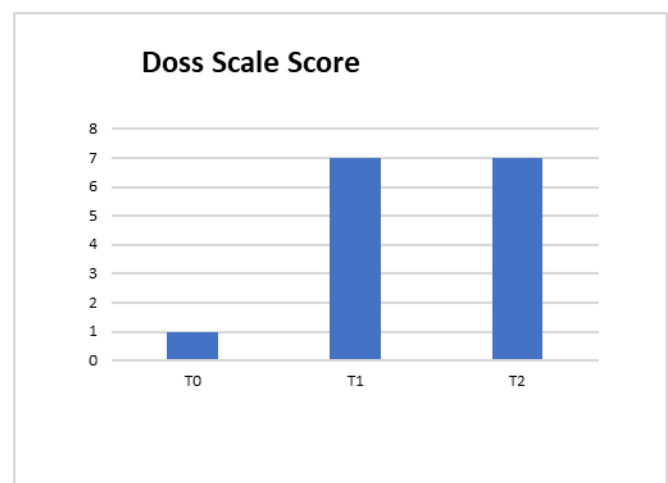
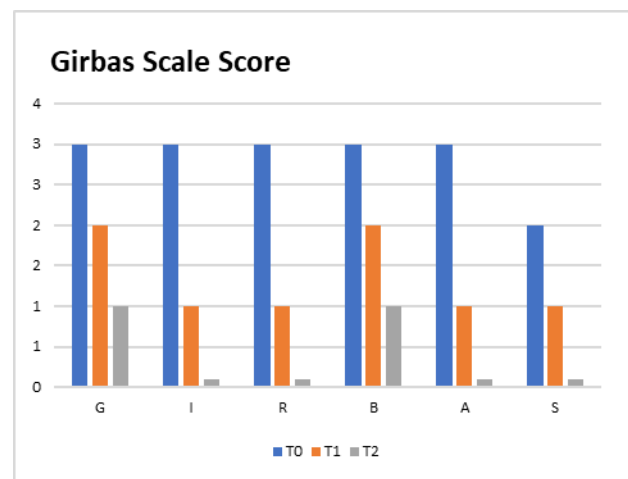
Materials and methods

During the forty days of hospitalization we carried out two daily sessions of respiratory physiotherapy aimed at improving respiratory performance by "stimulating" the muscles involved in the respiratory acts; three daily speech therapy sessions for the treatment of dysphagia and praxic deficit of the LBF district; 3 daily sessions with use of the FREE ASPIRE. For our evaluations we used the following evaluation scales administered at admission (t0), intermediate evaluation (t1) and at discharge (t2)

- 1) modified BORG scale: we asked the patient to use this scale every time he felt the sensation of air hunger, indicating the score related to the severity of the condition
- 2) DOSS scale for the assessment of dysphagia.
- 3) Fiberoptic endoscopic evaluation of swallowing (F.E.E.S.) Was performed at the beginning (t0) and at the end of the treatment (t2) which allowed us to see and not only interpret the progress achieved
- 4) European quality of life scale (visual analogue version): we evaluated the variation in the patient's quality of life
- 5) Functional independence measure scale (FIM®):

which allows to highlight the degree of disability and the progress in global functional recovery.

- 6) g.i.r.b.a.s scale for the degree of hoarseness and clammy voice.



Results

1. The evaluations carried out using the modified BORG scale showed how the patient constantly reduced its use during episodes of respiratory crisis until it was completely canceled near discharge.
2. Entry DOSS score (t0) was 1 (severe dysphagia); at discharge (t2) equal to 7 (absence of dysphagia)
3. The execution of the FEES allowed us both to highlight with extreme precision all the swallowing deficits present on admission and to confirm at discharge the good competence achieved in the management of all consistencies, allowing the patient to eat orally in safety.
4. Visual-analogical scale European quality of life: score (to): 10; discharge(t2): 80
5. Functional independence measure scale(FIM®): Admission (to):67 ; intermediate (t1): 90 ; , discharge 113
6. G.I.R.B.A.S. scale at t0: G 3 – I 3 – B 3 – A 3 – S 2 ; At discharge t2: G 2 – I 1 – R 1 – B 2 – A 1 – S 1.

Conclusions

The analysis of the data obtained from the treatment tested for our clinical case allows us to conclude that the absolutely non-traumatic technology for the patient (unlike what happens with frequent aspirations of the secretions) developed in the FREE ASPIRE, has made it possible to reduce considerably the production of airway secretions, eliminating the risk of aspiration pneumonia and improving the patient's respiratory effort. This method associated with rehabilitation and speech therapy has allowed the patient to resume oral

nutrition in safety and to improve the perception of his own quality of life, drastically reducing the degree of disability.

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