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ORIGINAL ARTICLE

Dysphagia in post Covid-19 Patients- a Prospective Cohort Study

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Abstract
Never in recent history has mankind been so severely and diversely affected by any disease like the COVID-19 infection. Many post-COVID complications have been mentioned in the literature and other platforms, of which post-COVID Dysphagia is a very distressing complaint. The severity of dysphagia may range from mild discomfort in swallowing to life-threatening aspiration. This paper aims to study post-COVID dysphagia, its various presentations, possible causative factors and diagnosis. Like any other new disease on the block, continuous study and research is the need of the hour, for us to be able to mitigate the damage already inflicted by this pandemic.

Keywords Post COVID 19 · Dysphagia · Presentation · Findings

Introduction

The SARS CoV 2 virus has put a halt to the entire world across boundaries and affected people in different ways. Even after recovery, patients have been found to present with varying complaints like loss of smell, taste, weakness etc. among which difficulty in swallowing is emerging as a very distressing complaint. Different causes have been mentioned in the limited literature available, including cranial nerve involvement, damage to peripheral nerves involved in swallowing reflex, prolonged intubation, tracheostomy, poor lung function among others. This paper aims to study the presentation and findings in patients with dysphagia after recovering from Covid-19.

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AIM

To study and document.

a. Ways of presentation (chief complaints).
b. Functional Oral Intake Scale (FOIS).
c. Findings in Fiberoptic Endoscopic Evaluation of Swallowing (FEES) in patients complaining of difficulty in swallowing post recovery from Covid-19.

Methodology

This study is an ongoing Prospective study being conducted at Nightingale Hospital and Pratiksha Hospital, Guwahati which started in March 2021. Informed consent was taken regarding the endoscopic procedure and inclusion in the study. All patients were included who presented with onset of difficulty in swallowing after suffering from Covid-19(RT-PCR proven). Complete history was taken followed by general examination and then ENT Examination was done. The chief complaints were recorded and grading was done based on Functional Oral Intake Scale (FOIS). Subsequently, all patients were put up for Fiberoptic Endoscopic Evaluation of Swallowing (FEES) [Fig. 1]. With the patient in sitting position (Fig. 1), Topical decongestant drops (Xylometazoline) and topical anaesthetic (4% lignocaine) were applied in the nasal cavities (throat anesthesia was avoided so as not to interfere with swallowing reflex) and

Fig. 1 FEES in progress

a fiberoptic laryngoscope was passed into the throat of the patients. After initial anatomical and physiological assessment, dyed liquids and solids were given to the patients and findings were noted in a proforma. Based on the findings, appropriate diet modifications, swallowing therapies and maneuvers were advised to the patients. Follow-up was done between 6 weeks to 8 weeks to after the initial assessment and a repeat FEES was done in all the patients who turned up for the review.

Results and Observation

A total of 41 patients were included in the study, of which 27 were males and 14 were females. Patients presented with complaints of frank difficulty in swallowing (19), Choking episodes (11), lump sensation in throat after every swallow (5) and nasal regurgitation of food (6) [Fig. 2]. Out of 41 patients, 22 patients required hospital admission for covid-19, of which 13 required non-invasive ventilation, 7 required mechanical ventilation while 2 patients had to undergo tracheostomy [Fig. 3].

On presentation-

1. The grading of food intake was done based on Functional Oral Intake Scale [Fig. 4]. The FOIS score was Level 1 in 8 patients, Level 2–3 in 12 patients, Level 4–6 in 11 patients and Level 7 in 10 patients [Fig. 5].

2. The FEES findings were inadequate velopharyngeal closure indicating palatal palsy (7), pre mature spillage (3), Residue in PFS (7) [Fig. 6], Penetration (that is entry of food in laryngeal inlet but remaining above the level of vocal cords) (6) [Fig. 7] and Aspiration (that is entry of food below the level of vocal cords) (9) [Fig. 8]. Findings within normal limit were seen in 9 patients [Fig. 9].

Follow-up, though advised in all the patients, could only be done in 33 who turned up for the review.

On follow -up

1. FOIS grading was Level 1 in 4 patients, Level 2–3 in 5 patients, Level 4–6 in 10 patients and Level 7 in 14 patients [Fig. 10].

2. FEES findings were inadequate velopharyngeal closure (3), pre mature spillage (0), Residue in PFS (4), penetration (4) and aspiration (3) [Figs. 11 and 12]. Findings within normal limit were seen in 19 patients.

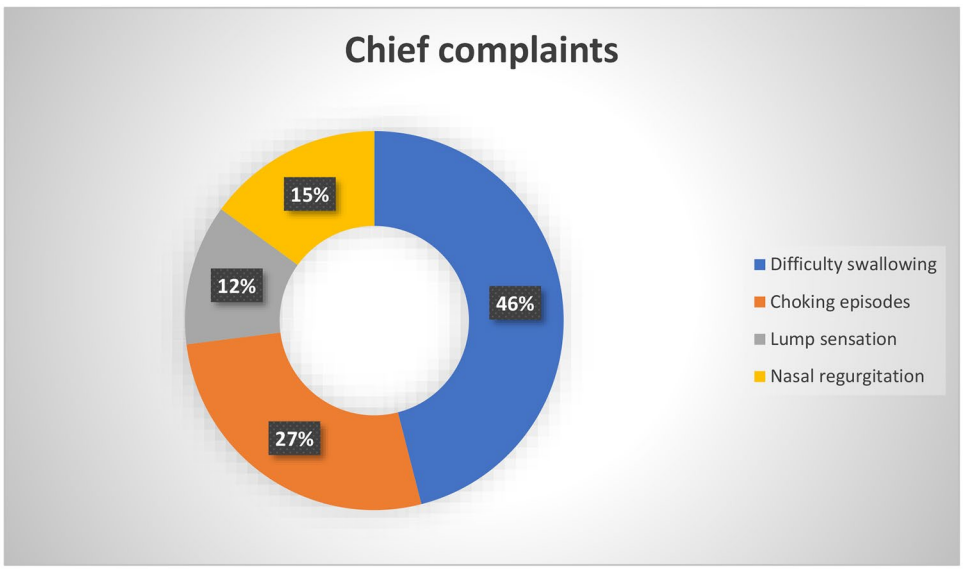

Fig. 2 Depicting distribution of chief complaints in percentage

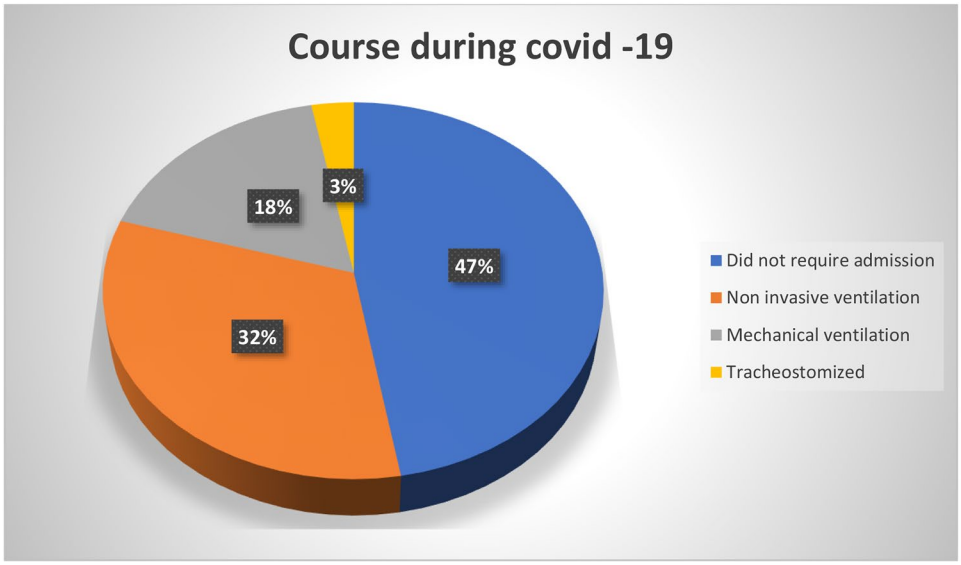

Fig. 3 Distribution of No. of patients based on treatment course during Covid -19

Level 1	Nothing by mouth
Level 2	Tube dependent with minimal attempts of oral feeding
Level 3	Tube dependent with consistent oral intake of food
Level 4	Total oral diet of single consistency
Level 5	Total oral diet with multiple consistencies, requiring special preparation or compensation
Level 6	Total oral diet without special preparation , but with specific food limitations
Level 7	Total oral diet with no restrictions

Fig. 4 Functional Oral Intake Scale

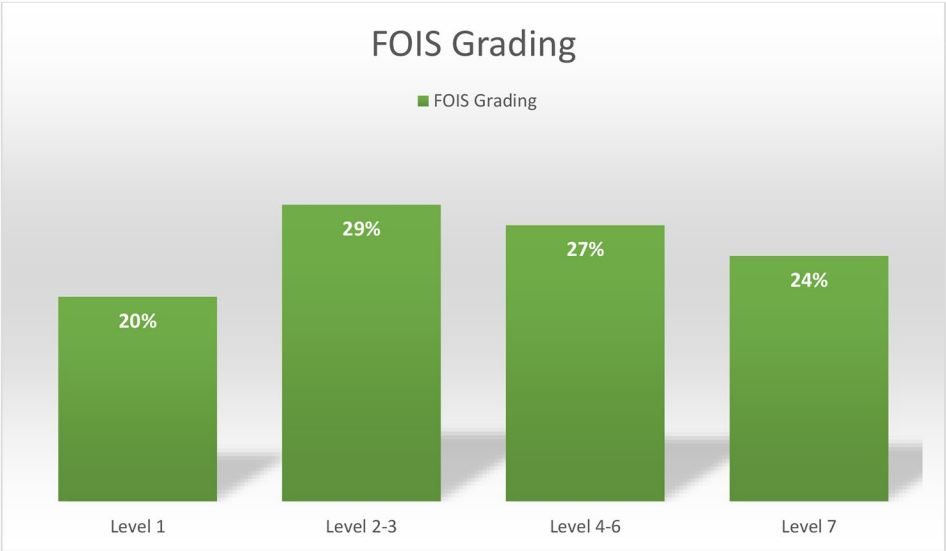

Fig. 5 Distribution of patients (percentage) based on FOIS grading in initial assessment

Discussion

Among all the diseases currently afflicting the world, Covid-19 is probably the most treacherous owing to its varying presentations and unpredictable nature. As with the disease, the treatment protocols are also changing shape as time

Fig. 6 Depicting PFS residue in a patient post mechanical ventilation and in dwelling Ryle's tube for over a month

Fig. 7 Penetration as seen by entry of dyed liquid into laryngeal inlet

progresses. Patients, however, are suffering not only during but also after recovering from this deadly disease. Difficulty in swallowing is one such complaint post covid which hampers the complete physical recovery of the patient. The most commonly postulated reason for post -COVID dysphagia is the involvement of the cranial nerves responsible for the swallowing reflex namely the lingual nerve, glossopharyngeal, vagus and hypoglossal nerves. Another very plausible reason is prolonged intubation of the patient which may alter the sensation of the lower airway, thus suppressing the protective cough reflex even in the presence of aspiration. Tracheostomized patients may also experience varying degree of dysphagia owing to insufficient laryngeal elevation and decreased sub-glottic pressure. Angela Cavalagli et al. [1] have put forth the fact that cranial nerve, particularly bulbar nerves could be involved as late complications. Ulrike Frank et al. [2] have also, in their paper, discussed about primary damage to the central and peripheral neuronal swallowing network as a cause of swallowing disorders in post covid patients. Another study by Julie Regan et al. [3] investigates post extubation dysphagia and dysphonia and emphasized prompt evaluation and intervention to minimize complications and inform rehabilitation planning. Timely intervention with dysphagia therapy is mandatory to mitigate the potentially negative consequences of prolonged intubation and long term use of cuffed tracheostomy tube and allow the patients to be able to eat what they want and speak with family. Athanasia Printza et al. [4] have also investigated the severity of dysphagia in Covid-19. Margareta Gonzalez Lindh et al. [5] have explored the swallowing function and risk factors associated with delayed recovery of swallowing in covid-19 patients post invasive mechanical ventilation using the Functional Oral Intake Scale. Maria Raffaella Marchese et al. [6], in their study, found that the prevalence of upper dysphagia after hospitalization for SARS-CoV2 is not anecdotal and that probably this long lasting sequela has psychogenic etiology. One very effective way of improving pharyngeal function via Pharyngeal Electrical Stimulation (PES) has been postulated by Marianna Traugott et al. [7] where they also state that PES can restore safe swallowing in orally intubated or tracheotomized ICU patients.

Conclusion

As Covid-19 keeps on changing forms with new presentations and features, as clinicians we too need to update ourselves with newer information regarding this subject. Complete patient recovery is not always achieved on the day the RT PCR report comes negative. Dysphagia as a post covid complaint can not and should not be taken lightly as it can severely impact the overall physical recovery of the patient if the nutritional needs of the patient are not met with adequately. Early diagnosis and intervention can not only ensure proper nutrition but also prevent life threatening aspiration. Since Covid-19 primarily affects the airway, a lot of patients may have a non-responsive airway paving way

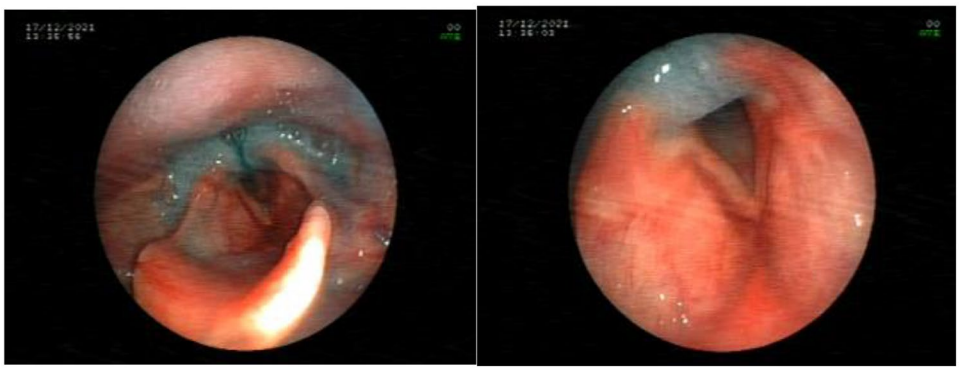

Fig. 8 Aspiration seen in post tracheostomized patient, almost no cough was seen in response to the massive aspiration

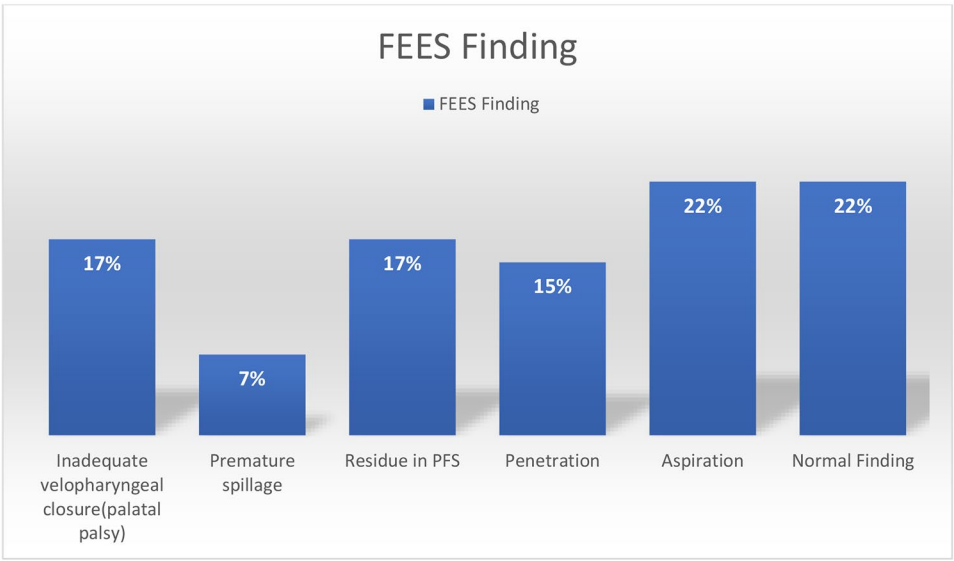

Fig. 9 Different FEES findings in patients with dysphagia (Initial assessment)

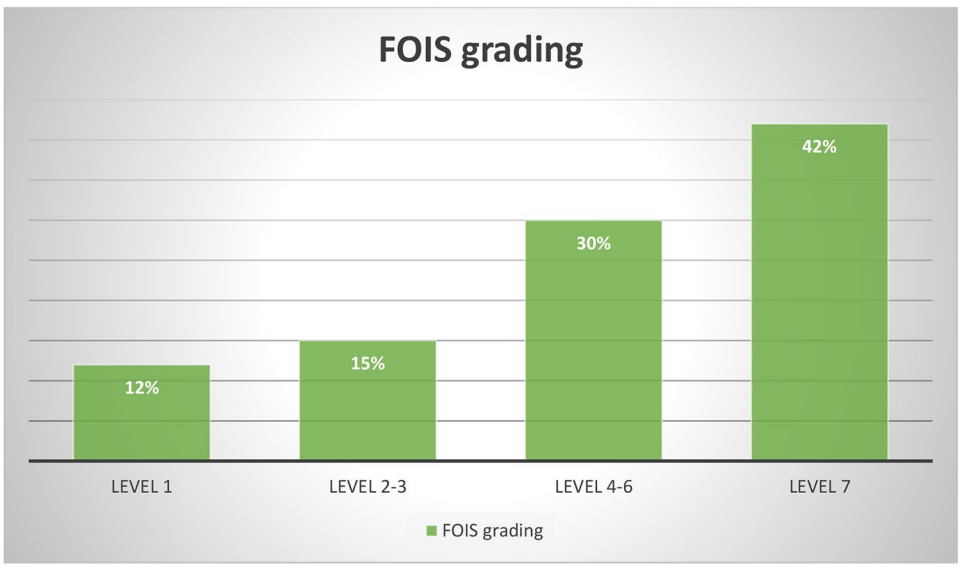

Fig. 10 FOIS grading in subsequent follow up

for the sinister silent aspiration. We, as otolaryngologists, should be on our toes and promptly investigate any patient who comes to us with any complaint related to swallowing after he/she has recovered from Covid-19. Only when we keep our minds open, we have a chance of mitigating the damage inflicted by this pandemic.

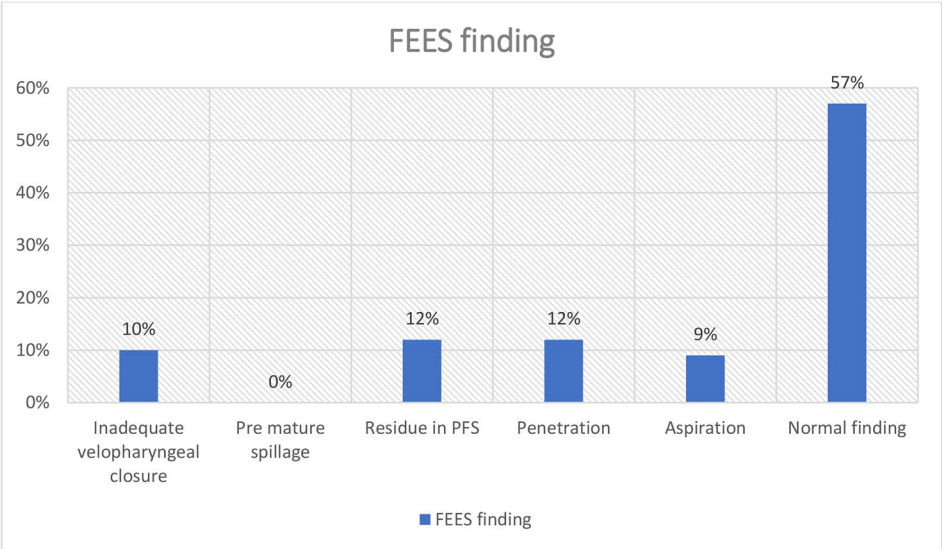

Fig. 11 FEES finding in follow up (in a total of 33 patients)

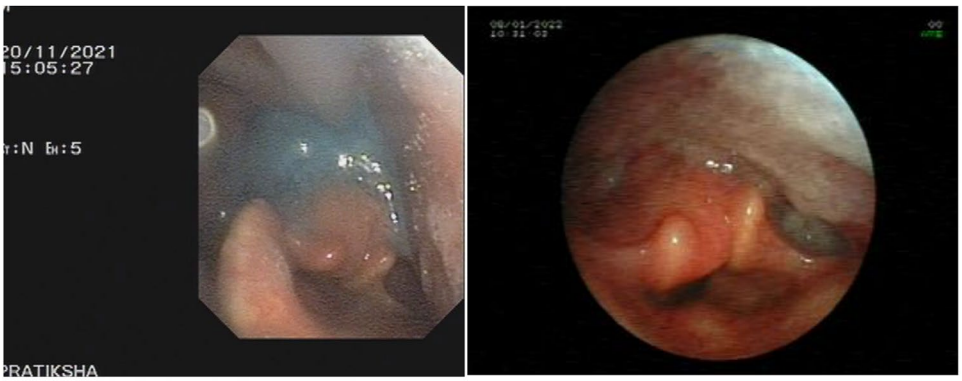

Fig. 12 Reduction in amount of residue in PFS following swallowing therapy

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