Complete Lateral Positioning Enabled Feeding in a Patient with Aspiration Pneumonia

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(Received March 4, 2022; Accepted April 14, 2022)

The complete lateral position can be used to widen the lateral pharynx in a direction that facilitates swallowing and reduces the risk of aspiration, even if the patient is unable to eat in the sitting position. Here, we report a case of aspiration pneumonia in a patient who was unable to eat in the sitting position after swallowing endoscopy, but was able to eat in the complete lateral position. By employing complete lateral positioning, more patients may be able to continue oral intake.

Keywords: complete lateral position, dysphagia, aspiration pneumonia, swallowing endoscopy

INTRODUCTION

Swallowing function declines with age [1]. As Japanese society ages, the importance of oral nutrition and assessment of swallowing function is increasing. Patients with aspiration pneumonia achieve a better prognosis with earlier oral intake and rehabilitation [2–4].

In clinical practice, patients with swallowing dysfunction are often repositioned during feeding so that they can consume food more safely. In addition, we have previously reported that posture is an important factor in swallowing [5] The complete lateral position is an assisted swallowing technique for aspiration prevention defined as "a method of oral intake with the trunk side down in a position that facilitates the storage of food mass on the lateral wall of the middle to lower pharynx under the action of gravity" [6]. It reduces the risk of pre-swallowing and post-swallowing aspiration and improves activities of daily living [6]. In patients with severe dysphagia, the complete lateral position enables feeding even in patients judged to be better off fasting due to a high aspiration risk [6].

Here, we report a case of aspiration pneumonia in a patient with swallowing-induced delay, obvious laryngeal influx, and aspiration who was unable to eat after swallowing endoscopy in the sitting position but was able to eat in the complete lateral position.

CASE REPORT

An 84-year-old man came to our hospital with a chief complaint of fever and choking on water. He had hypertension, type 2 diabetes mellitus, cerebral infarction, and left hemiplegia. Activities of daily living were mostly independent, and he was able to walk independently and lived with his wife and son. Activities of daily living: Mostly independent and can independently walk. He had decreased food intake since winter, about 3 months before hospital admission. He was admitted to our department due to aspiration pneumonia. At the time of his visit to the department, his vital signs were 15 points on the Glasgow Coma Scale of consciousness (E4V5M6), blood pressure 140/66 mmHg, pulse 124 beats/min (regular), temperature 39.0°C, and saturation of percutaneous oxygen (SpO2) 90% (room temperature). A coarse crackle was heard mainly in the right lung and no heart murmur was noted. Blood tests revealed an increased inflammatory response, with a white blood cell count of 13,000/μL, C-reactive protein level of 20.56 mg/dL, and consolidation in the right lower lung field on chest radiography. Computed tomography (CT) revealed consolidation in the bilateral lung fields, with right inferior lobe predominance. Based on these findings, aspiration pneumonia was diagnosed. The clinical course is shown in Fig. 1. Ceftriaxone (CTRX) and azithromycin (AZM) were initiated, and the patient fasted. On day 3, the patient's subjective symptoms improved. The first swallowing endoscopy was performed in a sitting position. The patient had a high degree of delayed onset of swallowing, laryngeal influx, aspiration with jelly consumption, a large amount of pharyngeal residue, and a weak cough reflex. The possibility of recurrent aspiration was considered very high, and the patient was judged to have difficulty with oral intake. On day 4 rehabilitation was initiated. At the start of the program, the Barthel Index (BI) was 10 points. On day 6, his fever resolved and he was de-escalated from CTRX and AZM to ampicillin. On day 8, the patient's respiratory condition improved, with lysis of fever and 100% SpO2 in

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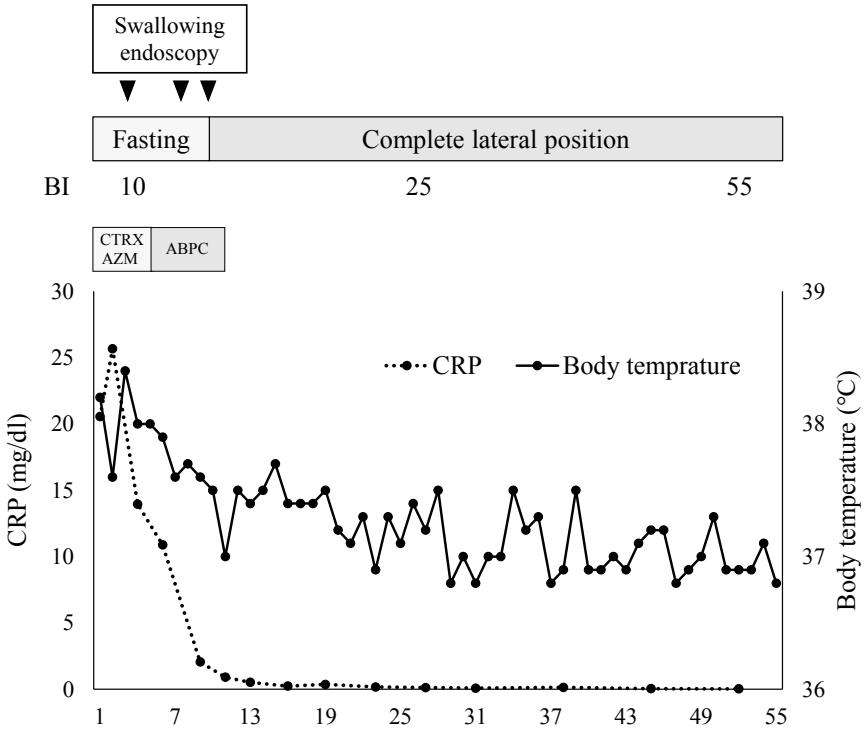

Fig. 1 Clinical course
BI: Barthel Index, CTRX: Ceftriaxone, AZM: Azithromycin, ABPC: Ampicillin, CRP: C-reactive protein

room air. Repeat swallowing endoscopy did not reveal any changes, and the patient had difficulty eating in the sitting position. Rehabilitation continued until oral intake was initiated. Swallowing endoscopy performed on day 10 showed no improvement. Because oral intake in the sitting position was difficult, we attempted to place the patient in the complete lateral position (Fig. 2A, B). Swallowing endoscopy showed no laryngeal inflow or aspiration and no indirect laryngeal inflow despite the presence of pharyngeal residue (Fig. 3). We judged that the patient was able to eat and initiated the oral intake of mixed food with assistance. Antibiotics were discontinued on day 11. On day 17, his diet was changed to total porridge, chopped sub-meals, and thickened food, and he was able to consume it without choking. On day 21, the patient was able to consume three meals on his own. Rehabilitation continued and BI improved to 25 points on day 27 and 55 points on day 52. He continued to consume food orally in the complete lateral position without any recurrence of aspiration pneumonia and was discharged from the hospital on day 60. After discharge from the hospital, the patient continued food intake using the complete lateral position.

DISCUSSION

Rehabilitation and good nutrition are expected to improve swallowing function in elderly patients with difficulty in oral intake [3, 4]. Physical rehabilitation reduces mortality in elderly patients with aspiration pneumonia [7]. Further, early initiation of oral intake is a favorable prognostic factor for aspiration pneumonia [8, 9]. Aspiration pneumonia due to poor swallowing function requires attention, and swallowing function assessment by swallowing endoscopy is a useful tool because it provides a direct view of the pharyngeal phase of swallowing [10, 11]. The risk of aspiration is high in cases with direct laryngeal influx findings on swallowing endoscopy [12]. Therefore, early swallowing evaluation and resumption of oral intake are important, but there are some cases in which oral intake is difficult [12].

The complete lateral position is an ingenious feeding posture for addressing dysphagia [6]. Placing patients in this position is easy, reproducible, and can be performed by anyone regardless of the level of support provided by medical personnel or supporters. Dysphagia in the pharyngeal phase of swallowing is considered a good indication for placing a patient in the complete lateral position, especially for those with delayed swallowing or decreased pharyngeal contractions that increase the amount of food left in the pharynx. When colored water was injected as a simulated food mass and the patient's pharyngeal reservoir was measured in the pharyngeal–laryngeal transparency model, it reached 14.2 ml in the fully side-lying position, which was about three times the amount in the sitting position (4.6 ml) [6]. This is because the complete lateral position allows food to remain in the lateral wall of the middle to lower pharynx and increases the amount of food stored in the pisiform fossa, thus making laryngeal inflow and aspiration less likely. Aspiration caused by a delayed swallowing reflex, which occurs after the swallowing reflex due to food remaining in the pharynx, is caused by food straying from the pharynx into the larynx and trachea due to gravity. Thus, minimizing the amount of food that strays can reduce the risk of aspiration. In addition, even if aspiration occurs, it is easy to exhale as long as the cough reflex is maintained because the direction of gravity is not toward the trachea. It is also important to perform the final swallowing to prevent aspiration of

A

B

Fig. 2 Meal intake positions
A pillow is inserted behind the back of the patient and fixed to prevent the patient from collapsing to the dorsal side. The patient is placed in the complete lateral position with the shoulders and pelvis perpendicular to the bed's surface.

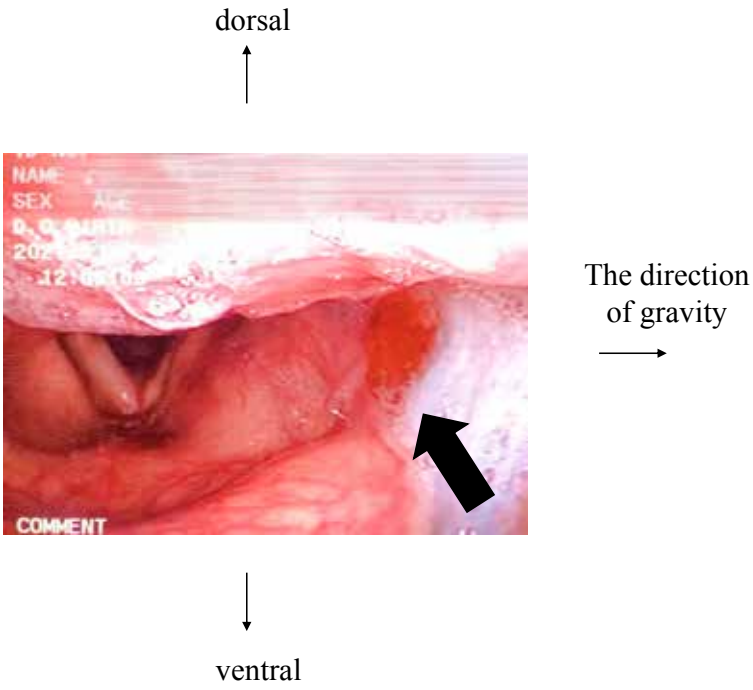

Fig. 3 Location of the food mass in the complete lateral position (swallowing endoscopy image)
The arrow indicates the jelly that pooled in the lateral wall of the pharynx.

residual material in the pharynx. The Final swallowing is the use of thickened water to swallow the food remaining in the pharynx, thereby reducing the amount of residual material present after the meal is finished, and reducing the risk of aspiration [13].

The patient's general condition improved and he was able to walk alone. Therefore, we performed a series of sedentary swallowing endoscopies on days 3, 8, and 10. Due to delayed swallowing, laryngeal influx, aspiration findings, and a large amount of pharyngeal residue, the patient's risk of recurrent aspiration pneumonia was very high, and oral intake was judged to be difficult. However, in the complete lateral position, pharyngeal residue was stored in the left lateral wall of the pharynx for all types of food ingested by the patient, including jelly, milk, and porridge. Thus, the patient was able to initiate oral intake without laryngeal inflow or aspiration. The patient subjectively reported that oral intake became easier.

When placing patients in the complete lateral position, the left lateral position is preferred to maintain the natural angle of the stomach and prevent gastroesophageal reflux. If there is glottal insufficiency, the paralyzed side of the glottis should be placed on top, and if there is hemiplegia, the healthy side should be placed on top for self-consumption so that the patient can proceed with less laryngeal inflow [6]. In our case, the left lateral side supine position was chosen because of left insufficiency palsy (Fig. 2A, B). The patient should be in this position with a cushion or bath towel behind the back on the side of the bed to prevent the body from opening. In addition, both shoulders should be vertically oriented [6, 14]. In our case, it would have been better to place a cushion between the patient's lower limbs. Therefore, we positioned his upper lower limbs forward to prevent his body from opening, thereby maintaining his posture.

Some patients placed in the complete lateral position are able to return to a sitting position by improving their nutritional status and continuing rehabilitation [14]. Direct swallowing training from an early stage can lead to a favorable outcome even if aspiration pneumonia develops. In addition, even when oral intake in a sitting position is judged to be difficult, as in our case, complete lateral positioning may allow patients to continue eating and enjoying meals. Because of the ease and reproducibility of complete lateral positioning, it can be continued after discharge from the hospital, despite the lack of experience of the patients' caretakers with this method.

CONCLUSION

We report the case of a patient with aspiration pneumonia who was judged to have difficulty eating orally after swallowing endoscopy in the sitting position but could eat in the complete lateral position. By considering complete lateral positioning as an option, we hope that more patients will be able to consume food orally despite initial contraindications.

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