

# Case report : Effect of hyaluronic acid injection for dysphagia who has vocal fold paralysis after Influenza infection

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## INTRODUCTION

Dysphagia is swallowing difficulty taking more time and effort to move food or liquid from your mouth to your stomach. And the most common cause of dysphagia is stroke. Vocal fold paralysis is one of the common problems that can cause dysphagia. Vocal fold paralysis is strongly related to the movement of the larynx. Because it is innervated by the vagus nerve, patients with vocal fold paralysis are often accompanied by decreased laryngeal movement, and the larynx does not function properly in swallowing.

Various methods for the treatment of vocal fold paralysis have been proposed, and among them, vocal fold Teflon and Botox injection treatment has been tried. In addition to Botox vocal fold injection, it is reported that hyaluronic acid vocal fold injection is also effective.

## Case Presentation

Case : F/74

Dysphagia, onset : 1 week ago  
 Past Medical history (-)

A 74-year-old female patient diagnosed with unilateral vocal fold paralysis without any brain lesions, but with a history of influenza infection 1 week ago. In Video Fluoroscopic Swallowing Study (VFSS), significant manifestations were not observed in the oral phase, but during swallowing aspiration, 50% of the residue after swallowing was measured as semisolid, and aspiration was observed during swallowing in liquid. The Penetration Aspiration Scale (PAS) score was 6 points, and the Functional Dysphagia Scale (FDS) was 46 points.

Vocal-fold adduction was performed by injecting hyaluronic acid.(Figure 2) 4 days after the vocal fold injection, VFSS showed no aspiration during the swallowing of semisolids, and 10% of the residue after swallowing semisolids was measured, that decreased compared to the initial test. No aspiration was observed in the liquid during swallowing. The PAS score was 4, and the FDS score was 26.(Figure 1)

Stroke is the most common cause of dysphagia. Therefore, in patients with dysphagia, stroke must be ruled out first, but if it is not, idiopathic vocal fold paralysis should also be considered as another cause of dysphagia.

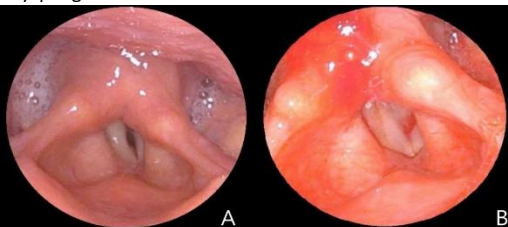


Fig. 2. (A) Before the injection (B) After the injection of Hyaluronic acid(Restylane® Q-Med. Uppsala, Sweden) in Right vocal fold. The right vocal fold has been medialized after the injection of hyaluronic acid.

In this case, as no specific findings were observed in the stroke evaluation, we searched for other causes, such as unilateral vocal fold paralysis and influenza virus infection, confirmed a week prior.

Therefore, it could be dysphagia due to idiopathic vocal fold paralysis caused by upper respiratory infection (URI). Idiopathic vocal fold paralysis occurred mostly from December to February, with the highest prevalence of URI. It was found that this patient also developed symptoms during this period. The cause of idiopathic vocal fold paralysis after URI has not been clearly identified.

The cause of idiopathic vocal fold paralysis after URI has not been clearly identified, but post-viral vagal neuropathy is thought to be the cause.

A few mechanism are suggested two mechanisms for post-viral vagal neuropathy: (1) direct infection and inflammation of the vagus nerve and (2) secondary inflammatory response. The vagus nerve has both sensory and motor components and various symptoms appear. The vocal fold is directly innervated by the superior and inferior laryngeal nerves, that are branches of the vagus nerve. Thus, vocal fold paralysis also occurs as one of several symptoms of post-viral vagal neuropathy.

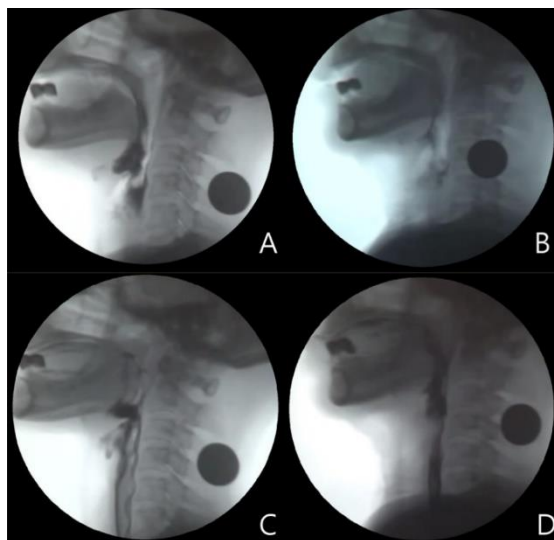


Fig. 1. VFSS results of pre, post intervention. (A) During swallowing aspiration, 90% of post swallowing residue in semisolid (B) After the hyaluronic acid injection, aspiration (-), 5% of post swallowing residue (C) During swallowing aspiration in liquid (D) After the hyaluronic acid injection, aspiration (-) is not observed

## CONCLUSION

Patients complaining of dysphagia with unilateral vocal fold paralysis due to viral infection other than stroke, hyaluronic acid injection into the vocal fold can be considered as a method to improve dysphagia.

In a situation where URI is increasing due to the recent COVID-19 pandemic, this treatment is thought to have many effects in patients with dysphagia caused by vocal fold paralysis that occurs after URI.