

# Glue Embolization of Gastrobronchial Fistula Post Sleeve Gastrectomy

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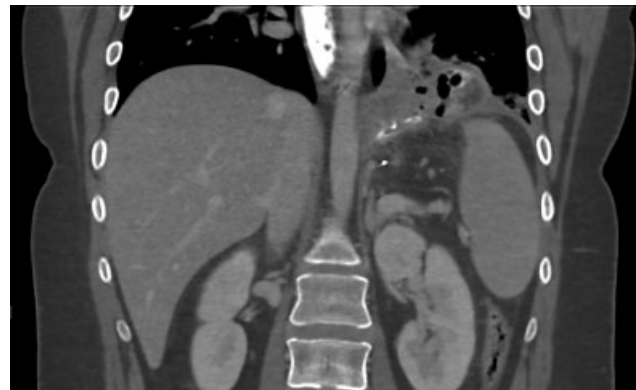
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Staple line leak occurs in 1.4 to 2.8% of cases post sleeve gastrectomy and can be treated by surgical revision, stent placement, or endoscopic interventions.<sup>1</sup> Untreated, it may progress to gastropleural or gastrobronchial fistulas (GBF).<sup>1</sup> We report two cases of GBF: one was successfully treated with glue embolization, and the other underwent surgical repair after unsuccessful glue embolization. Institutional research committee at our institute approved this report for publication.

The first case is a 25-year-old female who developed chronic GBF following staple line leak 18 days post sleeve gastrectomy (►Fig. 1). Patient complained of productive cough and shoulder pain. Initial management with a covered gastroesophageal stent for 6 weeks and then a second stenting for 8 weeks failed to treat the fistula. Endoscopic clipping of gastric opening of the fistula also failed. Subsequently, embolization of the fistula was performed via orogastric approach. A 5-F Kumpe catheter (Cook Medical, Indianapolis, Indiana, United States) was used to select the gastric opening of the fistula. Contrast injection confirmed presence of fistula between the stomach and left lower lobe bronchus. Glubran II (GEM Srl, Viareggio, Italy) mixed with lipiodol was injected to successfully embolize the tract (►Fig. 2). Follow-up computed tomography (CT) scan at 3 months showed

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complete resolution of the fistula and marked improvement in the left lower lobe inflammatory changes (►Fig. 3). Clinical follow-up indicated resolution of the patient's symptoms. The second case is a 28-years-old female who also developed GBF post sleeve gastrectomy (►Fig. 4). Patient's symptoms included cough and hematemesis. A trial of gastroesophageal



**Fig. 1** Coronal-enhanced computed tomographic image showing gastrobronchial fistula between the stomach, left lung, and left lower lobe bronchus.

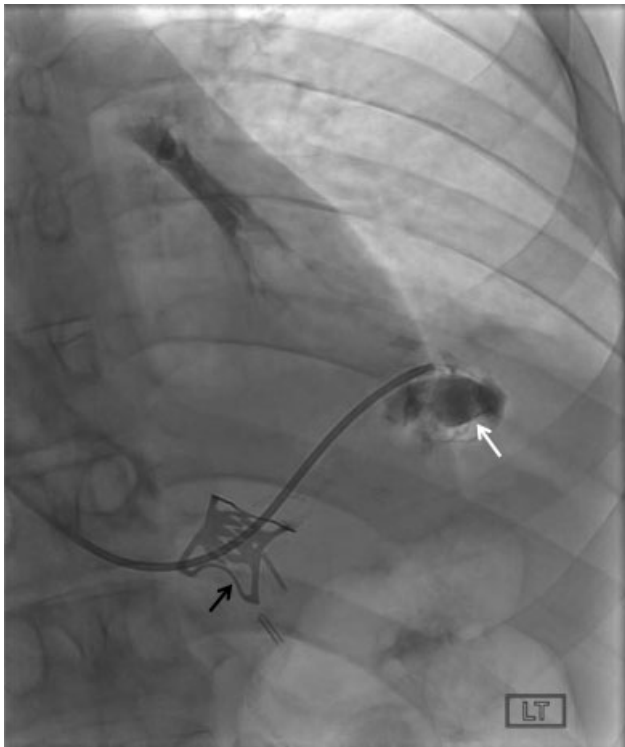
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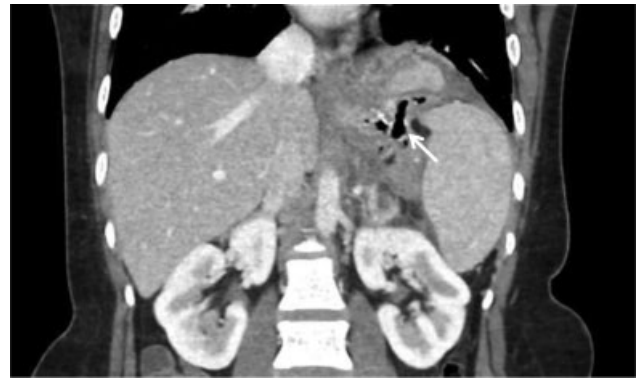


**Fig. 2** Intraprocedural fluoroscopy image showing left upper quadrant collection (white arrow) communicating with bronchial tree in left lower lobe via gastrobronchial fistula with successful embolization of the fistula track with Glubran II mixed with lipiodol. Endoscopic clipping also shown in the image (black arrow).



**Fig. 3** Coronal-enhanced computed tomographic scan 3 months after the procedure shows successful embolization of the fistula tract with Glubran II (arrow) and improvement in left lower lobe inflammatory changes.

stenting for 13 weeks failed to resolve the fistula. First stent was placed 10 months post-surgery for the duration of 6 weeks and followed by another stent for 7 weeks as the GBF persisted. Patient was referred to interventional radiology for GBF embolization. Fistula tract was selected with a 5Fr catheter and microcatheter. Embolization was performed with Glubran II (1:1 Glubran II: Lipiodol) (→ Fig. 5). Follow-up CT scan 1 month later showed persistent GBF associated with unchanged left lower lobe consolidation and plural effusion (→ Fig. 6). Patient then underwent successful laparotomy with fistulectomy and Roux-en-Y gastrojejunostomy.



**Fig. 4** Coronal-enhanced computed tomographic image showing gastrobronchial fistula track (arrow) arising from the proximal aspect of stomach through the left hemidiaphragm.



**Fig. 5** Intraprocedural fluoroscopy image showing gastrobronchial fistula embolized with Glubran II (1:1 Glubran II: Lipiodol).



**Fig. 6** CT scan 1 month later showing persistent gastrobronchial fistula tract arising from the proximal aspect of stomach through the left hemidiaphragm with the contrast seen in the left lower lobe (arrow).

The incidence of GBF post sleeve gastrectomy is still unknown<sup>1</sup> with paucity in medical literature for the best treatment plan for GBF. A retrospective study on 21 patients with GBF treated with gastroesophageal stents showed a success rate of 81%.<sup>2</sup> Previous case report by Fuks et al<sup>3</sup> on a female patient with GBF post sleeve gastrectomy that underwent total gastrectomy with pulmonary lobectomy after failure of several minimally invasive options including stent placement and seven injections of fibrin and Histoacryl glue.

Glue embolization may be considered as a minimally invasive option for the management of GBF post sleeve gastrectomy. Optimization of the technique and proper patient selection are vital for clinical and technical success. However, surgical operation may be required as a definitive intervention when less invasive procedures fail. Further

studies are needed to determine the effectiveness of this method.

#### Conflict of Interest

The authors declare no conflict of interest.

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