

Resolution of Treatment-Resistant Atrial Fibrillation After Paraesophageal Hernia Repair

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Background

- Atrial fibrillation (AF) and other atrial tachyarrhythmias affect over 0.5% of the entire world’s population [3].
- There is correlation between gastroesophageal reflux disease. (GERD) and AF [5].
- PPI use can decrease the frequency of arrhythmias [4,6].
- Hiatal hernia have been reported in association with multiple variations of cardiac arrhythmia [2].

Case

79-year-old female with a two-year history of paroxysmal atrial fibrillation (PAF) complicated by atrial thrombus refractory to maximal medical management and longstanding GERD.

- Not willing to undergo ablative therapy unless necessary.
- ICD in place, on Eliquis.
- Elected to undergo workup for GERD and was found to have a large PEH on esophagram and CT (Figure 1).
- Underwent robotic-assisted laparoscopic paraesophageal hernia repair with Collis gastroplasty and Nissen fundoplication.
- Uneventful hospital stay of two days and was discharged home tolerating a full liquid diet.
- Repeat esophagram was performed as a part of routine outpatient follow up noting no evidence of recurrent hernia with normal esophageal passage of contrast into the intraabdominal stomach (Figure 2).
- Interrogation of ICD over next 12 months noted sinus rhythm with only one non-sustained episode of AF. Advanced ablative therapies were no longer indicated.

Figure 1

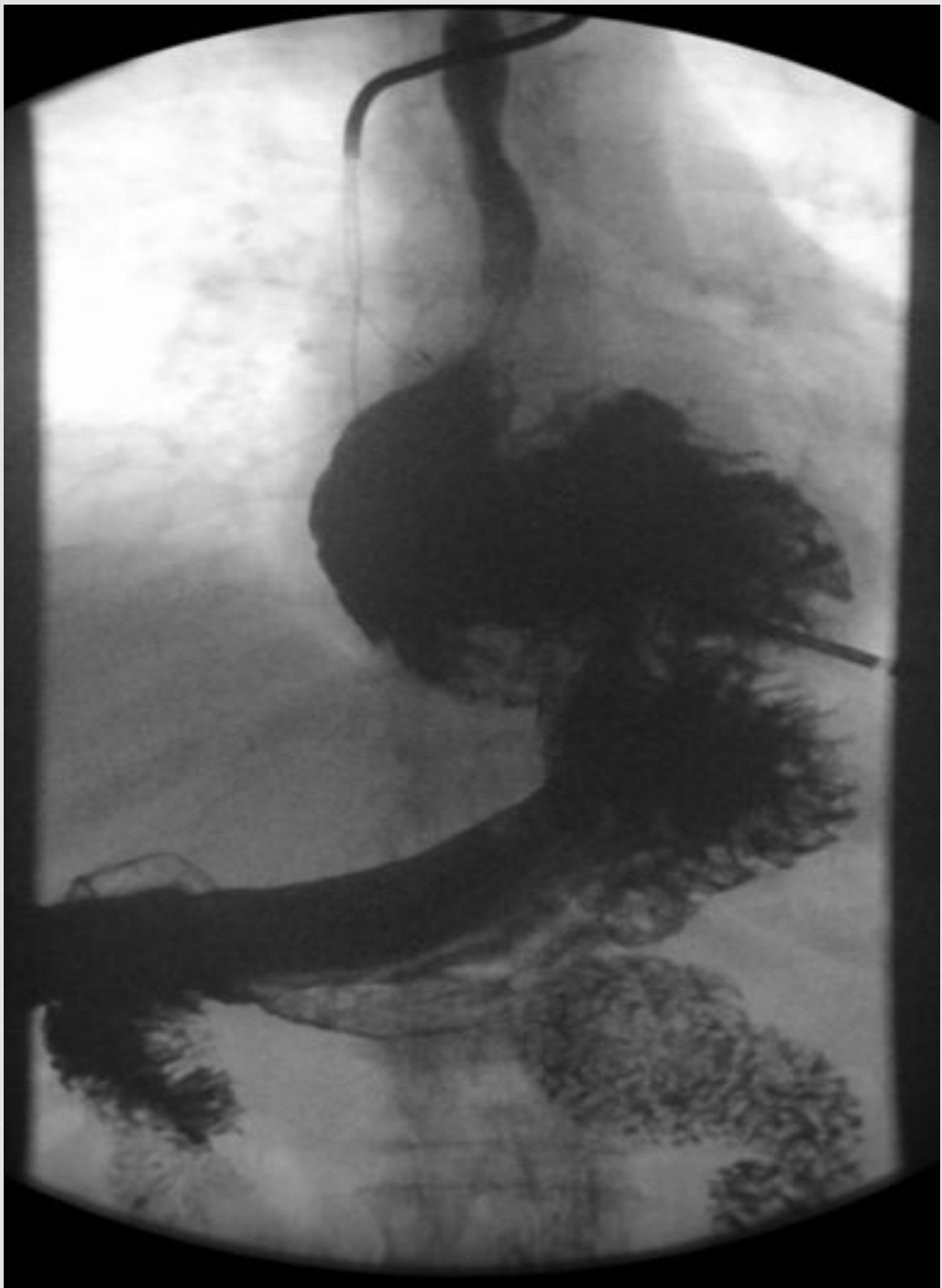


Figure 1: A (Left) esophagram showing a large hiatal hernia with most of the stomach above the diaphragm in the chest; B (right) computed tomography showing most of the stomach in the chest with compression on surrounding structures

Figure 2

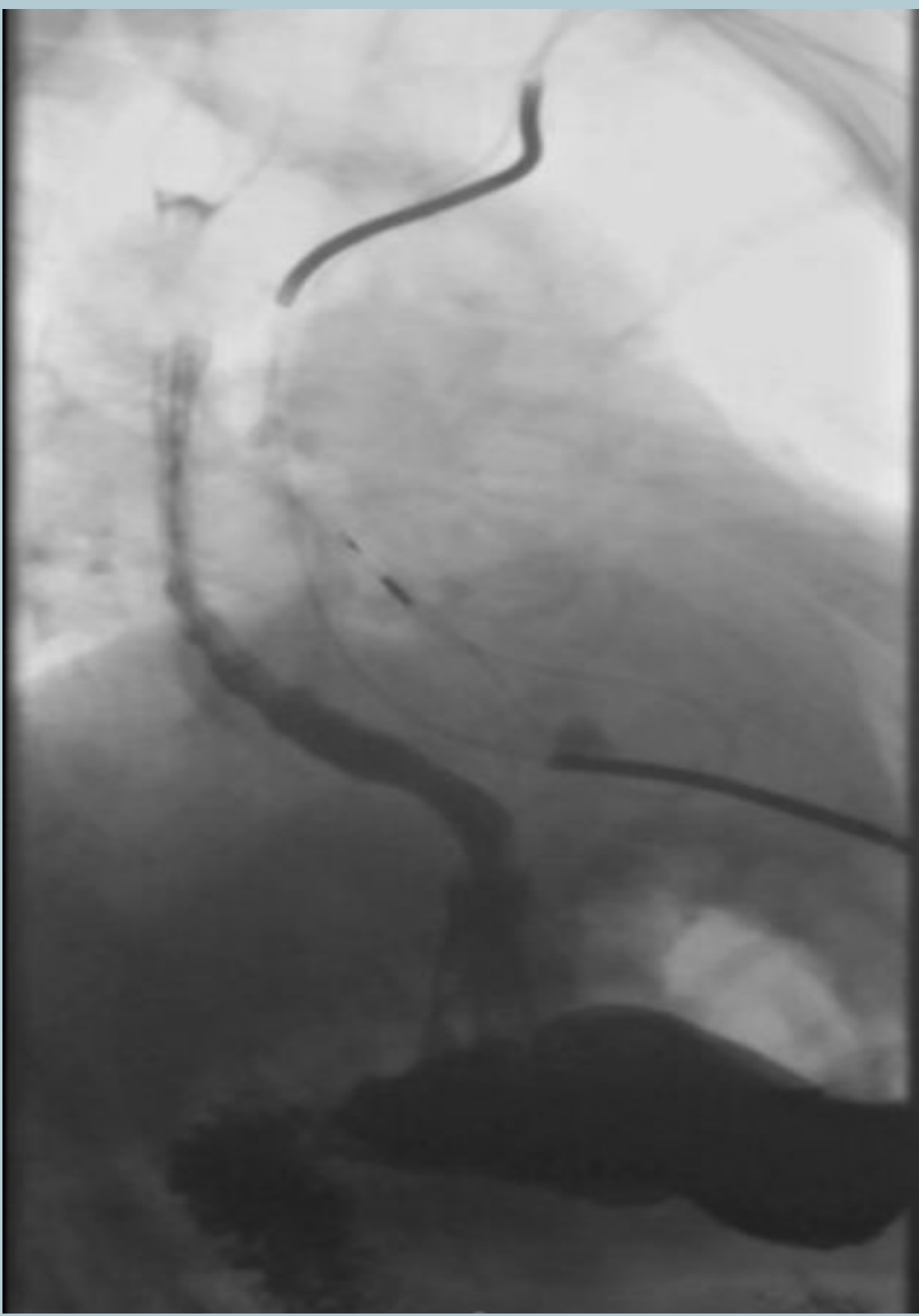


Figure 2: Postoperative esophagram showing repair of the hiatal hernia with contrast passage through esophagus and into intraabdominal stomach

Discussion

- Two mechanisms of hiatal hernia precipitating tachyarrhythmia have been proposed:
 - Mechanical compression on the left atrium or irritation of the lower esophagus affecting vagal tone [4].
 - Cytokine release from the adjacent esophagus or stomach altering electrical conduction of the heart [1,4].
- In a 2013 retrospective study, 7.1% of patients with PEH were found to also have AF, and the prevalence of predisposing conditions was less frequent in patients with both PEH and AF.
- In this case, AF persisted despite goal-directed treatment and was only cured following surgical repair of hiatal hernia.

Conclusion

- Further research is necessary to delineate the exact mechanism of atrial arrhythmia development in patients with GERD.
- Investigation of reversible gastroenterological factors perpetuating PAF in patients who are considering electrophysiological intervention may be warranted.
- Additional investigation exploring the co-occurrence of PEH and PAF may provide us with information regarding the etiology of AF, especially in previously healthy patients without a known provoking factor.

References

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