# Reduction plasty for giant left atrium causing dysphagia: Case report

Abdul Kerim Buğra[1], Ersin Kadirogullari[2], and Burak Onan[3]

[1]Bagcilar Training and Research Hospital
[2]Istanbul Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Training and Research Hospital
[3]University of Health Sciences Turkey, Istanbul Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Hospital

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**Abstract**

The giant left atrium is described as atrium with a diameter of 6.5 cm or larger, and can rarely cause dysphagia by compressing on esophagus. We wanted to present this case since we successfully reduced left atrial volume and eliminated gastrointestinal and cardiac complaints with a successful surgery. Cardiac causes of dysphagia are rare, but should be kept in mind in differential diagnosis. With early diagnosis and treatment, cardiac mortality and morbidity can be prevented.

## INTRODUCTION

The most common cause of left atrial dilatation is rheumatoid mitral valve disease. Giant left atrium (GLA) is used for atrium with a diameter of 6.5 cm and larger [1]. Massive expansion of cardiac structures can cause compression symptoms such as dysphagia, dysphonia, or Ortner syndrome. The most common indication of left atrial volume reduction plasty during mitral valve surgery is compression symptoms [2]. The choice of left atrial reduction technique should consider factors such as the patient's comorbidities, major bleeding risk, or prolongation of cardiopulmonary bypass time.

## CASE REPORT

A 60-year-old woman who has been treated with rheumatic valve disease presented with New York Heart Association class 3 dyspnea to the emergency clinic. At the same time, dysphagia was present in solid foods for previous three years. Echocardiographic evaluation showed left ejection fraction of 45%, severe mitral and tricuspid regurgitation, and left atrial dimensions of 5.7 x 9.5 x 12.5 cm. Coronary angiography was normal. There was chronic atrial fibrillation that did not affect hemodynamics. Computerized tomography revealed compression of the middle segment of the esophagus by the left atrium (Figure 1A). Surgery was planned to relieve compression symptoms, to decrease blood stagnation and thrombus formation and to avoid associated thromboembolization.

During operation, right atriotomy was performed and transseptal approach was used. First, posterior atrial wall was plicated parallel to the p2-3 segments of the mitral annulus. Plication line continued to the anterior wall of the atrium. Starting from the para-annular plication line, the posterior atrial wall between the right and left pulmonary veins was plicated. The superior wall was partially plicated, and suture line was extended to the roof of the atrium. The para-annular plication line continued to the left pulmonary vein laterally. The atrial appendage was ligated. In this way, we had reduction in surface area of the five walls of the left atrium, which became an anatomical chamber, rather than a giant cavity (Figure 1B). Subsequently, the rheumatic

mitral valve was replaced with a 29 no mechanical valve (St Jude Medical Inc., USA) with posterior chordal sparing. All plication lines were supported by double-layered continuous prolene sutures for hemostasis (Figure 1C). The interatrial septum was also plicated during septal closure. Tricuspid valve annuloplasty was done with 29 no flexible ring (Medtronic Inc, USA). After cardiopulmonary bypass, transesophageal echocardiography showed left hat atrial volume was significantly decreased, mitral valve functions were normal and mild tricuspid regurgitation was seen. Under stable conditions, the patient was transferred to the intensive care unit and extubated.

The patient was stable in the hospital follow-up and no complications were observed. Postoperative control echocardiographic evaluation showed that the ejection fraction was 45%, there is no valvular pathology. The left atrial diameter was measured as 4.9 centimeters at its widest point (Figure 1D). The patient was discharged on postoperative 6th day.

No surgical pathology was found during follow-up 14 months and the dysphagia complaint were significantly improved. Computerized tomography showed a reduction in left atrial volume by more than 60% (Figure 2).

## DISCUSSION

Compression of the esophagus by neighboring structures cause dysphagia. However, a massive dilated left atrium is a rarely considered cause of dysphagia, like our case [2].

The most common cause of left atrial enlargement is rheumatologic mitral valve disease. The GLA is used for the 6.5 cm and larger atrium[1]. In their series, El Maghraby[3] et al found the incidence of GLA in rheumatologic valve disease about by 0,6%, which is 11-12 times more common than non-rheumatological valve diseases.

The presence of compression symptoms, thrombus history and thromboembolic events are the indications for atrial reduction[1]. Traditional left atrial reduction surgery performed as; inferior atrial wall partial plication or excision of inferior atrial wall, partial plication or excision of both superior and inferior atrial walls, partial auto-transplantation of the heart. Weakening of the atrial wall due to rheumatologic factors and/or dilatation and increased atrial wall fragility and patients' comorbidities are likely to increase the risk of the complications in resection surgery [1,3,4]. In the present case, we have preserved anatomic structure and symmetric reduction by providing a decrease in surface areas of the five walls of left atrium.

Possible rheumatologic process leading to pancarditis leads to attenuation of the atrial wall. Also increased atrial pressure causes an increase in atrial wall thickness with a fibrous tissue accumulation mechanism. Fibrosis plays an important role in the development of atrial fibrillation. The atrial reduction surgery decreases the recurrence of atrial fibrillation and improves the success of the ablation procedure[1,3,5,6]. In our case, we observed that the atrium wall became thicker and non-contractile. Chronic atrial fibrillation was not affecting hemodynamics; therefore, we did not perform ablation procedure.

We did not cause a significant increase in the operation time, and we did not encounter any complications in the perioperative postoperative period. We also succeeded in reducing left atrium volume by over 60% and eliminating gastrointestinal and cardiac complaints.

## CONCLUSION

Cardiac causes of dysphagia are rare but should be kept in mind in the differential diagnosis. Thus, a gastrointestinal symptom may indicate heart disease. With early diagnosis, cardiac mortality and morbidity can be prevented.

### Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

### Author contributions

Abdul Kerim Bugra : Concept/design, Drafting article, Approval of article

Ersin Kadiroğulları : Concept/design, Critical revision of article, Approval of article

Burak Onan : Concept/design, Critical revision of article, Approval of article

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## FIGURE LEGENDS

**Figure 1** . A: Thorax CT computerized tomography view shows esophageal compression site (Black arrow), LA: Left atrium, *: Esophagus, B: Illustration of atrial plication lines, C: Intraoperative picture of atrial plication lines after mitral valve replacement, D: Postoperative 5th day transthoracic echocardiography, first and second dotted lines are diameters of the left atrium, LA: Left atrium, RA: Right atrium, LV: Left Ventricule, RV: Right Ventricule, CS: Coronary sinus.

**Figure 2** : Three-dimensional computerized tomography angiography images, Ao: Aorta, LA: Left atrium, PA: Pulmonary vein. A: Preoperative, B: Postoperative