One-stage atrioesophageal fistula repair after endovascular ablation for atrial fibrillation

Gigi Vos, MD,a Hans Van Veer, MD,a,b Peter Verbrugghe, MD, PhD,c,d Philippe Nafteux, MD, PhD,a,b Filip Rega, MD, PhD,c,d and Lieven Depypere, MD, PhD,a,b Leuven, Belgium

Atrioesophageal fistula (AEF) is a rare complication after ablation procedures for atrial fibrillation.1 As a result of thermal destruction of the left atrium and esophageal wall, a fistula can arise between these 2 neighboring structures. Presenting symptoms most often include fever, neurologic symptoms, and/or gastrointestinal bleeding occurring within 2 months after the ablation.2,3 This complication is associated with a high mortality.3 Emergency surgery seems to be the only effective treatment.2-4 However, the optimal surgical intervention for these patients is unknown.

There is a certain consensus that cardiopulmonary bypass and cardiac arrest reduce the risk of developing additional emboli.4 Moreover, it allows for better exposure, facilitating better surgical debridement and repair. As recently described by Amirkhosravi and colleagues,4 a patch repair of the left atrium and primary repair of the esophagus with a flap between the organs during cardiopulmonary bypass is the most common successful repair. A right thoracotomy allows for a good access of the middle part of the esophagus but at the cost of the exposure of the left atrium, especially when extensive reconstruction of the atrium with a xenopericardial patch is needed. To resolve the latter, authors have described a 2-stage procedure, combining a right thoracotomy for the repair of the esophagus with a subsequent sternotomy for left atrium repair.4

In our hospital we successfully performed a single-stage technique in several cases, which has—to the best of our knowledge—not been described before. After arresting the heart, through a median sternotomy, we transect the inferior vena cava. This approach allows for enucleation of the heart with optimal exposure of the left atrium and the esophagus. Institutional review board approval was not required.
pericardial flap over the esophagus to separate the cardiac space from the contaminated posterior mediastinum. In case of larger defects, the incision in the diaphragm was extended to the upper abdomen and a well-vascularized omental flap was used. The inferior vena cava is then reconnected onto the right atrium followed by weaning from cardiopulmonary bypass. Drains are placed to drain the posterior mediastinum, the thorax, and the pericardial space, separately.

A jejunostomy concludes the procedure for temporary enteral feeding. This can be performed by laparotomy in case the omentum was already harvested, or laparoscopically. A gastrostomy to allow decompression of the stomach and to prevent reflux of gastric content to the repaired esophagus can be considered.

Depending on the extent of the esophageal damage, cervical derivation may be contemplated via a left cervical incision. If this is deemed necessary, the esophagus is mobilized anteriorly of the prevertebral fascia and a few centimeters under the cricopharyngeus muscle. A small incision is made in the esophagus to allow the placement of a Pezzer drain CH 28. The esophagus is ligated distally from the drain with a resorbable suture as described by Lee and colleagues to temporary prevent passage of saliva over the reconstructed esophagus.

In the case of a primary esophageal repair without derivation, we performed a computed tomography scan before restarting oral intake to exclude a residual leak. Up to now, we have had no complications, such as sternal dehiscence, cardiac-related complications, or anastomosis-related issues that we can relate to the surgical technique on itself.

**COMMENT**

There appears to be consensus on the need for emergency surgery for AEF repair. The ideal approach is, however, lacking. We propose to perform a median sternotomy and to arrest the heart. By transecting the inferior vena cava and enucleating the heart, one can allow full exposure and thus the possibility to tackle all types of AEFs regardless of their anatomic position or of the extent of the inflammatory damage. Arresting the heart in particular prevents further thromboembolic injury during the surgery. After repairing the left atrium and the esophagus, the posterior mediastinum is separated from the cardiac space by a pedicled pericardial patch or omentum. We prefer a pedicled pericardial patch coming from the diaphragmatic site because of its thickness, strength, width, and length. In this way, a one-stage repair of the AEF is possible.
Conflict of Interest Statement

The authors reported no conflicts of interest.

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References


