Endovascular Treatment of Type II Endoleak Following TEVAR for Thoracic Aortic Aneurysm: Squeeze Technique to Reach the Aneurysmal Sac

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Disclosure

Speaker name: Chang Won Kim

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
Introduction

- Thoracic endovascular aortic repair (TEVAR) has been accepted as an alternative to open surgical repair in certain groups of patients.

- Complex type II endoleaks could be occurred due to persistent reverse blood flow through branch vessels.
Introduction

• Common sites of type II endoleaks are the left subclavian artery and intercostal arteries with occasionally bronchial arteries.

• Various methods are introduced to manage type II endoleaks, such as the use of coils, plugs, or liquid embolic agents (histoacryl, thrombin, onyx, etc.) through a transarterial approach or a direct puncture of the aneurysmal sac.
Introduction

I herein present a case of type II endoleak caused by reverse blood flow from the intercostal artery after TEVAR which was successfully treated with the use of histoacryl-lipiodol mixture by a squeeze technique to reach the aneurismal sac using a microcatheter.
Case

• A 77-year-old woman who was admitted to our hospital due to coronary artery occlusive disease presented diffused abdominal and chest pain.

• A 6.5-cm saccular aneurysm with discontinuous intimal calcification of the descending thoracic aorta was found.
Case

• She had increased C-reactive protein level at 19.02 mg/dL and leukocytosis (19.34 × 103/μL), suggesting mycotic aneurysm.
  • Broad-spectrum antibiotic therapy was started immediately.

• Due to her underlying disease and refusal to open surgery, TEVAR was performed with 30 mm diameter and 117 mm length stent-grafts (Valiant Captivia Medtronics, Minneapolis, MN, USA).
Case

One week after TEVAR, the patient had hemoptysis.

The hemoptysis suggested fistula between the aneurysm and the bronchus without underlying lung disease.
- 0.18-inch guide wire
- 5.0-Fr straight catheter
- 2.0-Fr microcatheter
1:3 mixture with lipiodol 9cc
10 days f/u
Discussion

• The incidence of endoleak after TEVAR ranges from 5% to 20%, which is similar to that after endovascular abdominal aortic aneurysm repair (EVAR).

• An accepted management method is aggressive endovascular repair of type I and III endoleaks along with observation for type II endoleaks.
Discussion

Collateral circulation in the chest involving the thoracic aorta is not so well developed compared to collateral vessels in the abdomen, making transarterial embolization of thoracic endoleaks quite difficult.
Discussion

• There have been some reports on embolization of intercostal artery caused type II endoleaks by percutaneous sac puncture through lung parenchyma.

• However, a direct thoracic approach may involve transgression of the pleura and lung, which has a high risk of complications.
Discussion

• I placed a microcatheter in the aneurysmal sac between the distal end of the stent-graft and the aortic wall and then embolized endoleaks using histoacryl-lipiodol mixture.
  • This procedure may be difficult and unfeasible for some patients with anatomic limitations.
  • The risk of spinal infarction and neulorogic deficits may contribute to this trend.
Conclusion

- This is a report on successful transarterial embolization with hystoacryl in type II endoleak after TEVAR using microcatheter squeezing technique.

- There is no definite guideline for treating type II endoleaks after TEVAR, close and regular follow-up is needed for optimal treatment and good clinical outcome.