Endovascular Repair of Complex Ruptured Abdominal Aortic Aneurysm with Surgeon-Modified Fenestrated Stent Graft

Ahmed K. Ghamraoui & Joseph J. Ricotta

1. General Surgery, Larkin Community Hospital, Miami, USA 2. Delray Medical Center, Tenet Healthcare, Delray Beach, USA

Corresponding author: Ahmed K. Ghamraoui, ghamraoui.ahmed@gmail.com

Abstract

Despite advances in technology, ruptured abdominal aortic aneurysm still carries a high risk of perioperative morbidity and mortality. Although off-the-shelf stent grafts can be used to treat certain ruptured infrarenal and thoracic aortic aneurysms in high-risk patients, complex supra- and para-renal aneurysms require customized fenestrated stent grafts that take a minimum of 6 weeks to be manufactured. This delay can be circumnavigated with surgeon-modified custom fenestrations created in the operating room using an off-the-shelf stent graft. Described herein is a case of a ruptured suprarenal abdominal aortic aneurysm successfully treated endovascularly with surgeon-modified three-vessel fenestrated stent graft.

An 86-year-old male presented to the emergency department with worsening back and groin pain and was found on imaging to have a suprarenal abdominal aortic aneurysm with a contained rupture of the posterolateral wall. He was subsequently taken to the operating room, where a Cook Zenith® stent graft was partially deployed and custom modified using specifications obtained from a three-dimensional reconstruction of the patient's computed tomography angiogram (CTA) to create fenestrations for the superior mesenteric artery (SMA) and right and left renal arteries.

The patient tolerated the procedure well and was kept overnight in the intensive care unit for close observation. His post-operative course remained unremarkable and he was discharged home on post-operative day three.

Surgeon-modified fenestrated stent grafts allow a way to circumvent the high morbidity and mortality associated with open repair of complex ruptured abdominal aortic aneurysms, especially crucial in high-risk patients. Described above is a high-risk patient with a contained rupture of a suprarenal abdominal aortic aneurysm, successfully treated endovascularly with a back table surgeon-modified three-vessel fenestrated stent graft with no perioperative morbidity.
Endovascular Repair of Complex Ruptured Abdominal Aortic Aneurysm with Surgeon-Modified Fenestrated Stent Graft

Ahmed K. Ghamraoui, DO, MSc, FACC, Joseph J. Rocotta III, MD, MS

Abstract

A 65-year-old female presented to the emergency department with non-severing pain and groin pain.

Background

Abdominal aortic aneurysm (AAA) is a non-healing degenerative condition, often asymptomatic until rupture occurs, and the patient is typically female with a mortality rate of 20-40%.

Methods

The patient underwent surgical repair with a surgeon-modified fenestrated stent graft.

Results

The patient tolerated the procedure well and had an uneventful recovery.

Conclusion

The surgeon-modified fenestrated stent graft is a useful tool in the management of complex abdominal aortic aneurysms, especially in high-risk patients.

Keywords:
- Abdominal aortic aneurysm
- Surgeon-modified fenestrated stent graft
- Endovascular repair
- Complex abdominal aortic aneurysm