Introduction

The treatment strategy for ruptured thoracic aortic aneurysm (TAA) is problematic. The General Thoracic and Cardiovascular Surgery annual report showed that the hospital mortality associated with ruptured TAA was 26.6%, which was markedly higher than the 3.3% mortality in unruptured TAA\(^1\). Furthermore, surgical mortality and morbidity rates are especially higher in the elderly than in younger patients. Herein, we report an octogenarian patient who was successfully treated with open surgical aortic stenting for a shock state due to ruptured thoracic aortic aneurysm.

Case Report

The patient was an 87-year-old woman who had a thoracic aortic aneurysm that had been followed conservatively by a general physician. She was transferred to our hospital in a shock state due to rupture of the thoracic aortic aneurysm. Computed tomography revealed a large aneurysm with a maximum diameter of 80 mm in the distal aortic arch. She developed hemorrhagic shock due to hemothorax. Thoracic endovascular aortic repair was difficult because of marked kinking of the descending aorta. We performed emergency open stenting under mild hypothermic circulatory arrest using our unique procedure. The patient was discharged from the hospital 14 days after the surgery without any complications. Herein, we report a successful case of less-invasive, quick, open stenting treatment for an octogenarian patient in a shock state due to ruptured thoracic aortic aneurysm.

Key words: Emergency open stent, Ruptured thoracic aortic aneurysm

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arrest, aortic cross clamp, cardiopulmonary bypass, and overall surgery were 16, 26, 94, and 153 minutes, respectively. The postoperative CT scan did not show any end-leakage from the suture line (Fig. 3). The patient was discharged from the hospital 14 days after the surgery without any complications.

Discussion

The clinical practice guidelines of the European Society for Vascular Surgery recommend TEVAR for ruptured TAA as the first treatment option. A Japanese nationwide observational study also showed that TEVAR was associated with better in hospital outcomes for ruptured TAA than open surgery. Furthermore, the results of the subgroup analysis indicated that TEVAR might be suitable for elderly patients. However, both studies described that TEVAR was suitable when the anatomy was appropriate. In elderly patients, access from the femoral artery for TEVAR is often difficult to obtain because of heavy calcification. In the present case, the devices were difficult to insert because of marked kinking of the descending aorta and complication of abdominal aortic aneurysm. However, both studies described that TEVAR was suitable when the anatomy was appropriate. In elderly patients, access from the femoral artery for TEVAR is often difficult to obtain because of heavy calcification. In the present case, the devices were difficult to insert because of marked kinking of the descending aorta and complication of abdominal aortic aneurysm. However, the usual open surgery for ruptured TAA requires longer cerebral exclusion and cardiopulmonary bypass durations. Even with the left thoracotomy approach, open surgery carries the risk of recurrent nerve and pulmonary injuries. Prolonged surgery may increase the risk of mortality due to bleeding, cerebral edema, infection, or multiple organ failure.

In this case, our unique technique, the LIQS method using open stenting with mild hypothermic circulatory arrest and no cerebral perfusion, was the most appropriate procedure. Cerebral perfusion was not required because circulatory arrest was completed in approximately 15 minutes. Furthermore, this approach avoids the risks of recurrent nerve injury and pulmonary complications associated with left thoracotomy. A Japanese nationwide observational study showed that the total length of hospital stay was significantly shorter for TEVAR (25 days) than for open surgery (32 days). In the present case, the duration of hospital stay was just 14 days, even in the octogenarian patient. We consider this procedure favorable for minimizing cardiopulmonary bypass and surgical stress for ruptured TAA in very elderly patients.

Conclusions

Herein, we report a severe case of ruptured TAA successfully treated with emergency limited surgical open stenting.

Disclosure Statement

Mitsumasa Hata and the co-authors have no conflicts of interest.

References

1) Masuda M, Okumura M, Doki Y, et al. Thoracic and Cardiovascular surgery in Japan during 2014. Annual report by The Japanese Association for Thoracic Surgery. Gen Thorac Cardiovasc Surg 2016; 64: 665–697.
2) Hata M, Orime Y, Akiyama K, et al. Efficacy of a newly modified technique for distal limited open stenting in octogenarians with aortic arch aneurysm. J Thorac Cardiovasc Surg 2017; 153: 530–535.
3) Wanhainen A, Verzini F, Van Herzeele I, et al. European Society for Vascular Surgery (ESVS) 2019 clinical practice guidelines on the management of abdominal aortoiliac artery aneurysms. Eur J Vasc Endovasc Surg 2019; 57: 8–93.
4) Yamaguchi T, Nakai M, Sumita Y, et al. Endovascular repair versus surgical repair for Japanese patients with ruptured thoracic and abdominal aortic aneurysms: A Nationwide Study. Eur J Vasc Endovasc Surg 2019; 57: 779–786.
5) Westaby S, Saito S, Katsumata T. Acute type A dissection: Conservative methods provide consistently low mortality. Ann Thorac Surg 2002; 73: 707–713.