A Single Stage Hybrid Repair of a Complicated Acute Type B Dissection with Aortic Arch Involvement

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We present a case in which a single stage hybrid repair was successfully performed for a complicated acute type B dissection of the aortic arch involvement in a 63-year-old male patient. We performed a combination of different techniques; left subclavian artery debranching, elephant trunk insertion without aortic arch replacement, and thoracic endovascular aortic repair (TEVAR) from an antegrade approach. The postoperative course was successful, and the patient was discharged on day 11 after surgery. A half-year’s follow-up computed tomography (CT) scan showed shrinkage of thrombus lumen, vascular reverse remodeling.

Keywords: complicated acute type B dissection, hybrid operation, thoracic endovascular aortic repair

Introduction

The operative results and early clinical outcomes for aortic arch repair have improved for several years, but still represent a high-risk operation with increased mortality and morbidity, especially for high-risk patients. Extensive diseases involving the aortic arch are challenging to repair. As progression of thoracic endovascular aortic repair (TEVAR), instead of conventional total or partial aortic repair, an arch debranching, frozen elephant trunk, stented elephant trunk with endovascular repair of thoracoabdominal aorta, techniques have evolved into a hybrid repair. However, a hybrid repair of acute aortic dissection remains a clinical challenge. We succeed in performing a single stage hybrid operation, which consisted of partial debranching, elephant trunk procedure and TEVAR on a symptomatic acute type B dissection of the aortic arch.
without any complications. We discharged the patient uneventfully after 11 operative days. 5 postoperative days later the CT scan revealed an almost closed false lumen. (Fig. 3A) A half-year’s follow up CT scan showed shrinkage of thrombus lumen, so called, vascular reverse remodeling (Fig. 3B and 3C).

Discussion

The management of acute complicated type B aortic dissection remains a clinical challenge. Especially with the aortic arch involvement, cause a dramatic and
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...import-ant factor in spinal protection. In our institution, if in case of left subclavian artery stent-graft covering, we reconstruct left subclavian artery in every case. Although spinal drainage is not routinely used because of dangerous of bleeding, we have scarcely experienced spinal cord ischemia in case of left subclavian artery reconstruction.

In case of aortic arch involvement, the next important issue is the management of the neck vessel. The surgical strategy of the neck vessel depends on the distance of the proximal landing zone. For the purpose of complete exclusion of the primary tear site, we have to obtain a proximal landing distance of over 20 mm. In addition, Bavaria and colleague proposed that if landing zone diameter is greater than 3.7 cm, they created a Dacron proximal landing fixation because of a decrease of the risk of retrograde type A dissection in the deployment of proximal stent grafts. In this case, the patient had just a 20 mm proximal landing distance if the left subclavian artery was debranched, and the proximal landing diameter was 40 mm, thus we had a combined safety strategy; left subclavian artery debranching and elephant trunk insertion. The brachiocephalic artery and carotid artery were not debranched in order to reduce circulatory arrest time. For the same reasons, elephant trunk insertion was made without aortic arch replacement. Considering the risk of residual aortic arch aneurysms in the future, total aortic arch...
replacement with an elephant trunk, combined with a delayed TEVAR repair may ensure for long-term mortality. However, in addition to dangerous of rupture, we thought concomitant antegrade TEVAR was more safety than retrograde approach because descending aorta was extended for dissected aneurysm. It is additional factor that strategy of staged or not is decided to antegrade or retrograde TEVAR. Bavaria and colleague classified the variations of hybrid repair as three types. We propose hybrid aortic arch repair modified their classification including staged or not. (Table 1) In the single stage operation, it is important strategical factor if available native aortic proximal landing zone.

In conclusion, we succeed in performing a single stage hybrid operation, which consisted of (1) left subclavian artery debranching, (2) elephant trunk insertion without aortic arch replacement and (3) antegrade TEVAR on a symptomatic acute type B dissection of the aortic arch involved.

Disclosure Statement

The authors have declared no conflicts of interest.

Table 1  Hybrid aortic arch repair

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<th>Single stage</th>
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<tr>
<td>I Debranching + TEVAR</td>
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<td>II Debranching + creating a Dacron proximal landing zone + TEVAR</td>
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<td>Arch replacement with a delayed TEVAR</td>
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References