The surgical repair of mycotic abdominal aortic aneurysms is often difficult especially because of in situ recurrence. Brown reported a mortality rate of 32% and re-infection rate of 16% for this procedure when reconstructed in situ, and a mortality rate of 13% when reconstructed with an extra-anatomic bypass, with the overall mortality rate being 40%. In the present study we report our recent experience and treatment.

Case Report

A 66-year-old man was referred to the emergency room at JR Tokyo General Hospital by ambulance complaining of low-grade fever, hypogastralgia, vomiting, and back pain. On physical examination, a pulsatile mass, measuring 5 cm in diameter, was palpated in his abdomen. An abdominal roentgenogram showed aeration in his left psoas muscle area. Computed tomography (CT) examination revealed extravasation of the contrast media from the infra-renal abdominal aorta. The aorta was surrounded by an aerated low-density area (Fig 1). Under the diagnosis of ruptured mycotic abdominal aorta, an urgent operation was performed. During the procedure, a right axillo-bilateral femoral artery bypass graft was first installed using a branched 8-mm ring-reinforced EPTFE graft. This wound was closed and wrapped with a drape.

Thereafter, a median laparotomy was made and the infected part of the infra-renal lumbar part of the aorta was totally excised. The stumps were obliquely excised and closed. Moreover, the intact abdominal aorta proximal to the stump and the common iliac arteries distal to the stumps were ligated with Teflon tapes in order to reduce the pressure to the stumps (Fig 2). The surrounding hematoma was almost removed, the omentum was mobilized, and the infected area covered.

Pathological examination of the resected aorta revealed bacterial nests of Enterobacter cloacae (Fig 3). The patient's postoperative course was uneventful; his fever had receded and any inflammatory changes had normalized after 6 weeks. He was discharged from hospital 4 months after the operation. Oral antibiotic therapy was continued for 6 months. The patient is alive and well and without any inflammatory signs 1 year after the operation.

Discussion

The diagnosis of an infected aneurysm is difficult.

Fig 1. Abdominal computed tomography. Arrow indicates extravasation of contrast media. Aeration was observed around the infra-renal abdominal aorta.

Fig 2. Surgical procedure for the vascular stumps.
Because mycotic aneurysms are thin-walled and friable by inflammation, they readily rupture; hence, only 53% of cases with an abdominal mass are detected before operation. Rupture is often the most frequent symptom; therefore, CT plays an essential role in a correct diagnosis. In the present case, CT revealed extravasation of contrast media, as well as aeration in the surrounding area, suggesting infection by gram-negative bacterium. As infection was highly suspected but bacteria are invisible during the surgical procedure, a ‘no-touch’ isolation extra-anatomic bypass procedure was adopted.

There are 2 methods of treatment for such cases: (i) installing an extra-anatomic bypass, as carried out in the present case; and (ii) anatomically replacing the cryopreserved homograft. Because the present case was a rupture, there was no time to access the homograft and so the extra-anatomic bypass procedure was elected. In situ replacement of Daunon grafts has a high incidence of reinfecting, but there are also some disadvantages to conducting an extra-anatomic bypass procedure. First, extra-anatomic revascularization does not exclude the risk of graft contamination, so it was installed first before the laparotomy and the wound was then closed. Second, a blow-out of the aortic stump may lead to a dismal prognosis, accounting for 43% of early deaths. Therefore, in addition to totally debriding the infection site and suturing the omentum, the aortic stump was tapered and the proximal aorta was ligated with Teflon tape to reduce the pressure load to the stump.

Postoperative antibiotics are mandatory. Pasic et al recommend 2–12 weeks of intravenous administration followed by 4–16 weeks of oral administration. Based on treatment for infective endocarditis, in the present case, intravenous administration was conducted for 12 weeks and oral administration for 6 months, and life-long administration was considered unnecessary.

**Conclusion**

Although the surgical treatment of a ruptured mycotic aneurysm is often difficult, the ‘no-touch’ extra-anatomic bypass grafting procedure can prevent an artificial graft from becoming contaminated during the operation, resulting in an increased chance of a successful surgical repair.

**References**