Abstract: Saphenous vein graft aneurysm (SVGA) is one of the chronic complications after coronary aorta bypass grafting (CABG) and may be caused by atherosclerosis-like phenomena of the vein graft, weakness around the vein valve, rupturing of the suture of the graft anastomosis, or perioperative graft injury. We describe a case of a large, growing saphenous vein graft aneurysm that was followed serially by chest radiography and computed tomography. Eighteen years after CABG, an SVGA (23 × 24 mm) was incidentally detected. The patient was asymptomatic and was followed conservatively. Four years later, coronary computed tomographic angiography showed that the giant aneurysm had grown to 52.1 by 63.8 mm and revealed a second, smaller aneurysm. Finally, the SVG was ultimately resected without bypass via off-pump surgery. Therefore, this case suggested that aggressive treatment that includes surgical intervention should be considered before the aneurysm becomes larger, even if it is asymptomatic.

Keywords: Vein graft aneurysm, CABG, off-pump surgery
Blood flowed lightly through the small lumen of the large aneurysm.

The SVGA was resected to reduce the risk of rupture (Figure 5) and was diagnosed as a true aneurysm pathologically (Figure 6). The patient was discharged without postoperative complications.

**Ethical approval:** The research related to human use has complied with all the relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration and has been approved by the authors’ institutional review board (or equivalent) committee.

**Informed consent** has been obtained from all individuals included in this study.

### 3 Discussion

Saphenous vein graft aneurysms are rare and may be caused by atherosclerosis-like phenomena of the vein graft, weakness around the vein valve, rupturing of the suture of the graft anastomosis, or perioperative graft injury [3,4]. The cause in our case was unclear.

If the diameter of an aneurysm is less than 1 cm with adequate blood flow, medically conservative treatment is commonly indicated, with the international normalized ratio maintained at 2 to 2.5 to prevent emboli. Magnetic resonance imaging and/or CT should be required during follow-up [5]. If the aneurysm’s diameter is 2 cm or more, or is rapidly expanding, surgical intervention is recommended [6].

Some reports suggest that coil embolization or mildly invasive catheter intervention with the closure device (Amplatzer vascular plug®, Amplatzer Vascular Plug II®) can substitute for surgical treatment [7-10]. However, the success rate of the catheter intervention is not very high. It has been reported that the vein graft aneurysm is considered to be an indication for surgical treatment when the diameter of the aneurysm is more than 20 mm [11]. In our case, the graft aneurysm was more than 20 mm before the ACS developed, hence, the requirement for surgery.

The optimal management of this rare complication is not well established. The recommendation for management is as stated in our case report, rather than recommended by evidence-based practice or consensus statement.

In summary, this case suggested that aggressive treatment that includes surgical intervention should be
Saphenous vein graft aneurysms with diameters of 27 mm and 64 mm, respectively, were found from the head side position in front of the right atrium (red arrows).

The wall thickness of resected vein graft aneurysm was thinner than the healthy segment. Normal three-layer structure was observed microscopically in the enlarged segment of the resected vein graft aneurysm (hematoxylin-eosin stain).

Conflict of interest statement: Authors state no conflict of interest.

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