THE FIRST AORTIC STENT-GRAFT PLACEMENT IN THAILAND

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ABSTRACT

The first patient in Thailand, a 67 years-old female having liver cirrhosis with an asymptomatic huge infra-renal aortic aneurysm, who has an aortic stent graft, was reported.

INTRODUCTION

Over the past few years, one of the most remarkable innovations in interventional radiology was the development of the intraluminal stent-graft placement. This new technique has recently been used to treat a variety of lesions, including vascular occlusive disease, peripheral aneurysms, vascular injury and aortic aneurysms.[1]

Usually, surgical repair is the treatment of choice for an abdominal aortic aneurysm, provided that the patient is a good candidate for operation. The standard surgical repair of the abdominal aortic aneurysm (AAA) using synthetic graft is associated with a perioperative mortality rate of 1.4-6.5.[2]

For this reason, the endovascular repair with aortic stent-graft is an attractive alternative treatment for the surgical procedures.

A CASE REPORT

A case of 68 years-old female patient, presented at Ramathibodi Hospital with hematemesis on the 23rd of July 1998. Her physical examination showed evidences of chronic liver disease. Her upper GI study is normal and the ultrasound study showed liver cirrhosis, splenomegaly and a huge abdominal aortic aneurysm (Fig.1).

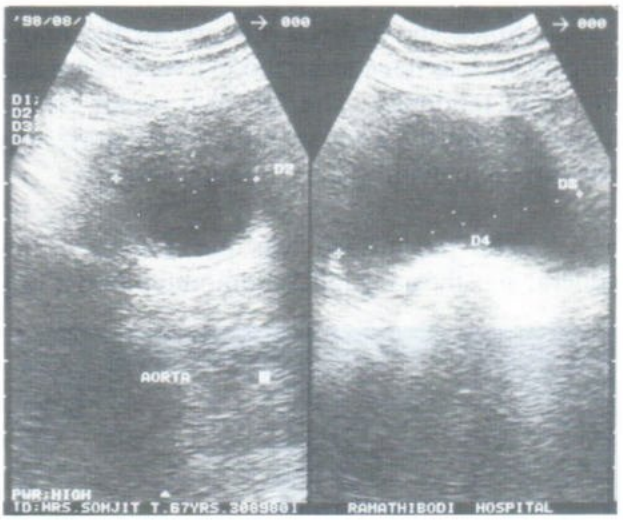

Fig.1. Ultrasound study showed a huge aortic aneurysm.

The hematemesis disappeared after the initial treatment for acute gastritis. The computed tomography angiogram (CTA) was performed to evaluate her asymptomatic aortic aneurysm. It revealed that the size of the aneurysm was about 9 cm in length and 4.8x5cm in its maximum AP and transverse diameters, respectively (Fig.2, 3).

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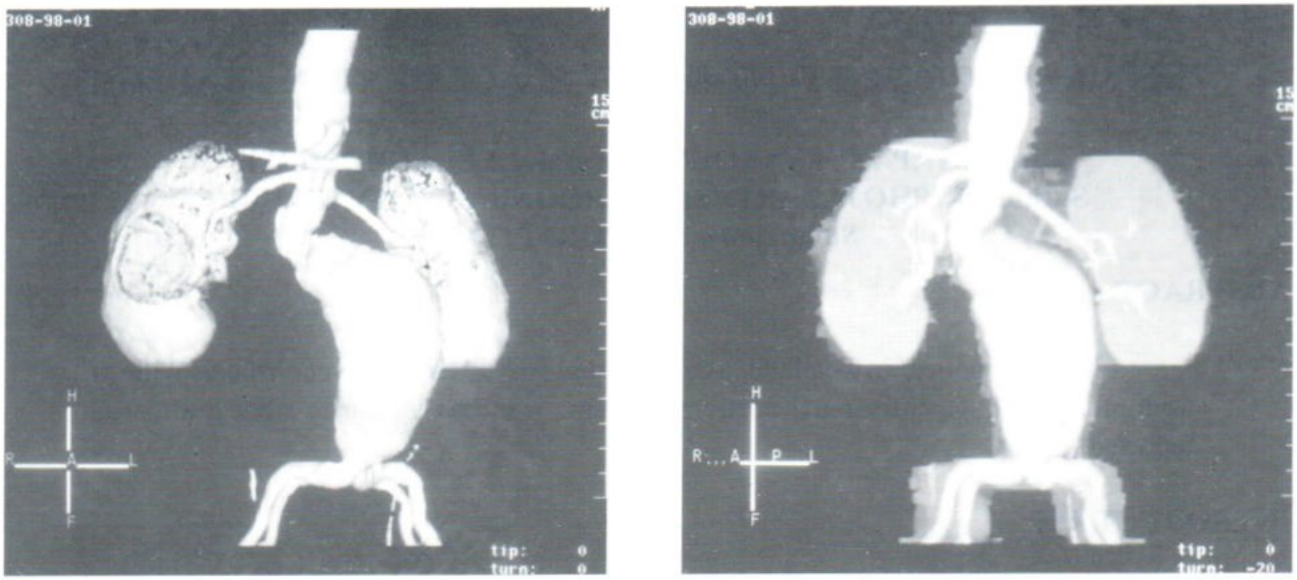

Fig. 2-3. Computed tomography angiogram also showed an infra-renal aortic aneurysm.

PROCEDURE

Since she had risk factors for the major surgery such as her age, cirrhotic liver disease and bleeding tendency. The elective repair of the aneurysm by the endovascular stent graft was performed to avoid the emergency surgery.

The procedure was performed under general anesthesia. Right common femoral artery was cut down and a 5 French arterial sheath was inserted.

The abdominal aortic angiogram was performed by using a 6 French Pigtail Catheter. Pre-treatment angiogram revealed a huge infra-renal aortic aneurysm (Fig.4) with severe stenosis at its upper neck (Fig. 5).

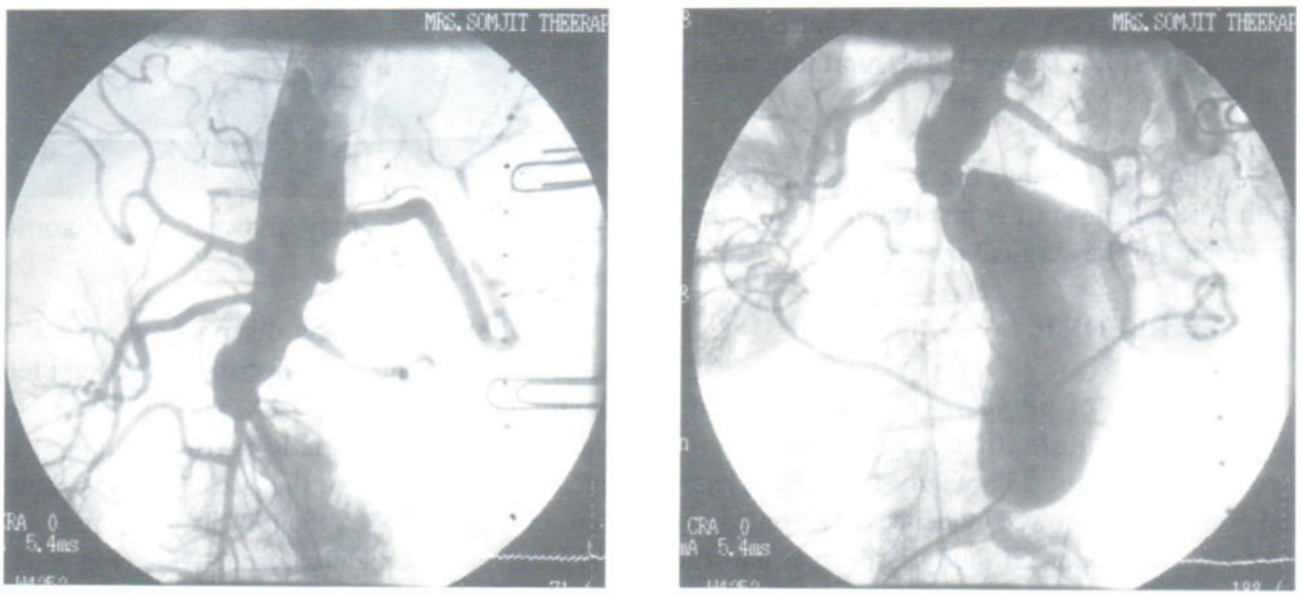

Fig. 4-5. Severe aortic stenosis is noted at the upper neck of the huge infra-renal aortic aneurysm.

The aneurysm was crossed by the 0.35 J-tip Hydrophilic guidewire with difficulty due to the previously mentioned severe aortic stenosis. After successful crossing, the Cobra-2 catheter was inserted by co-axial technique and the Hydrophilic guidewire was changed to 260 cm length, 0.35 Amplatz Super -Stiff guidewire.

The bifurcated aortic stent graft with right leg was placed successfully, (Fig.6, 7) by using the Vanguard Bifurcated Endovascular Graft, which had 26x12mm diameter (Boston Scientific Corporation).

The left leg of the graft was introduced by percutaneous puncture of the left common femoral artery. The 6 French arterial sheath was placed. The J-tip Hydrophilic guidewire was inserted, crossing over the aortic bifurcation from the right femoral arterial sheath and its tip was snared through the left femoral arterial sheath. The Cobra-2 catheter and 0.35 Amplatz Super Stiff guidewire were changed, respectively and the left leg of the graft was introduced by co-axial technique.

Upper and lower necks of the graft as well as its both legs were dilated by the occlusive balloon to prevent endoleak. The abdominal aortogram, post procedure, revealed a good result (Fig.6, 7).

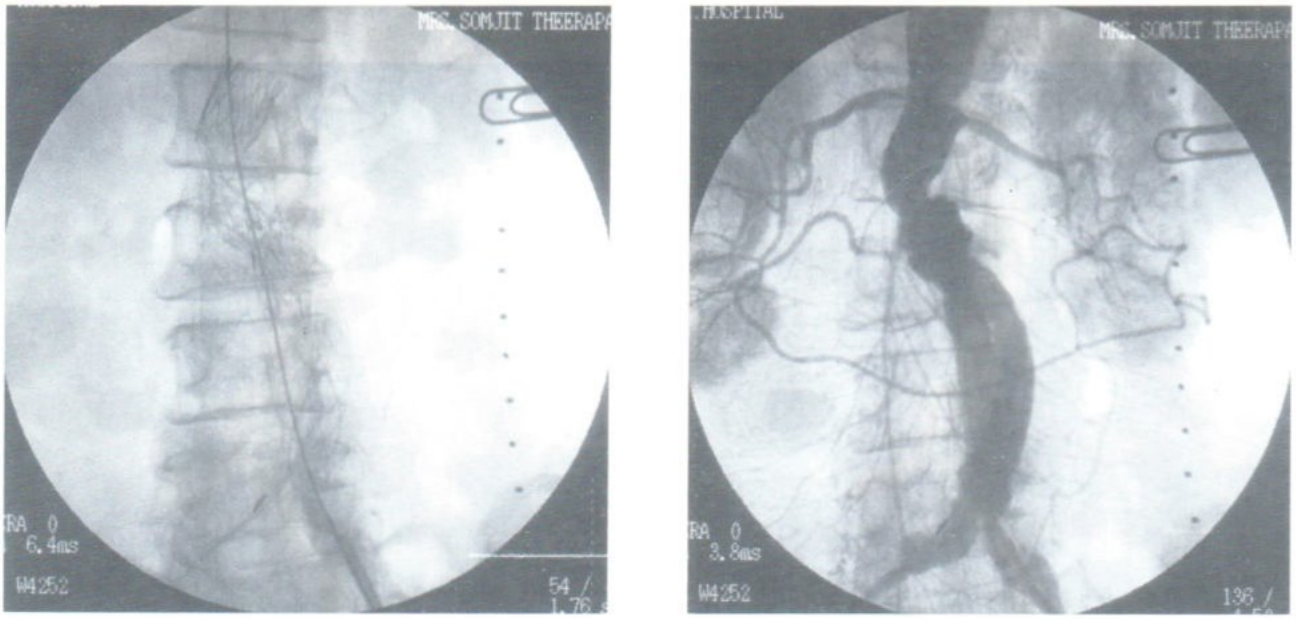

Fig. 6-7. A Vanguard Bifurcated Endovascular Graft (Boston Scientific Corporation) was successfully deployed.

The operative team consisted of a vascular surgeon, a radiologist and a cardiologist. Follow up CTA , at the fourth day post graft placement showed no contrast leakage into the outer lumen of the graft, which represented the good result (Fig.8, 9,10,11). She was discharged from the hospital five days after the treatment.

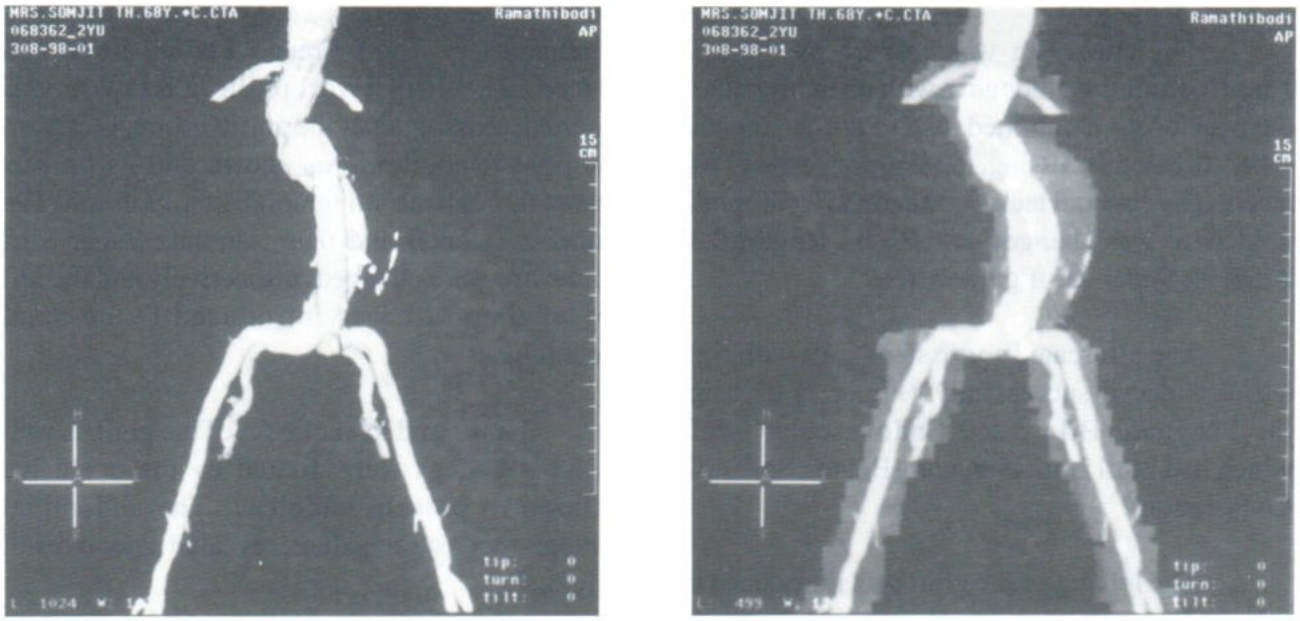

Fig. 8-9. Follow up CTA, four days post the procedure.

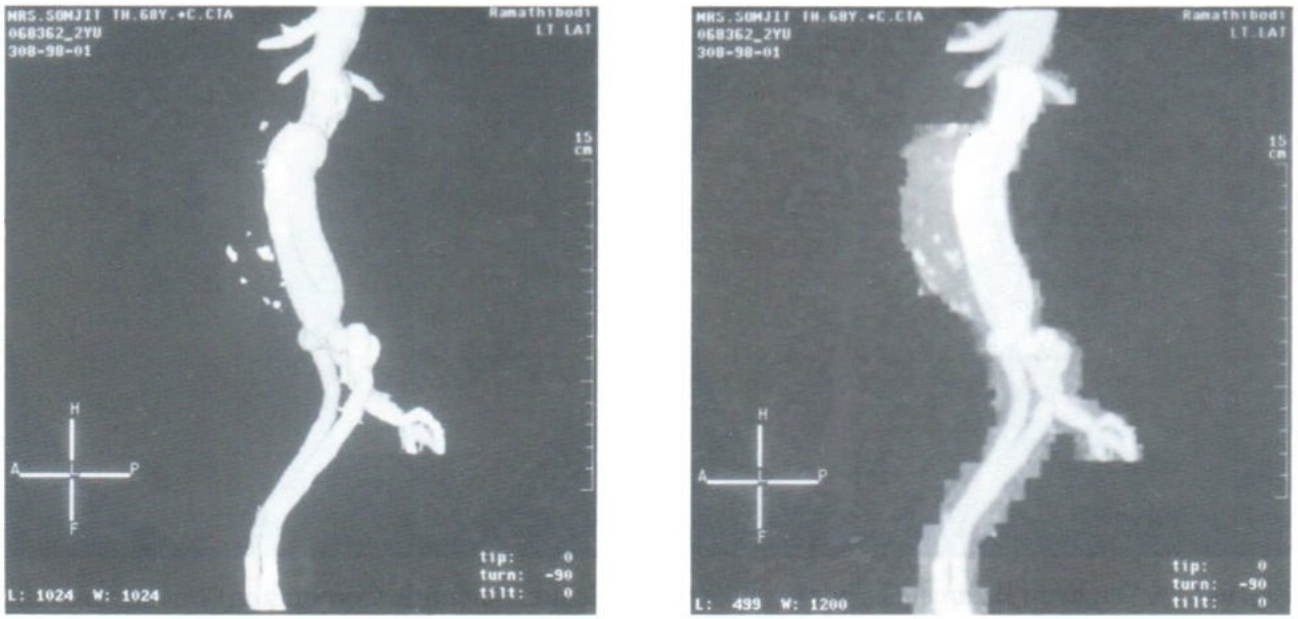

Fig. 10-11. Follow up CTA, four days post the procedure.

DISCUSSION

The surgical treatment for an abdominal aortic aneurysm is associated, however, with a relatively high morbidity and mortality rate. In community hospitals, overall mortality rate is 10-14%.

According to the literature, when elective procedure is performed by an experienced vascular surgeon in excellent centers, the mortality rate is in the range of 3-5%.[1] The mortality rate increases more than 20%[3] in patients requiring emergency operative treatment or in patients with advanced age, chronic heart failure, coronary artery disease and chronic obstructive pulmonary disease. It has been recommended to do elective surgical repair even in those patients not at high risk for rupture.[1]

The development of covered stents opens a new dimension for non-operative therapy of the aneurysmal disease. Successful endoluminal grafting was performed in different animal model.[4]

The straight grafts in humans for aortic dissection and infra renal aortic aneurysms were first described in 1991 by Parodi et al.[3] Since then, endoluminal treatments of aneurysms of the thoraco-abdominal aorta with different types of endoprosthesis have been performed in several centers.[4]

For endovascular repair of an asymptomatic abdominal aortic aneurysm, by the endovascular technologies (EVT) using the endograft was introduced in February 1993.[4]

After initial experience with an endoprosthesis of tubular design, a bifurcated graft was introduced in 1994 and monoiliac system in 1996.[5-7]

The first bifurcated stent-graft implantation was performed in good risk patients with the long and straight implantation site in both proximal and distal part of the aneurysm.[4]

By April 1997, over 450 endografts have been utilized worldwide, as part of clinical trials under the supervision of the Food and Drug Administration (FDA) of the USA.

Thoraco-abdominal aneurysms of all Crawford types that usually involve major arterial branches such as the renal or other visceral arteries are not candidates for an endoluminal treatment. However, 75 to 90% of abdominal aortic aneurysms are infrarenal.[4]

The suitable lesions for endoluminal treatment should have a sufficient infra renal neck of 2 to 3 cm in length, which does not present in about 15% of cases.[4] The vast majority (90%) of cases does not have a distal aortic neck proximal to the aortic bifurcation. Nearly 50% of cases, there is an involvement of part or the whole segment of unilateral or bilateral common iliac arteries.[4]

Currently, the introduction of large -diameter systems prevents exclusively percutaneous insertion of those devices, which can not be performed by a radiologist alone. This shifts their use to a collaborative effort of both radiologists and vascular surgeons.

CONCLUSION

The use of endoluminal grafts for the treatment of thoracic and abdominal aortic aneurysms has attracted both vascular surgeons and radiologists.

In Thailand, nowadays, the aortic stent graft is quite expensive. But the endovascular aneurysm repair with stent-grafts is an attractive

alternative to surgical procedures, especially in the patients who have high risk of major surgical complications as in this reported case.

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