Case Reports

Open Surgical Repair of Ruptured Giant Abdominal Aortic Aneurysm Still the First Choice In some Cases

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Abstract

Background: *Abdominal aortic aneurysm (AAA) is a dilatation of the abdominal aortic artery which is associated with increased pressure to the internal wall of the artery and may result in fatal complications such as rupture. In this case, we have a male patient, admitted as a case of AAA rupture treated urgently with an open surgical approach and by replacement of a Dacron graft.*

Report: *A 76-year-old male patient, presented with a chief complaint of severe abdominal pain associated with chest and back pain, diagnosed a case of ruptured abdominal aortic aneurysm. The operation was done under general anesthesia and the ruptured aneurysm was replaced by a Dacron graft.*

Conclusion: *In urgent cases of ruptured abdominal aortic aneurysms conventional open surgery may be the only choice of treatment in some circumstances and can be done successfully.*

Keywords: *abdominal aortic aneurysm rupture, laparotomy, endovascular abdominal aortic repair (EVAR).*

Introduction

The abdominal aortic aneurysm (AAA) is a vascular pathology that presents with dilatation of the aortic vessel diameter and is associated with an increased risk of rupture. AAA affects males more than females and increases in direct proportion with the age. According to Laplaces's low, the increase in the vessel diameter is associated with an increase of the intravascular pressure to the internal vessel wall that may result in rupture **(**1**)**.

When AAA rupture occurs patients are at high risk of dying due to internal hemorrhage. Immediate surgical management is requested. In our case, we had a male patient with ruptured AAA. We couldn't do an endovascular abdominal aortic repair (EVAR) because of the lack of EVAR equipment in our city. It is usually brought from another city on-demand and in elective cases, but in this case, any delay of the operation would carry a high risk of mortality. Also, the ruptured AAA was high up to the level of the renal arteries with no enough neck as a landing zone. We preferred to do open surgery repair. Open surgery was done with difficulties.

Report

A 76-year-old male patient had presented to an outer medical center with a chief complaint of severe abdominal pain associated with chest pain radiating to the back. İnvestigations were done and indicated the possibility of abdominal aortic aneurysm rupture while the complete blood count showed low hemoglobin. According to the CT-Scan with contrast the abdominal aortic diameter was about 8.5 cm, the aneurysm started from the lower border of the renal arteries and extended to the beginning of the iliac arteries **(figure 1).**

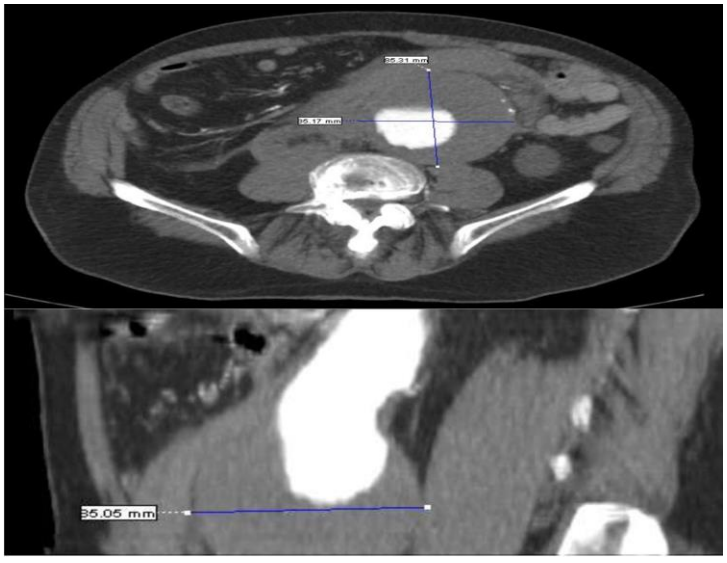

Figure 1: Self-limited ruptured AAA

The patient was transferred to our center and he was immediately taken into the operation room. Under general anesthesia, the operation started.

Surgical technique: In supine position and after preparations midline laparotomy was done starting from the lower border of xiphoid bone towards the lower part of the umbilicus. The abdominal cavity was opened through the peritoneum. The left transverse colon was pulled upward while the small intestine was pulled to the right side by sterile wet compresses. A huge self-limited ruptured AAA was seen **(figure 2).**

Retroperitoneum above the body of the aneurysm was dissected gently from proximal first. İt was so difficult to reach the posterior wall of the aorta at that level, so it was liberated from the nearby tissues at both sides. Both common iliac arteries were dissected from surrounding structures and hanged up by Dacron tapes.

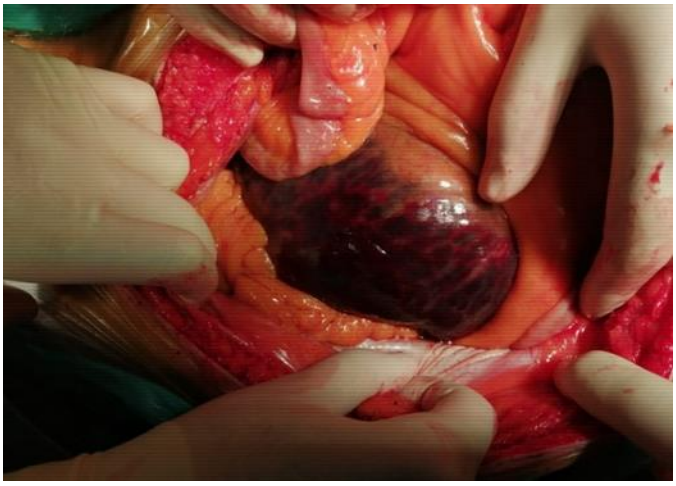

Figure 2: Self-limited ruptured AAA.

Heparin was given in a standard dose of (70 IU/kg) and an average of 5000 IU bolus I.V to maintain ACT around 200-250. After about 3 minutes of heparin administration first, a cross-clamp was applied to the proximal abdominal aorta at the lower border of the renal arteries blindly and the other clamps were applied to both common iliac arteries under the control of the Dacron tapes. Aortotomy was done longitudinally at the anterior aspect of the abdominal aorta and then laterally at the edges of the incision. Huge clots and blood were evacuated from the lumen.

The rupture site of the Wall was detected. A 16/8 mm 'Y' Dacron graft was used. Firstly; the proximal site of the graft was anastomosed to the proximal aorta then the two legs were anastomosed to the common iliac arteries by 4/0 polypropylene sutures with the fashion of end-to-end After de-airing the

graft the sutures were tight and hemostasis was secured. The superior mesenteric artery was reimplanted to the graft underside clamp and with end-to-side fashion by 6/0 polypropylene suture **(figure 3).**

Figure 3: Replacement with 'Y' Dacron graft and reimplantation of superior mesenteric artery

The aneurysm sac then was closed over the graft. Two drains were inserted and abdominal layers were closed in a traditional way. Intraoperatively one unit of erythrocytes suspension and two units of fresh frozen plasma were given.

The patient was then taken to the intensive care unit (ICU) where he was monitored carefully and extubated after five hours of the operation. In ICU another two units of erythrocytes suspension transfusion were done too. Total drainage was about 270 cc. On the post-op third day, he was transferred to the floor where daily investigations and dressings were done.

In this period, the patient's creatinine elevated and a consultation was done with the nephrology department. All the recommendations of nephrology were followed. After one week and when the patient's blood investigations values became in acceptable ranges and he was free from any complaint, he was discharged to be seen after one week as an outpatient.

Discussion

AAA aneurysm is a vascular dilatation that carries a high risk of rupture which increases in direct proportion to the diameter of the aorta **(**2**)**. It is an urgent case and needs quick management or will be resulted in death mainly due to intraabdominal hemorrhage. In developed countries, AAA cause about 1-3% of deaths among male patients at the age of 65-85 **(**3**)**.

For a long time, ago the management of such cases was limited to open surgery till endovascular interventional techniques have come up and became the standard management method **(**4**)**.

In our case, the AAA was about 8.5 cm in diameter. The patient was symptomatic with severe abdominal and chest pain radiating to the back. We had to operate him as soon as possible and there was no ability to do EVAR, the graft had to be brought from a nearby city of about 3 hours distance. Also, the shape and localization of the aneurysm were not suitable for EVAR.

In the 2017 year; a study of 30 vascular centers (29 in the UK and one in Canada) was done over three years to assess the outcomes and cost-effectiveness of endovascular repair versus open surgical repair for ruptured AAA. 316 patients were managed by endovascular repair while 297 were operated on with an open surgical approach. The mortality was found to be similar after three months and increased in the period of 3 months to three years in the patients who were operated by open surgery more than of endovascular ones, but by the year seven after surgery the mortality was found to be about 60% in each group **(**5**)**.

Our patient has been seen and evaluated several times postoperatively as an outpatient for the last five months and he was free from any complaint and his investigations were in acceptable ranges. Surely the cost of open repair is less than it is in endovascular repair but the staying time at ICU and the hospital are longer than EVAR patients.

Conclusion

Even EVAR has become the standard treatment method of AAA, open surgery is still keeping its place mainly in ruptured AAA where the shape and localization of the aneurysm are not suitable or when it is difficult to get the graft as soon as it is needed. Open surgery for ruptured AAA can be performed with good results when done in proper time and by experienced hands.

Patients inform consent: had been written and signed by the patient himself accepting his case to be our case report and publishing the pictures of his operation.

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