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Aortic aneurysm-surgical treatment in apollo hospitals, Dhaka

Abstract

Objective: In developing country, treatment of aortic aneurysm is costly. Surgical treatment is rather cheaper than stent implantation. Long term outcome is favourable with surgical treatment.

Methods: This is a retrograde study, was done in Apollo Hospitals Dhaka from 21st December, 2006 to 12th July 2014. 32 patients were operated. Age range was from 22 to 81 years (mean 55.33), male 28, female 4. Infrarenal aortic aneurysm cases were 20, thoraco abdominal aneurysm cases were 4, dissectingaortic aneurysm cases were 2 (CABG+Bracheocephalic artery reimplantation with 8 mm graft), Descending thoracic aortic aneurysm rupture cases were 2, Descending thoracic aortic aneurysm cases were 2, Descending thoracic aortic aneurysm + Bentall procedures were--2. Emergency (37.5%) operations were 12 cases :- 6 cases were infrarenal leaking aneurysm, 2 cases were leaking abdominal aortic aneurysm, 2 cases were dissecting aortic aneurysm, 2 cases were Descending thoracic aortic aneurysm rupture.

Results: Overall mortality rate was 15.62% (5 cases). Among emergency cases there were 6.25% (2 cases) death rate, per operative one – Descending thoracic aorta rupture in a 75years old gentleman. Another lady of 35 years died 3 months later where emergency surgery was done for dissecting aortic aneurysm. In routine cases mortality rate was 9.37% (3 cases) – 1 month later a case of thoraco abdominal aneurysm dieddue to diabetic complication, 1 month later 22 years old gentleman (Descending thoracic aortic aneurysm with Bentall procedure) diedas a complication of tracheostomy (tracheo-innominate artery fistula) - sudden severe bleeding; another death in 46 years old gentleman where graft leakage occurred4 years after abdominal aortic aneurysm repair. Rest of the patients arein continuous follow up with us and are doing well.

Conclusion: Surgical repair for aortic aneurysm has a good long-term outcome.

Keywords: aortic aneurysm, femoro femoral bypass, ct angiogram

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Abbreviations: CT Angiogram, computed tomographic angiogram; CABG, coronary artery bypass graft; TCA, total circulatory arrest; CPB, cardio pulmonary bypass

Introduction

Aortic aneurysm is a localised dilatation of the aorta which results in a 50% increase in its diameter. Aneurysms can develop anywhere along the aorta. Thoracic or abdominal aortic aneurysms that are large, causing symptoms or rapidly getting bigger are considered at risk of rupturing. A repair surgery or procedure is usually recommended if any one of these factors is present. In developing country surgical intervention is less costly then endovascular stent implantation with good long term outcome.

Materials and methods

This is a retrospective study, wasdone in Apollo Hospitals Dhaka from 21st December 2006 to 12th July 2014. 32 patients were operated. Age range was from 22 to 81years (mean 55.33), male 28, female 4. 4 patients had the characterstics of Marfans syndrome. Infrarenal aortic aneurysm cases were 20, thoraco abdominal aneurysm cases were 4 , dissecting aortic aneurysm cases were 2, Descending thoracic aortic aneurysm rupture were 2, Descending thoracic aortic aneurysm were 2, Descending+ascending thoracic aortic aneurysm 2. Emergency (37.5%) operations were 12 cases :- 6 cases were infrarenal leaking aneurysm, 2 cases were leaking abdominal aortic aneurysm, 2 cases were dissecting aortic aneurysm, 2 cases were Descending thoracic aortic aneurysm rupture.

Clinical presentation on admission:

a. Severe abdominal pain-12

b. Asymptomatic -12

c. Vague abdominal pain-3

d. Shock-2

e. Chest pain-6

f. Hoarseness of voice-1

g. Dysphagia-1

We used CT angiogram for every patient. Femoro femoral bypass was usedfor all patients in thoracic cases. Proximalcontrol was taken firstby passing cotton tape. Cross clamp was applied 2 cm above and below the aneurysm. Aneurysm was opened Longitudinally–removed clots-6/0 prolene closure of intercostals, lumber arteries were done. Proximal anastomosis of the graft was done first. Proximal cross clamp removed now distal anastomis with the graft completed. Reimplantation of aortic branches was done. Wrapping of the graft was done eith with anerysmal wall. We needed total circulatory arrest in 8 cases (Figure 1-11).

Associated procedures done:

I. Inferior mesenteric artery reimplantation-12

II. Bracheocephalic artery reimplantation-6

III. Celiac, superior mesenteric, renal, Inferior mesenteric artery reimplantation-4

IV. Bentall-4

V. CABG-2

VI. Subclavin artery reimplantation-2

VII. Dacropatch repair-1

VIII. Direct repair-1

Figure 1 Ascending and descending aortic aneurysm.

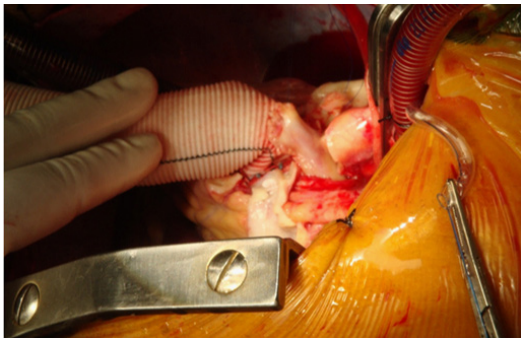

Figure 2 Bentall procedure-coronary artery implanted.

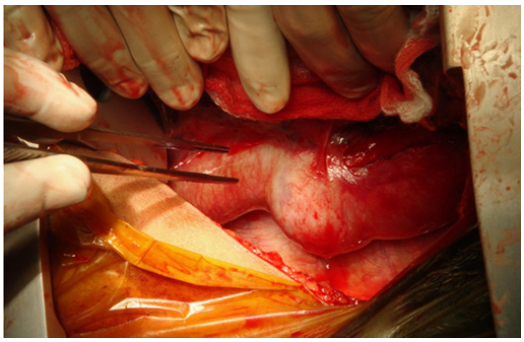

Figure 3 Descending thoracic artery aneurysm exposed through anterolateral thoracotomy which was extended posteriorly.

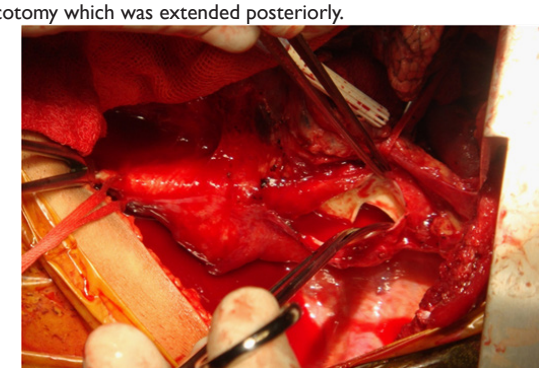

Figure 4 Dissecting descending thoracic aortic aneurysm.

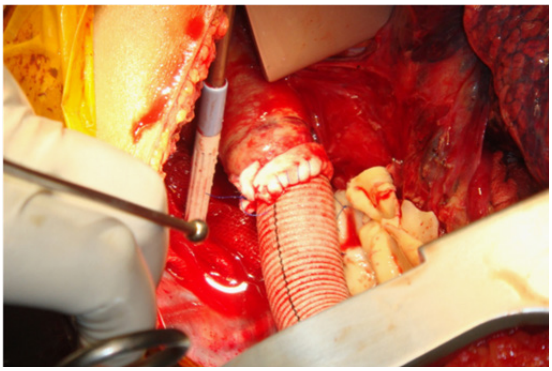

Figure 5 Distal anastomosis.

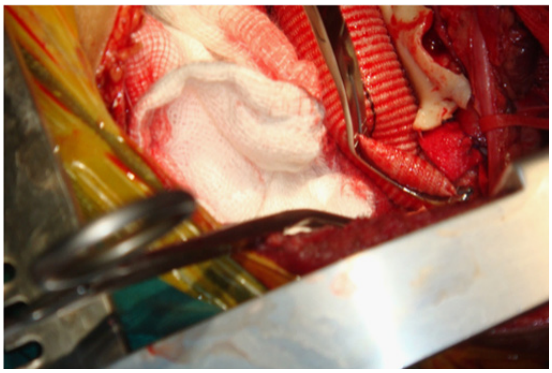

Figure 6 Left subclavian artery implantation.

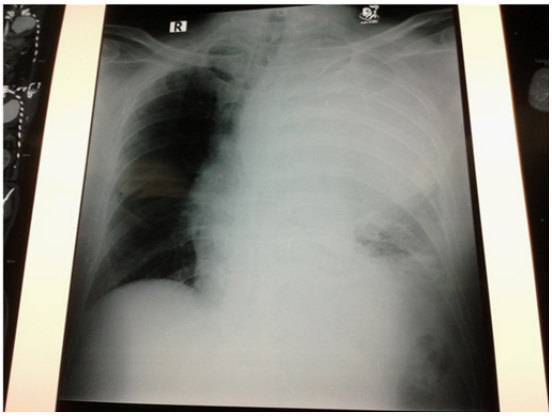

Figure 7 Huge radiodense area almost involving left hemithorax due to huge descending thoracic aortic aneurysm.

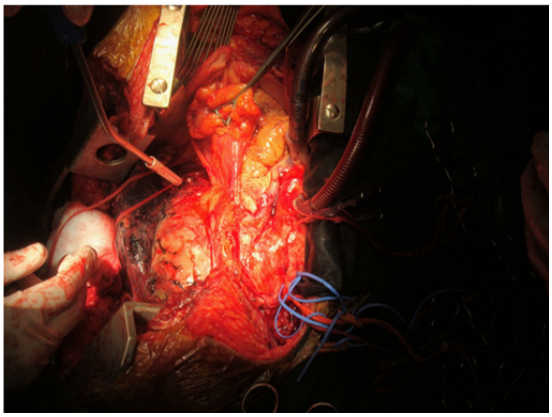

Figure 8 Huge aneurysm descending thoracic aorta compressing left lung.

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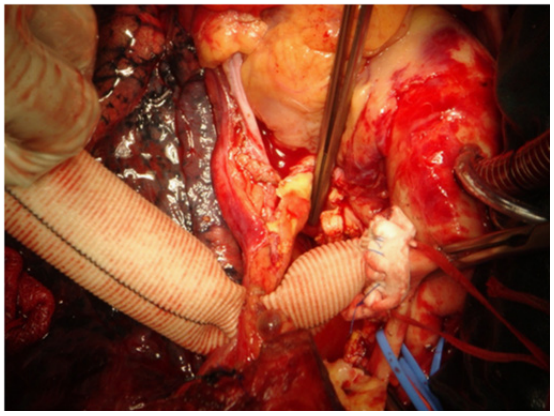

Figure 9 Proximal anastomosis below left common carotid artery,proximal to left subclavian artery.

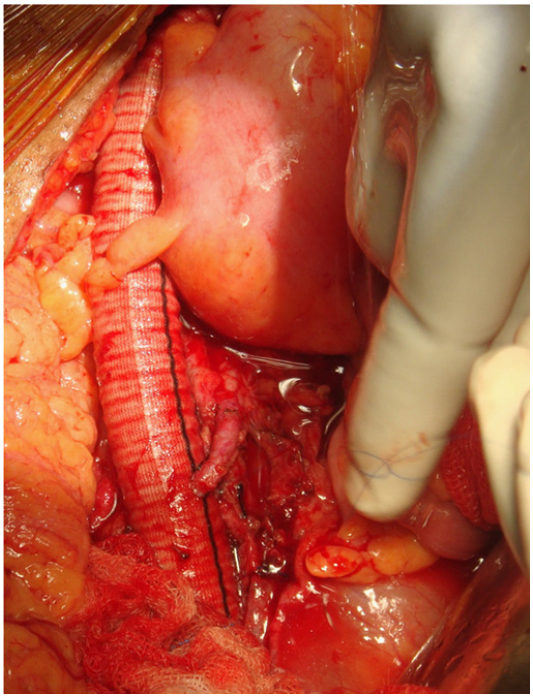

Figure 10 Inferior mesesenteric artery reimplantation.

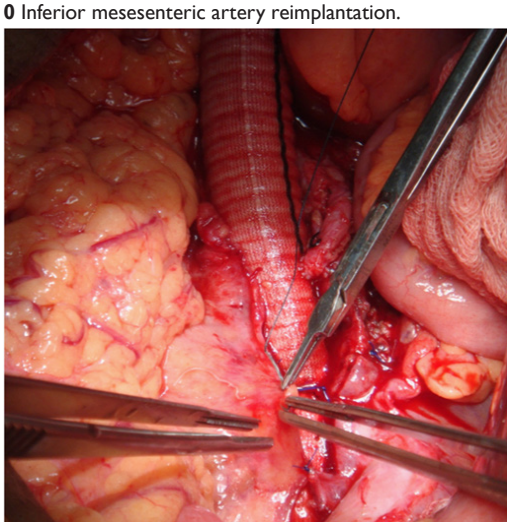

Figure 11 Inferior mesesenteric artery reimplantation done, wrapping of graft by aneurismal wall.

Results and discussion

In 8years continuous follow up total survival - 27 - 83.48%. Overall mortality was 15.62% (5 cases). In emergency cases mortality was 6.25% (2 cases). Per operative mortality was 1 in a 75years old gentleman who came to us with descending thoracic aorta rupture. Another case of 35 years old lady who came to us with dissecting aortic aneurysm, early postoperative period was uneventful. 3months later she died due to acute MI, cardiogenic shock. In routine cases mortality was 9.37% (3 cases). 39 years old gentleman with thoraco abdominal aneurysm died 1month post operatively due to hypoglycaemic shock. 22years old gentleman with Descending thoracic aortic aneurysm with Bentall procedure died 1 month post operatively as a complication of tracheostomy (tracheo-innominate artery fistula)-sudden severe bleeding. Another 46 years old gentleman died 4 years after operation with graft leakage.

Another post operative patient presented with groin infection . Femoral end of graft was needed to be replaced after 1 month of operation. Rest of the patients arein continuous follow up with usand are doing well. True etiology of aortic aneurysms is probably multifactorial and it occurs with individual risk factors. Risk factors include smoking, hypertension, atherosclerosis, bicuspid or unicuspid. Aortic valve, genetic factors like Marfan's syndrome, type IV Ehlers-Danlos syndrome, infection (like syphilis), arteritis (like Takayasu) and trauma. Aortic aneurysms are more common in men than in women and are also more common with chronic obstructive air way disease.[1]

Most people with aortic aneurysms do not have symptoms unless a dissection or rupture has occurred. A rupture or dissection is a medical emergency. If an aneurysm ruptures or dissection occurs-Sharp, sudden pain in the upper back that radiates downward, pain in chest, jaw, neck or arms or difficulty breathing. In case of family history of aortic aneurysm, Marfan syndrome or other connective tissue disease, or bicuspid aortic valve, it may be recommended for regular ultrasound exams to screen for aortic aneurysm. Most people who have a ruptured aortic aneurysm die. Surgery for a ruptured aneurysm is dangerous because of the large amount of blood loss. Aneurysms usually do not cause any symptoms until they become very large or rupture. Aneurysms in the abdominal aorta are often found coincidentally when the individual undergoes a medical test or procedure for some other reason. Overall prevalence of aneurysm is increasing in the last thirty years, which is in part due to wide spread use of the imaging techniques.[2] CT angiogram was used as diagnostic modality in all of our cases.

Surgical outcomes may be improved using endovascular aneurysm repair (EVAR), but aortic endografting under emergency circumstances presents many challenges. Increasing numbers of institutions have initiated protocols for endovascular repair of ruptured AAA with promising results in small series, but not all institutions are equipped to treat all ruptured AAAs using minimally - invasive technology. Conventional surgical repairs were performed on 8185 intact and 1829 ruptured AAA. Hospital mortality rates accompanying operation for intact AAA decreased from 13.6% in 1980 to 5.6% in 1990.[3] In our series mortality is 9.37%. Aortic aneurysm is now a days mostly done by stent implantation.

For a third world country it is difficult as huge cost is involved . Surgical intervention is less costly with good outcome. Total CPB with an interval of hypothermic circulatory arrest is a widely used technique for operations on the ascending aorta and aortic arch. The main complications of aneurysmal surgery are paraplegia (2-20%)

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and renal failure (3-14%), both of which are normally avoidable by use of bypass or use of deep hypothermic circulatory arrest.[4]

Conclusion

Open surgery and the less invasive procedure - endovascular repair, are the two options for repairing a thoracic and abdominal aortic aneurysm. The choice of repair can depend on the size and location of the aneurysm 5. Surgical treatment could be a good option for treatment of aortic aneurysm .

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Conflicts of interest

Author declares there are no conflicts of interest.

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