Rapidly Enlarging and Asymptomatic Abdominal Aortic Aneurysm in a Male Patient with Chronic Obstructive Pulmonary Disease: A Case Report of Endovascular Aortic Aneurysm Repair (EVAR)

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ABSTRACT

Objective: to report a case of an incidental large asymptomatic AAA in an ex-smoker with severe COPD successfully treated by EVAR and to delineate the results and complications of EVAR performed in operative theater of Siriraj Hospital.
Methods: A retrospective review of selected high-risk patients with asymptomatic AAA treated by EVAR in operative theater of our hospital from August 2003 to December 2005 was performed.
Results: All nine cases (100%), including reported case (100%), were successfully treated by EVAR. Merely one of 30-day peri-operative death (11.1%), of post-operative cardiopulmonary arrest (11.1%), of early AAA rupture (11.1%), of early graft limb occlusion (11.1%), of late graft limb occlusion (11.1%), and of early type II endoleak (11.1%) took place in this study. Neither late AAA rupture, AAA sac enlargement, nor graft migration happened.
Conclusion: EVAR was achieved as a minimal invasive treatment of an incidental large asymptomatic AAA in an ex-smoker with severe COPD. Although EVAR provides an excellent alternative of AAA in high-risk patients, its high peri-operative mortality rate around 10 % should be taken into account.

Keywords: Abdominal aortic aneurysm; Chronic obstructive pulmonary disease; Endovascular aortic aneurysm repair; EVAR

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Abdominal aortic aneurysms (AAAs) are defined as a focal dilation of the abdominal aorta that results in a diameter at least 50% larger than the expected normal diameter[1]. Since the notorious higher mortality rate of emergency repair of ruptured AAAs compared with that of elective repair of non-ruptured AAAs, patients with AAA should be treated before the fatal complication or rupture AAA happens. Although elective AAA repair offers an overall mortality rate at less than 5%, some concomitant diseases such as COPD result in higher operative risk and sometimes being a contraindication of OR. In this case, endovascular aortic aneurysm repair (EVAR), requiring shorter hospital stay and early recovery period with less invasive technique and smaller surgical incisions, has become an excellent alternative of open AAA repair. We report a case of AAA with concomitant COPD in a 73-year-old man. The diagnosis, investigation and management are discussed.

CASE REPORT

A retired Thai professional with chronic obstructive pulmonary disease (COPD) was presented with rapid enlarging and asymptomatic AAA for 15 months. His AAA was incidentally detected by magnetic resonance imaging (MRI) during the investigation of his increasing PSA level at one year following his transurethral resection-prostate gland (TUR-P) for benign prostatic hypertrophy (BPH). Despite non-significant finding of his prostate

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Fig 1. Computed tomographic angiography (CTA) showed dilated infra-renal abdominal aorta 6.6x7 cm. in diameter with intraluminal thrombus.

Fig 3. C-arm image intensifier

investigation, his asymptomatic AAA was closed monitored with interval color duplex ultrasound (CDU) scans and computer tomographic (CT) scans during awaiting his decision making for surgery. The maximal aneurysmal diameter had been increased from 4.1 cm. at the beginning to 6.9 cm. of the last scan before he eventually agreed to have an operation.

The patient was on medication of hypertension, transient ischemic attacks, dyslipidemia and COPD. In spite of taking his inhaled long-acting bronchodilators and inhaled corticosteroid for 8 years, he had frequently experienced non-severe exacerbation for a year. He also underwent cataract surgery and TUR-P about 6 years and 1 year before this admission respectively. He ceased smoking 8 years earlier after having been a 50 pack-year smoker. No familial history of AAA was detected in this patient.

On physical examination, apart from his affected parts including a non-painful expansile and pulsatile epigastric mass as well as a barrel-shaped chest, there was no remarkable clinical finding.

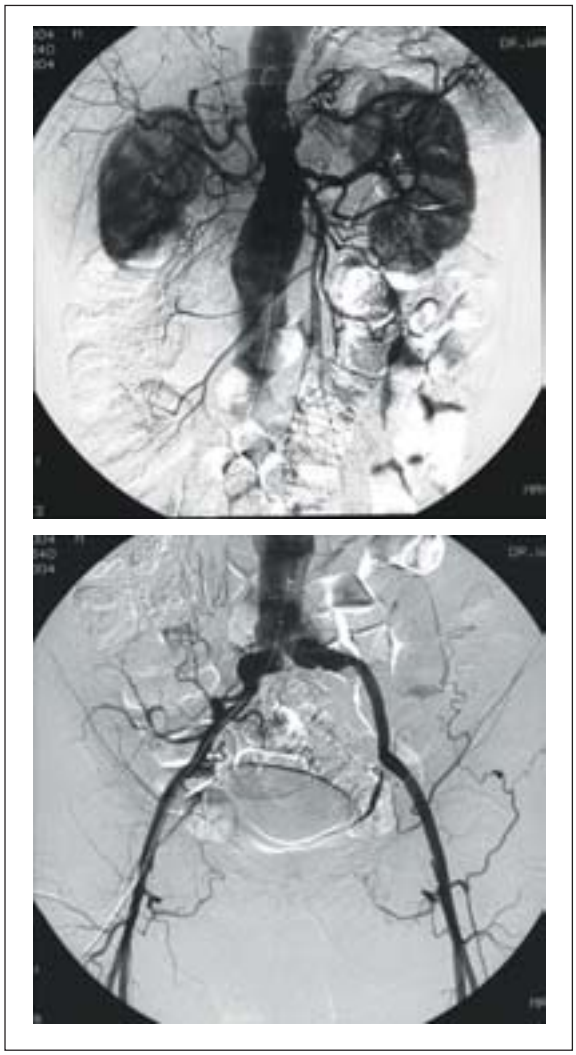

Fig 2. Conventional angiography of lower abdominal aorta and both iliac arteries showed aneurysmal dilatation of infra-renal aorta and both common iliac arteries. Note complete occlusion of left internal iliac artery from atherosclerotic disease.

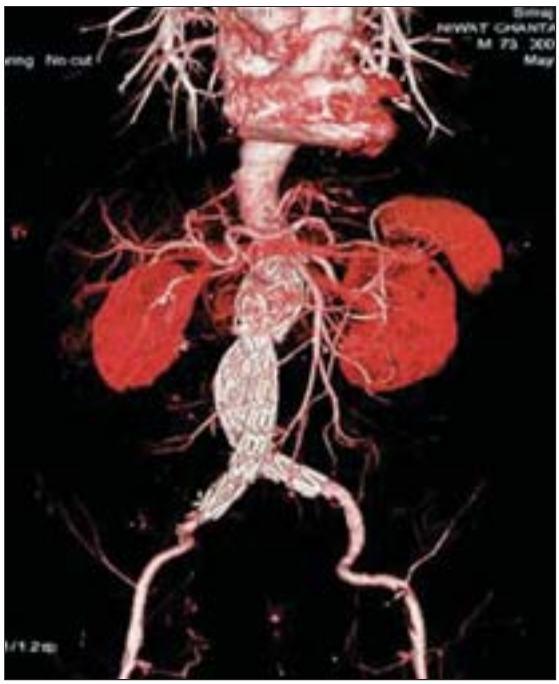

Fig 4. Post-operative CTA with 3-D reconstruction in coronal plane showed proper position of the aortic stent graft just beneath the origin of bilateral renal arteries. Note the cross-shape(x) of both iliac limbs indicating marked tortuosity of the vessels (making very difficult for the equipment delivery)

TABLE 1. Inclusion criteria for EVAR

1.	Asymptomatic large AAA (max. ø >5.5 cm)
2.	Asymptomatic rapid expanding AAA (ø >0.5 cm / 6 mo)
3.	High risk patient (Severe associated disease)
4.	Difficult anatomy for open repair (e.g. bilateral large iliac aneurysm)
5.	Age > 60 years

TABLE 2. Exclusion criteria for EVAR

1.	Renal failure or serum creatinine > 2.0 mg/dL
2.	Major stroke with bedridden
3.	Short life expectancy
4.	Major stroke with bedridden
5.	Active infection

Methods

Patient selection. All charts and medical records of 9 selected high-risk patients with asymptomatic AAA treated by EVAR were reviewed. The inclusion and the exclusion criteria of patients proceeding with EVAR were shown in Table 1 and Table 2.

The data collection was focused on: the patients' demographic data; indications for surgery; category of high-risk; AAA size; types of stent-graft; adjunctive procedure; operative and radiation exposed time; volume of used contrast agent; estimated blood loss and required blood transfusion; amount of exposed radiation; and post-operative complications; and cause of death.

Pre-operative evaluation and preparation. Medical review and consultation were offered for all patients. CTA

The complete blood count, blood chemistry, coagulogram were unnoticeable. His chest radiography showed fibro-nodular infiltration at both upper lobes corresponding to old pulmonary tuberculosis and no significant change from that of taken two months earlier. The electrocardiography demonstrated normal sinus rhythm and heart rate; however, left axis deviation, right atrial enlargement and RSR' in lead V_1 and V_2 were also found.

His pre-operative radiographic imaging includes computed tomographic angiography (CTA) and conventional angiography (as demonstrated in Fig. 1 and Fig. 2).

Following careful pre-operative evaluation and preparation as well as scrupulous sizing of aneurysmal morphology, the patient was treated by EVAR in operative theatre with an aid of C-arm image intensifier (Fig. 3) under general anesthesia with endotracheal intubation.

Operation and anesthesia course were uneventful. His endotracheal tube was extubated immediately in operative room without pulmonary complication. Post-operative period were uncomplicated with two days of ICU stay and he was discharged from the hospital in the early second week post-operatively.

His post-EVAR computed tomography (CT) with 3-D reconstruction is shown in Fig. 4.

Early experience of EVAR performed in operative theater of Siriraj Hospital (2003-2005)

The objective of the study is to delineate the results and complications of EVAR in our learning period. Between August 2003 and December 2005, nine selected high-risk patients with asymptomatic AAA treated by EVAR at our hospital were reviewed.

TABLE 3. Details of asymptomatic AAA patients undergoing EVAR

Case No.	Age (yr.)	Sex	Maximal AAA diameter (cm.)	Indications or special considerations	Method of treatment	Complications
#1	66	M	5.7	CAD	Bifurcated graft Excluder® (WL Gore)	none
#2	83	M	6.3	CAD, Paraplegia	Bifurcated graft Excluder® (WL Gore)	1. Airway obstruction 2. Cardiac arrest 3. Late graft limb occlusion (at 5 months)
#3	70	F	6.9	Morbid obesity	Bifurcated graft Excluder® (WL Gore)	none
#4	69	M	6.3	1. CAD 2. Aorto-bi-iliac a. aneurysm with short segment of aortic aneurysm	1. Pre-EVAR coil embolization (bilaterally) 2. Bifurcated graft (Medtronic AVE)	Type II endoleak
#5	74	M	5.0	1. Large bilateral IIA 2. Too risky for OR	1. Pre-EVAR coil embolization (bilaterally) 2. Aorto-uni-iliac graft (Medtronic AVE) 3. F-F crossover graft 4. Lt. CFA ligation	none
#6	72	M	6.0	1. COPD 2. Rapid expansion of AAA 3. Small iliac artery	1. Bifurcated graft (Medtronic AVE) 2. Trans-iliac artery cannulation 3. Lt. CFA endarterectomy	Intimal flap of Lt. CFA
#7	69	M	7.0	CAD	1. Pre-EVAR coil embolization (Unilaterally) 2. Bifurcated graft (Medtronic AVE)	none
#8	68	M	6.2	CAD	Bifurcated graft (Medtronic AVE)	none
#9	67	M	9.0	COPD	1. Pre-EVAR coil embolization (Unilaterally) 2. Bifurcated graft (Medtronic AVE) early rupture	1. Intimal flap and thrombosis of Rt. EIA 2. Undetected endoleak and AAA (dead)

CAD, Coronary artery disease; COPD, Chronic obstructive pulmonary disease; OR, Open repair; CFA, Common femoral artery; F-F, Femoro-femoral.

TABLE 4. Early and late complications of EVAR

Complications	No. of patients (%)	Management
30-day peri-operative death*	1 (11.1)	-
Cardiopulmonary arrest**	1 (11.1)	CPR, tracheostomy, and prolonged ICU and hospital stay
Graft limb occlusion (early)*	1 (11.1)	Rt. Limb of aortic stent graft to Rt. SFA bypass
Graft limb occlusion (late)**	1 (11.1)	1. Confirmed diagnosis by contrast-enhanced CT 2. Rt. EIA to Lt. SFA bypass with externally supported PTFE graft
Early endoleak (Type II)	1 (11.1)	Expectant management
Early ruptured AAA*	1 (11.1)	Dead
Late ruptured AAA	0	-
AAA sac enlargement	0	-
Graft migration	0	-

CPR, Cardiopulmonary resuscitation; CT, Computerized tomography; EIA, External iliac artery; SFA, Superficial femoral artery; PTFE, Polytetrafluoroethylene; *, ** each event happened in the same case

was performed in all patients for AAA morphology evaluation and stent-graft sizing. Conventional angiography as adjunctive imaging was required if suitable AAA anatomy for EVAR was questionable.

Operative procedure. Surgical steps of EVAR consist of: Patient's position and skin are prepared similar to those of OR. Accessed arteries (most commonly common femoral arteries) are exposed through bilateral groin incisions and cannulated with 18-gauge needle and 0.035-inch guide wires under fluoroscopic guidance. 10 French sheaths are inserted bilaterally over the guide wire into the accessed arteries. Two wires are advanced into aneurysm and higher up to the thoracic aorta followed by the advance of a radiographic catheter. A guide wire is exchanged by a super-stiff 0.035-inch guide wire 260 cm. long through the right groin and parked in the thoracic aorta. In the contralateral leg, a pigtail catheter is placed at just above both renal arteries before pre-procedural aortography is performed. A 10 French sheath is replaced by a sheath of the main stent-graft delivery system which is carefully inserted into the proximal infra-renal aorta over the stiff guide wire. The second aortogram is obtained to ensure the proximal end of the covered portion of the stent-graft being just below the lower renal artery orifice. The main body of the stent-graft is gradually deployed by retracting outer sheath which allows graft expansion under fluoroscopic guidance. After a successful deployment of the main body of aortic stent-graft, pigtail catheter of the contralateral limb is pulled back and a 0.035-inch angled hydrophilic wire followed by a guide catheter are advanced and negotiated into the contralateral limb of the bifurcated graft. The hydrophilic wire is exchanged for a super-stiff guide wire before a contralateral stent-graft delivery system is inserted and deployed under fluoroscopic guidance. A final angiogram is obtained to verify proper position without malfunction of the stent-graft and to exclude complication resulting from the procedure. Proximal and distal extender cuff placement may be considered if necessary. Both arteriotomies and then both groin incisions are re-approximated. The lower-limb perfusion is confirmed by digital palpation of ankle pulses.

Post-operative surveillance. All patient requires life-long follow-up of his endograft to detect potential complication following EVAR. These complications include endoleak, limb occlusion, aneurysm expansion, aneurysm rupture, infection, structural failure and graft migration. Post-endografting surveillance comprises abdominal plain films and computed tomographic (CT) scan at 1 month, 6 months and 12 months in the first year and annually thereafter.

RESULTS

Over 25 months, asymptomatic AAA in 9 selected patients was successfully treated by EVAR. Of all patients, there were 8 male patients and 1 female patient. The mean age was 70.8 years (range, 66-83 years). All patients except one who had either large or rapid expanding asymptomatic AAA were evaluated as non-fit patients for OR and were recruited in this study. The average AAA size was 6.5 cm (range, 5.0-9.0 cm).

As an indication for EVAR in 8 high-risk patients, 5 were of cardiac co-morbidity, 2 of severe COPD and 1 of morbid obesity. Merely one patient in this study had too difficult and risky anatomy to manage his AAA with concomitant bilateral large common and internal iliac aneurysms. We terminated open repair followed by EVAR as a postponed procedure.

Eight patients underwent EVAR with bifurcated aortic stent-graft and one proceeded with aorto-uni-iliac (AUI) graft with supplementary femoro-femoral crossover graft. Bifurcated aortic stent-graft (Excluder®, WL Gore) was used for the first three cases whilst the last six patients underwent EVAR with AneuRx® or Talent™, (Medtronic) stent-graft. The latter included 5 bifurcated graft and one AUI graft. We considered AUI to treat bilateral large iliac aneurysms with small AAA.

Four patients underwent pre-operative coil embolization for internal iliac aneurysm (IIA). Two patients required 2 separated attempts to bilateral IIA coil embolization at least 2 weeks before undergoing EVAR while the other two proceeded with only one side IIA embolization. There was no evidence suggestive of pelvic organ ischemia such as ischemic colitis or buttock claudication.

The mean operative time and radiation time were 305.5 minutes (range, 190-550 minutes) and 75.4 minutes (range, 28-172 minutes) respectively. The average radio-opaque contrast media used per a procedure was 230 cc. (range, 150-350 cc.) and the average exposed radiation was 107.4 Rad. (range, 38.6-182 Rad.). The mean estimated blood loss was 366.6 cc. (range, 100-500 cc.) and the mean blood transfusion = 0.88 unit (range, 0-3 units). The mean length of stay includes 5.1 days (1-20 days) of ICU stay and 17.2 days (range, 9-37 days) of post-operative hospital stay.

Details of AAA patients treated by EVAR including age, sex, maximal aneurysm size, indications/special consideration, method of treatment and complications are shown in table 3.

There were one of 30-day peri-operative death (11.1%), one of post-operative cardiopulmonary arrest (11.1%), one of early AAA rupture (11.1%), one of early graft limb occlusion (11.1%), one of late graft limb occlusion (11.1%), and one of early type II endoleak (11.1%). Neither late AAA rupture, AAA sac enlargement, nor graft migration occurred in this study.

A patient (case no. 2) experienced post-operatively airway obstruction and cardio-pulmonary arrest requiring

cardio-pulmonary resuscitation (CPR), tracheostomy and prolonged ICU and post-operative hospital stay. The patient had the longest stay in ICU and in the hospital in our series.

Unfortunately, one patient (case no. 9) in our series died from an unrecognized early aneurysm rupture following a limb salvage operation. Although having successfully placed the aortic stent-graft through his difficult bilateral tortuous iliac arteries, this patient experienced acute right leg ischemia caused by severe intimal injury of right external iliac artery requiring an open surgical bypass-right external iliac artery to right superficial femoral artery bypass with externally supported PTFE graft.

Despite his limb salvageablity and clinical improving, his post-operative period was stormy with a pulmonary artery branch tearing from ballooning of pulmonary artery catheter resulted in massive hemoptysis and thrombocytopenia. Accordingly, the patient developed sudden abdominal distension and hypotension as well as passed away in his second week post-operation. Since the autopsy of the patient showed a small defect on the right lower part of the aneurysm sac without evidence suggestive of either type I endoleak, type III endoleak, or anastomotic leakage, the suspected cause of early aneurysm rupture and death was a combination between retractor injury to the aneurysmal sac during the open surgical bypass for limb salvage and type II endoleak. Additionally, the AAA of this patient is the largest of all managed by stent-grafting. With 9.0 cm. in the maximal diameter, the aneurysm was vulnerable to rupture at any time.

Regarding long term outcome, a patient (case no.2) developed acute leg ischemia five months following EVAR. This caused by late graft limb occlusion confirmed by contrast-enhanced CT. He was managed by right external iliac artery to left superficial femoral artery bypass with externally supported PTFE graft without post-operative complication.

Although this case caused 11% of 30-day peri-operative death rate, this is comparable with 9% of high-risked patients treated by EVAR as mentioned earlier in EVAR trial 2 (EVAR-2)[13].

A patient (case no. 4) experienced persistent pulsatile AAA following successful EVAR. His first post-operative day abdominal contrast-enhanced CT demonstrated undetermined endoleak whether caused by type II or type III endoleak. He was carried to an angio-suite where his type III endoleak was excluded. In addition, his type II endoleak was confirmed and managed expectantly. Patient did very well with the absence of abdominal pulsatile mass in the next week. The early and late complications and management of EVAR are depicted in table 4.

DISCUSSION

Abdominal aortic aneurysms (AAAs) generally occur in the elderly population and increase steadily in frequency after 50 year old. Overall, the age-adjusted incidence is twofold to sixfold higher in men than in women for asymptomatic and ruptured AAAs.

Since the patients treated with emergency repair of ruptured AAAs have 10 times higher operative mortality than those treated with elective repair of non-ruptured AAAs (>50% versus <5%), the only way to reduce this high mortality rate is that AAA must be fixed before its fatal complication or rupture occurs. To obtain this objective, ultrasonographic screening program has been established for early detection and closed monitoring of AAA progression until it either reaches surgical indications or develops symptoms. At this stage, the aneurysm should be managed by surgical procedure before its rupture.

Surgery for AAAs is indicated in any patients with symptomatic AAAs (e.g. those presenting with painful or ruptured, compression or fistularization to the adjacent organs, or distal embolization) and in asymptomatic patients with large aneurysm (maximal diameter > 5.5 cm.) or rapid enlarging aneurysm (expanding rate > 1cm/year).[1]

Management of this patient comprised a pre-operative evaluation and preparation in particular by a pulmonologist and an anesthetist, accurate sizing of aneurysmal anatomy by a radiologist and meticulous and precise stent-graft placement by either surgeons or interventionists.

In terms of the preoperative evaluation of patients with COPD, factors affecting the peri-operative pulmonary complications (PPC)[2] are, namely:

1. Smoking status: those who quit smoking for less than 8 weeks have more PPC.
2. Spirometry: those with FEV_1 less than 50% predicted have more PPC.
3. Exacerbation: those who have frequent exacerbation (> 1 episode/year) or severe exacerbation (requiring invasive or non-invasive ventilation) have more PPC.
4. Room-air ABG: those with PaO_2 < 60 mmHg or $PaCO_2$ > 50 mmHg have more PPC.

Since this ex-smoker patient had severe COPD[3] (post-bronchodilator FEV1 ~ 40 % predicted) requiring inhaled long-acting bronchodilators and inhaled corticosteroid, and had frequent non-severe exacerbation for a year, the peri-operative management for COPD should include:

1. Avoidance of general anesthesia;
2. Peri-operative systemic corticosteroids; oral prednisolone 30 mg/day for 3-5 days before surgery, intravenous dexamethasone 20 mg/day during the operative day, and continue until uneventful post-operative period;
3. Continue previous medications and switch to optimum nebulized short-acting bronchodilators in the operative day and during postoperative period.

Having assessed by a chest physician, the patient was found not a good candidate for OR. Nevertheless, his AAA should be urgently repaired because of an increase in risk of rupture due to his large aneurysm size. Accordingly, he was referred to an anesthetist for evaluation of the possibility of EVAR under general anesthesia without upper abdominal incision.

This patient was seen by an anesthesiologist; risks and benefits of anesthetic techniques were explained to him. General anesthesia provides unconsciousness, comfortable for long-lasting procedure and can be continued in case of changing surgical technique to open repair but the risk of PCC may be increased.[4] Regional anesthesia avoids airway manipulation and reduces stress responses to surgery.[5] For long-lasting procedure using intravenous heparin as EVAR, the risk of epidural hematoma after continuous epidural anesthesia may be increased. After balancing benefits and risks of each mode of anesthesia, general anesthesia with endotracheal intubation was the anesthetic method of choice in this patient.

During the waiting for his consent to surgery, he was arranged for a radiological assessment which included computed tomographic angiography (CTA) and conventional angiography (as demonstrated in Fig. 1 and Fig. 2) whether his AAA anatomy is amenable to EVAR.

According to patient selection criteria, the considerable aorto-iliac anatomy of the patient for EVAR[6] includes, namely:

1. Superior neck - minimum length of 15 mm is needed for adequate seal;
2. Angulation < 60 degree between the neck and aneurysmal body;
3. Intraluminal thrombus occupies > 1/4 of the aortic circumference or has a thickness > 2 mm. can also interfere with proper sealing;
4. Aortic neck diameter - the largest diameter should be 26-28 mm and no increase in diameter along the first 20 mm of the upper attachment zone (reverse cone shape);
5. Distal neck - minimum length is 12-15 mm. for attachment zone;
6. Thrombus and ulceration of the iliac arteries may prevent adequate sealing and cause leakage after the procedure.

As for the pre-operative planning, the dimensions of the aneurysm and aorta as well as the sizes and conditions of the iliac arteries (i.e. calcified, stenotic, or tortuous) are crucial in determining whether a specific patient is suitable candidate for EVAR. Currently, two of the most recommended investigation for AAA morphology assessment for EVAR are CTA and conventional angiography.

CTA using spiral acquisition of thin sections offers the ability to display true vessel cross sections as well as provides superior diameter and length estimations. CTA can show the extent and location of calcification and intraluminal thrombus. Moreover, 3-dimensional (3-D) volume renderings provide images that can be viewed from any perspective.

Conventional angiography can provide a quick overview of aneurysm configuration, relationship to aortic branch vessels, the iliac anatomy and diameter. However, angiography is limited to measure accurate outer diameter of aneurysm and vessels as well as inability to clearly delineate thrombus.

As a poor candidate for OR by COPD and having proper AAA morphology for EVAR, he was eventually proceeding with EVAR. Operation and post-operative period were uncomplicated and the patient was discharged from the hospital in the next week after the surgical procedure.

After Dubost and colleague published their first successful replacement of an AAA in 1952, endoaneurysmorrhaphy with intraluminal graft placement has been adopted as a current standard procedure for AAA repair.[7] However, following achievement in AAA treatment with transfemoral intraluminal graft implantation by Parodi and co-workers, EVAR has challenged OR as an alternative method of AAA repair.[8] With its less invasiveness and lower mortality rate as well as requiring shorter hospital stay and early recovery period, EVAR nowadays becomes more popularized in AAA remedy than OR.

The aim of OR is to exclude blood flow from proximal normal aorta in to the aneurysmal sac and to maintain blood supply to both leg vessels. This demands an access through a long midline abdominal incision and aneurysmal sac opening resulting in severe post-operative pain and significant respiratory compromise as well as a large amount of blood loss and blood transfusion requirement. On the contrary, neither a long midline abdominal incision nor aneurysmal sac opening is required by EVAR.

Surgical procedure and post-operative surveillance for EVAR were mentioned earlier in this article.

In the late 2004, the two earliest and largest randomized controlled trials comparing between EVAR and OR by the Dutch Randomized Endovascular Aneurysm Management (DREAM) trial[9] and the British Endovascular Aneurysm Repair Trial 1 (EVAR-1)[10] were published. Both showed that EVAR reduced 30-day operative mortality by nearly three-fourths (from 4.6% to 1.2%) in DREAM trial and two-thirds (from 4.7% to 1.7%) of EVAR-1 trial respectively as compared with OR.[9,10]

The post-operative survival advantage of EVAR over OR was not sustainable after the first operative year from the two-year outcome of DREAM trial[11] in mid 2005 at which the same period was EVAR-1 demonstrating the maintained 3% better aneurysm-related survival by EVAR over OR at 4-years after the randomization[10]. However, the latter study interpreted that EVAR offered no advantage related to all-cause mortality and health-related quality of life, was more expensive and caused a great number of complications and re-intervention.[12]

In addition, after 4-year controlled trial of the patients who were unfit for OR randomized for either EVAR or no intervention in the British Endovascular Aneurysm Repair Trial 2 (EVAR-2), EVAR had a significant 30-day operative mortality up to 9% while the non-intervention group had a rupture rate of 9.0 per 100 person years.[13] Surprisingly, in this study, the overall mortality by 4 years was around two-thirds (at 64%) of the patients (62% of EVAR group versus 66% of non-intervention group). Moreover, EVAR made no improvement on survival. More cases are needed for continued surveillance and re-interventions. It requires more cost when compared to the non-intervention group.

Regardless of the long term outcome, longer follow-up is mandatory to evaluate how durable EVAR would be.

CONCLUSION

We report a case of an incidental large asymptomatic AAA in an ex-smoker with severe COPD. Subsequently, the aneurysm had been rapidly enlarging during the waiting period for his informed consent. He underwent EVAR 15 months after his first diagnosis of AAA. Operation and post-operative period proceeded uneventfully. In addition, the early experience of EVAR performed in the operative theater of Siriraj Hospital from 2003 to 2005 is comparable to that of a recent large multi-center controlled trial.

COMMENT

From Head of Department of Surgery

Elective repair of non-ruptured AAA should be done because of low morbidity rate compared to emergency repair of leak or rupture AAA. Those with chronic obstructive lung disease were limited for upper abdominal incision and higher operative risk. In this case, endovascular aortic aneurysm repair (EVAR), has become an excellent alteration of open AAA repair but this method, the vascular surgeon need a good cooperate with intervention radiologist. EVAR has been an alternative method of AAA repair especially in the patient with COPD or very old age. This is another step of a new development in the division of vascular surgery.

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บทคัดย่อ

หลอดเลือดแดงใหญ่ช่องท้องโป่งพองในชายที่มีโรคถุงลมโป่งพอง: รายงานผู้ป่วยและการรักษาโดยวิธีการสอดท่อหลอดเลือดเทียมที่มีโครงค้ำยัน

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วัตถุประสงค์: รายงานผลสำเร็จของการรักษาหลอดเลือดแดงใหญ่ช่องท้องโป่งพองโดยวิธีการผ่าตัดสอดท่อหลอดเลือดเทียมที่มีโครงค้ำยันผ่านทางหลอดเลือดแดงที่ขาหนีบทั้งสองข้างเข้าไปเชื่อมต่อกันภายในหลอดเลือดแดงใหญ่ที่โป่งพองภายในท้องช่องท้อง ซึ่งก้อนดังกล่าวได้รับการตรวจพบโดยบังเอิญในผู้ป่วยข้าราชการบำนาญชายไทย อายุ 73 ปี ที่เป็นโรคถุงลมโป่งพอง และรายงานผลการรักษาและภาวะแทรกซ้อนของการรักษาหลอดเลือดแดงใหญ่ช่องท้องโป่งพองโดยวิธีการผ่าตัดสอดท่อหลอดเลือดเทียมที่มีโครงค้ำยันผ่านทางหลอดเลือดแดงที่ขาหนีบทั้งสองข้างเข้าไปเชื่อมต่อกันภายในหลอดเลือดแดงใหญ่ที่โป่งพองภายในท้องช่องท้องที่เกิดขึ้นภายในห้องผ่าตัดของโรงพยาบาลศิริราช ระหว่างปี พ.ศ. 2546 ถึง พ.ศ. 2548

วิธีการ: การศึกษาย้อนหลังในผู้ป่วยหลอดเลือดแดงใหญ่ช่องท้องโป่งพองที่ปราศจากอาการที่ได้รับการรักษาโดยวิธีการผ่าตัดสอดท่อหลอดเลือดเทียมที่มีโครงค้ำยันที่เกิดขึ้นภายในห้องผ่าตัดของโรงพยาบาลศิริราชในช่วงเริ่มต้น 2 ปีแรก

ผลการศึกษา: ผู้ป่วยทั้งหมด 9 ราย (100%) รวมทั้งผู้ป่วยรายที่ได้รับการรายงาน ได้รับการผ่าตัดสอดท่อหลอดเลือดเทียมที่มีโครงค้ำยันเพื่อรักษาหลอดเลือดแดงใหญ่ช่องท้องโป่งพองได้เป็นผลสำเร็จ ผู้ป่วยเสียชีวิตภายใน 30 วันแรกหลังการผ่าตัด, เกิดภาวะหัวใจหยุดเต้น, หลอดเลือดแดงใหญ่ช่องท้องโป่งพองแตกภายใน 30 วันแรกหลังการผ่าตัด, หลอดเลือดเทียมอุดตันในระยะเริ่มแรก (1 วันหลังผ่าตัด), หลอดเลือดเทียมอุดตันในเวลาต่อมา (5 เดือนหลังผ่าตัด), และมีการรั่วของเลือดแดงเข้ามาภายในช่องว่างระหว่างหลอดเลือดเทียม กับผนังของหลอดเลือดแดงใหญ่ช่องท้องโป่งพอง อย่างละ 1 ราย (11.1%) แต่ไม่พบภาวะหลอดเลือดแดงใหญ่ช่องท้องโป่งพองแตกภายหลัง 30 วันแรกหลังการผ่าตัด, ขนาดของหลอดเลือดแดงใหญ่ช่องท้องโป่งพองที่โตขึ้นหลังการผ่าตัดและการเลื่อนตำแหน่งของหลอดเลือดเทียมหลังการผ่าตัด

สรุป: วิธีการสอดท่อหลอดเลือดเทียมที่มีโครงค้ำยันเป็นทางเลือกที่ดีมากอย่างหนึ่งสำหรับการรักษาโรคหลอดเลือดแดงใหญ่ช่องท้องโป่งพองในผู้ป่วยที่มีความเสี่ยงต่อการผ่าตัดสูง เช่นผู้ป่วยถุงลมโป่งพองรายนี้ที่ได้รับการตรวจพบหลอดเลือดแดงใหญ่ช่องท้องโป่งพองโดยบังเอิญ หากต้องพิจารณาถึงอัตราการเสียชีวิตที่สูงประมาณ 10 เปอร์เซ็นต์ ในการรักษาโรคหลอดเลือดแดงใหญ่ช่องท้องโป่งพองในผู้ป่วยที่มีความเสี่ยงสูงต่อการผ่าตัด