

THE ADVANTAGE OF FENESTRATED STENT GRAFT FOR TYPE B AORTIC DISSECTIONS

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OBJECTIVE

Thoracic endovascular aortic repair (TEVAR) for Type B aortic dissections has come into wide use, despite it is still controversial.

In addition, many dissections have entries in distal arch. Therefore, in order to cover distal arch entries, stent grafts needs to be placed in aortic arch. However, TEVAR of the aortic arch has anatomical restrictions, such as the proximity to the great vessels and arch tortuosity, and there are no adequate commercially available devices.

From 2006, we introduced the TEVAR of the aortic arch with fenestrations strategically placed for each arch branch without the use of extra anatomical bypass.

In this year, we performed 2cases fenestrated stent grafting for complicated Type B sub acute dissection. The false lumen was patent and proximal end of devices were placed at Zone 0 in all cases.

RESULTS

Primary Technical success rate was 100%. There was no hospital death and major complications. The thrombosed false lumen of the distal arch was seen in all cases at post operative CT.

CONCLUSIONS

Endovascular repair of complicated Type B sub acute dissection with fenestrated stent graft is feasible and safe. These results seem this device has a potential to be one of the method for treatment Type B dissection.

IMPROVEMENT THE DEBRANCHING BYPASS IN ZONE 1 TEVAR WITH 2 INCISIONS AND 1 CONDUIT TECHNIQUE

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OBJECTIVE

Debranching procedures to allow for zone 1 landing of the device are currently standard for TEVAR. We report an improvement of debranching bypass technique in zone 1 TEVAR.

METHODS

Approximately 5cm skin incision was made to the left sternocleidmastoid muscle medial margin from sternum emargination. The left common carotid artery (LCCA) was exposed from sternocleidmastoid muscle medial margin. The left subclavian artery (LSCA) was taped by the proximal side of the left vertebral artery (LVA) origin. At the same time, approximately 5cm skin incision was made to the right subclavian region, and the right subclavian artery (RSCA) was exposed. An 8mm prosthetic conduit was used. It was passed from the right subclavian incision via subcutaneous tunnel to the left incision. First, end to side anastomosis of the prosthetic conduit was carried out to RSCA. Then, end to side anastomosis of the LCCA was carried out to the prosthetic conduit side wall under simple clamp. Finally, transection of the LSCA was carried out at the proximal side of the LVA bifurcation area, and end to end anastomosis with the prosthetic conduit was performed. In order to prevent type 2 endoleak, the transection stump closure of the proximal side of LCCA and LSCA was carried out. After the skin closure, Zone 1 TEVAR was performed.

RESULT

Four patients were performed by this technique. No operative death was encountered. All patients were discharged uneventful without any complications.

CONCLUSION

Debranching bypass to LCCA and LSCA was possible for this technique at one incision. The stump closure of the LSCA was carried out directly, coiling to the proximal side of LSCA for the prevention of type 2 endoleak after TEVAR was unnecessary.

AZELNIDIPINE SUPPRESSES THE PROGRESSION OF AORTIC ANEURYSM IN WILD MICE MODEL THROUGH ANTI-INFLAMMATORY EFFECTS

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OBJECTIVE

Patients with aortic aneurysm (AA) have been increasing. The aims of this study are to make wild model mice with AA, and to assess the drug effect for preventing the progression of AA.

METHODS

7-week-old C57BL6J male mice were used. Angiotensin-2 and B-aminopropionitrile (BAPN) were administrated subcutaneously (Group AA). Azelnidipine, calcium antagonist, was additionally administrated orally (Group CT). Mice were assessed at 4 weeks after pharmacological manipulations.

RESULTS

Mice in group AA highly developed the aneurysm of thoracic and/or abdominal aorta (11/12; 92%). The AAs were frequently found at the distal aortic arch and suprarenal abdominal aorta. Although there were no differences in peak systemic blood pressures of both groups, mice in group CT reduced the development of aneurysm significantly (2/11; 18%). In histological analysis, the coarse and stretched elastic fiber was markedly observed in aortic wall in group AA. MAC-3 positive cells accumulated significantly to the periaortic adipose tissue in group AA. In RT-PCR of aortic wall, the expressions of TNF- α and MMP-2 were significantly increased in group AA.

CONCLUSIONS

Our data show that a combination of angiotensin-II and BAPN can develop site-specific degenerative aortic aneurysms, and Azelnidipine suppresses the progression of AAs by anti-inflammatory effect.

ENDOVASCULAR MANAGEMENT OF ISOLATED ILIAC ARTERY ANEURYSMS

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OBJECTIVE

We reviewed our experience with endovascular treatment of isolated iliac artery aneurysms (IIAs).

METHODS

Eight patients (8 men), with a mean age of 77 years, underwent endovascular repair of 9 isolated IAAs : 5 common iliac and 4 internal iliac. Patients with abdominal aortic aneurysm diameter >30mm or patients with prior open abdominal aortic aneurysm repair were excluded. The mean preoperative diameter was 37mm. One patient had prior open bilateral common iliac artery aneurysm repair. Medical records for consecutive patients undergoing endovascular IIA repair from 2009 to 2011 were reviewed. Computed tomography angiogram were used to assess IAA location, size and presence of endoleaks after endovascular repair.

RESULTS

Three patients were treated bifurcated stent-grafts, two with unilateral iliac stent-grafts and three with coil embolization alone. There was no perioperative complication. On follow-up, one patient had buttock claudication and one type II endoleak was found in bifurcated stent-grafts. One patient died of cerebral bleeding 33 months after treatment. The mean aneurysm size was decreased to 35mm during a mean follow-up period of 14 months.

CONCLUSIONS

Endovascular repair of isolated IAAs appears safe and effective with initial results.

A CASE OF INFERIOR MESENTERIC ARTERY ANEURYSM

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Inferior Mesenteric Artery(IMA) aneurysm is among the rarest of visceral artery aneurysms. We report a case associated with occlusion of the Superior Mesenteric Artery(SMA) and Celiac Artery(CA), which is so rare that only 20 reports do exist worldwide as far as we know.

The patient was a 69 year old man who was referred to our hospital with an asymptomatic IMA aneurysm which had been discovered at his primary hospital during treatment of tuberculous pleuritis. The abdominal computed tomography angiograms revealed a fusiform IMA aneurysm located at the root of IMA branching from the abdominal aorta with a maximum diameter of 2.8cm. Both SMA and CA were occluded at the roots, and both the branches of IMA and marginal arteries were tortuous and dilated, which supplied the entire intra-abdominal organs. The aneurysm was resected and the artery was reconstructed by end-to-end anastomosis after revascularization of SMA with an 8mm expanded polytetrafluoroethylene(ePTFE) graft. Histology showed arterosclerotic disease without calcification.

We found 53 cases of IMA aneurysms including our own case. Including our case, there were 21 cases of IMA aneurysms associated with occlusion of SMA and CA. In these cases, splanchnic blood flow was supplied only through the tortuous mesenteric artery originating from IMA. As mentioned by several authors, the greatly increased and possibly turbulent blood flow might create dilatation of small collateral arteries, because of a "jet disorder" phenomenon. We report this case with a review of the literatures.

SURGICAL MANAGEMENT OF MIDDLE AORTIC SYNDROME IN THE ELDERLY: A CASE REPORT

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INTRODUCTION

Coarctation of the abdominal aorta, namely "Middle aortic syndrome" (MAS), is a rare disease with only 200 reported cases. MAS may present clinically as uncontrolled hypertension, abdominal claudication or lower limb claudication. Diagnosis is usually made during childhood or in young adulthood; therefore, the surgical management of MAS in an elderly patient is exceptional. We report a case of the surgical repair of a MAS in a 70-year-old woman with lower limb claudication.

CASE

A 70-years-old-woman with hypertension, diagnosed about 40 years earlier, and diabetes mellitus was admitted to our hospital because of severe lower limb claudication. The peripheral pulses were not palpable and the ankle brachial pressure index (ABPI) was 0.6, bilaterally. Computed tomographic angiography showed the severe segmental narrowing of the aorta from just below the renal arteries and the enlarged meandering mesenteric artery and inferior mesenteric artery, forming collateral pathway to the distal aorta. We performed the bypass from the juxta-renal aorta to the bilateral common iliac arteries using bifurcated Dacron graft. The post operative course was uneventful. The peripheral pulses were palpable, the ABPI returned to 0.9 and the claudication was relieved.

A CASE OF HYBRID THERAPY FOR DISSECTED THORACO-ABDOMINAL AORTIC ANEURYSM IN A MARFAN SYNDROME PATIENT

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OBJECTIVE

We report a case in which a hybrid therapy using open and subsequent endovascular treatment was very effective for extensive dissected thoraco-abdominal aortic aneurysm in a Marfan syndrome patient.

METHODS

The patient was a 43 year-old female with a diagnosis of Marfan syndrome. She had a past history of Stanford type B aortic dissection and had undergone Bentall operation, total arch replacement and proximal descending aortic replacement before. The aorta between the distal portion of the previous descending aortic graft and bilateral common iliac arteries became gradually enlarged. The maximum diameter was over 6cm at the time of the operation.

RESULTS

At first, we planned to replace the aorta from the previous descending aortic graft and bilateral common iliac arteries. However, we failed to approach to the previous graft due to a severe adhesion of lung and neighboring tissue. So we planned a two-staged operation. As a first operation, we performed thoraco-abdominal aortic replacement through left thoracotomy. The proximal anastomosis was underwent at the aneurysm site of thoraco-abdominal aorta. As a second operation, we performed TEVAR and bridged the previous descending and thoraco-abdominal aortic graft. The result was very successful, revealing no endoleak, The patient went well with no sign of spinal cord ischemia.

CONCLUSIONS

A hybrid treatment may be effective in a case of extensive aneurysm, in which optimal outcomes would not be obtained with open surgery alone.

THORACOABDOMINAL AORTIC REPAIR USING A MULTIDISCIPLINARY APPROACH TO PREVENT NEUROLOGICAL DEFICIT

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OBJECTIVE

Surgery for pathology in thoracoabdominal aortic aneurysm is still challenging. We have used several techniques to reduce mortality and morbidity.

METHODS

Forty-one consecutive patients (30 men, 11 women; aged 62 years, range 23-80) who underwent thoracoabdominal aortic repair using a special-designed prosthetic graft with four branches were reviewed. Etiology was dissection (n=29) and non-dissection (n=12). Extent of aneurysm was Crawford I (n=1), II (n=19), III (n=17) and IV (n=4). Four patients were Marfan syndrome and 18 patients had previous aortic surgery. Surgery proceeded with patients in the right-sided lateral position. Stony incision was performed and the diaphragm was divided. Heparin sulfate was injected intravenously, and then a femoro-femoral bypass with a centrifugal pump and a membrane oxygenator was established for distal perfusion during aortic cross clamping. The aorta was cross clamped using the serial shift technique and was replaced with prosthetic grafts. Celiac, superior mesenteric and bilateral renal arteries were reconstructed using a branched graft. In most patients several pairs of segmental arteries were reconstructed based on information of preoperative detection of the Adamkiewicz artery by computed tomography. Motor-evoked potential monitoring and cerebrospinal fluid drainage were routinely performed. Regional spinal cord cooling using a countercurrent closed-lumen epidural catheter was performed in 20 patients and selective perfusion of intercostal arteries were performed in 3 patients.

RESULTS

Operation time and partial bypass time was 583 and 145 minutes. One patient who had diabetes mellitus, arteriosclerosis obliterans and a history of tracheotomy died of respiratory failure (hospital mortality, 2.4%). Postoperative morbidity was tracheotomy (n=3), permanent hemodialysis (n=2). There was no complication of central nervous system such as cerebral infarction or paraplegia.

CONCLUSIONS

Although the surgical repair of thoracoabdominal aortic aneurysms remains challenging, multidisciplinary approach using several methods have dramatically reduced the incidence of neurological deficits and achieved excellent clinical results.

REVASCULARIZATION FOR ASO ASSOCIATED WITH MYELOPROLIFERATIVE DISEASE: REPORT OF 2 CASES

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Myeloproliferative disease is disease of increasing erythrocyte, leukocyte and platelet as polycythemia vera and essential thrombocythemia. The disease complicate thrombosis in various vascular problems as cerebrovascular, coronary artery, peripheral vascular. We reported 2 cases of revascularization for ASO associated with myeloproliferative disease and improvement of blood flow and symptom consequently.

Case 1:A 62-years-old female with history of polycythmia vera, diabetes mellitus, atrial fibrillation and cerebral infarction. She underwent EVT for bilateral SFA region by ASO 10 years ago at other hospital. After 4 years. She had rest pain and left leg ulcer. She underwent EVT for left EIA occlusion, but the leg ulcer progressed and uncontrolled infection, then she received amputation of left leg. Next 1 month, she developed right foot ulcer. She underwent EVT for right SFA occlusion but it was not successful. So we performed right DFA to above-knee popliteal artery bypass using reversed the great saphenous vein graft. The graft had been patent for 4 months postoperatively and the foot ulcer improved.

Case 2:A 43-years-old male had ischemic rest pain and dysesthesia of right leg, so he received physical examination and medication for essential thrombocythemia. He was pointed out occlusion of lower extremity artery. We performed right CFA to posterior tibial artery bypass using in situ the great saphenous vein graft and endarterectomy of DFA 5 years ago. The blood flow and symptom improved. After 3 years, he suffered from same symptom of left leg as right. We performed hybrid procedures how EVT of left EIA and left CFA to below-knee popliteal artery bypass using in situ the great saphenous vein graft, so his symptom improved.

We have found little the literatures about treatment for ASO associated with myeloproliferative disease. We purposed to treatment of 2 cases by control blood cell numbers, medication and blood flow evaluation of lower extremity strictly.

A CASE OF THE PERSISTENT SCIATIC ARTERY ANEURYSM ASSOCIATED WITH LIMB ISCHEMIA

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CASE REPORT

A 66-year-old woman was admitted with a complaint of sudden onset of pain and paralysis in the right lower extremity. The affected leg was cool and cyanotic. The artery pulses were palpable but weak in the right femoral, and not palpable in both the popliteal and the pedal artery. Computed tomography scans revealed that the right internal iliac artery was unusually large in caliber and coursed laterally into the buttock with keeping its large diameter. There was an aneurysm of the artery with mural thrombus at the level of the greater trochanter. Then it run down posteriorly in the thigh and was suddenly occluded at the level of the distal thigh. The superficial femoral artery and profunda femoris artery were hypoplastic. Those findings allowed us to establish the diagnosis of acute embolic occlusion of the distal femoral and popliteal artery; originated from the persistent sciatic artery (PSA) aneurysm. At first for early rescue of the ischemic insult of the right lower leg, thrombo-embolectomy was urgently performed. After the operation, the right dorsal pedis artery was well palpable. On the 23 days since the operation, the right PSA aneurysm was excluded with ligation of the right internal iliac artery and the femoral artery distally, and the right common iliac artery to popliteal artery bypass was carried out. On the 51 day from admission, the patient discharged the hospital with ambulatory condition. At the 45 months from the operation, the bypass graft was patent and the aneurysm was not size up.

PSA is a rare congenital vascular anomaly whose interesting anatomy may create significant clinical challenges. PSA is usually discovered when evaluating a patient with ischemia of the lower extremity or a painful or painless gluteal mass, reflecting aneurysm formation or its thromboembolic complications.

PSEUDOANEURYSM IN THE LEFT GROIN DUE TO RUPTURED KNITTED DACRON GRAFT LIMB OF THE PREVIOUS BYPASS SURGERY

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OBJECTIVE

We report a case of pseudoaneurysm in the left groin due to ruptured knitted Dacron graft.

CASE PRESENTATION

An 82-year-old man was admitted to our institution in 2010 with a painful pulsating mass in the left groin. He had undergone bypass surgery with a bifurcated Cooley double velour knitted Dacron graft to treat aortoiliac occlusive disease 21 years ago. He was also previously admitted our hospital in 2007 with a pseudoaneurysm of the proximal anastomotic site, and operated by endovascular aortic repair using a hand-made stent graft via an approach from the right limb of the bifurcated graft. This time 2010, computed tomography demonstrated a 35-mm pseudoaneurysm near the distal anastomosis site of the graft. Opening the aneurysm revealed that the graft was disrupted along the guideline. We resected the aneurysm and interposed an expanded polytetrafluoroethylene (ePTFE) graft.

CONCLUSIONS

We have reported a rare case of late stage rupture of Dacron graft. Vascular surgeons should consider that grafts can fail in patients with long-term prosthetic grafts.

HEPARIN-INDUCED THROMBOCYTOPENIA AFTER ABDOMINAL AORTIC ANEURYSM SURGERY

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Heparin induced thrombocytopenia (HIT) is a serious adverse reaction to unfractionated heparin (UFH) that often results in catastrophic thrombotic complications. We experienced two HIT cases during UFH treatment for disseminated intravascular coagulation (DIC) after abdominal aortic aneurysm (AAA) surgery. In the first case, although a symptom of DIC gradually improved with UFH treatment, mesenteric artery thrombosis suddenly occurred, associated with over 50 percent decrease in platelet count on the 11th day. The platelet counts were increasing due to UFH cessation, but clinical symptom and coagulation abnormalities worsened to multiple organ failure. In the second case, the platelet count decreased to under 100000 on the 13th day after UFH anticoagulation along with continuous hemodiafiltration which was indicated for postoperative renal failure. The extracorporeal circuit clotted frequently under an adequate dose of UFH. Serologically, heparin platelet factor

4 complex antibodies were repeatedly detected by enzyme linked immunoassay. Argatroban, a direct thrombin inhibitor, was introduced as an alternative to UFH, and the platelet count improved with a decrease in titers of the antibodies. In critical AAA cases such as a ruptured one, UFH is often used for treatment of DIC. Therefore, it is important to recognize the onset of HIT in clinical course of DIC and consider an immediate usage of an alternative as a heparin substitute for further improvement of surgical outcome.

THE TREATMENT OF REYNAUDS PHENOMENON WITH 5-HYDROXYTRYPTAMINE_{2A} RECEPTOR ANTAGONIST, SARPOGRELATE HYDROCHLORIDE

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OBJECTIVE

Raynauds phenomenon was reported as characteristic symptoms that cause a discoloration of the fingertip in the range confined by cold stimulation by Raynaud. We assessed the efficacy of 5-hydroxytryptamine_{2A} (5-HT_{2A}) receptor antagonist sarpogrelate hydrochloride as the treatment for Raynauds phenomenon and the literatures on this entity are reviewed.

METHODS

Thirteen patients (6 men and 7 women; their mean age (+-SD) ; 69+-8 years) who were diagnosed with Raynauds phenomenon that is characterized by vasospasm of the extremities precipitated by cold or emotional stress at this institution using a multifinger photoplethysmography system (PT-300TM, Hukuda Denshi, Tokyo) (control and cold challenge test) between January, 2008 and June, 2010, were selected. We assessed whether sarpogrelate hydrochloride improves their subjective symptoms (coldness and numbness) using a self-interview of five-grade estimation (higher efficacy, moderate improvement (50 %), mild improvement (30 %), no change, and deterioration), after they received over 4 weeks of treatment with 5-hydroxytryptamine_{2A} receptor antagonist, sarpogrelate hydrochloride (300 mg per day).

TWO SUCCESSFUL EVAR WITH SNORKEL TECHNIQUE OF ADJUNCTIVE RENAL ARTERY STENTING

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OBJECTIVE

AAA with the length of infrarenal proximal neck less than 10 mm was treated by not usual EVAR but conventional grafting. However, if EVAR technique is definitely able to preserve renal perfusion, it must be less invasive to high-risk patients with those AAAs. EVAR with snorkel technique of adjunctive renal artery stenting was successfully performed to two patients with pararenal AAA.

CASE1

A 89-year-old man had pararenal AAA (56mm) with angina on effort, hypertension and massive calcification of the aortic arch and the carotid arteries. He underwent endovascular aortic repair (GORE Excluder device) and adjunctive renal artery stenting by snorkel technique for both renal artery perfusions (Palmatz Genesis 5mm). No major endoleakage of EVAR was revealed. Although he suffered from a slight cerebral infraction with left hemiparesis on postoperative day 3, he was discharged with almost recovery of motor function after rehabilitation on postoperative day 21.

CASE2

A 89-year-old woman had pararenal AAA (60mm) with angina pectoris and previous coronary catheter intervention. She underwent endovascular aortic repair (GORE Excluder device) and adjunctive renal artery stenting by snorkel technique for both renal artery perfusions (Boston Express Vascular SD 5mm). Postoperative 3D-CT showed the patency of both renal arteries and no endoleakage of EVAR. She was discharged on postoperative day 9 without any complications.

CONCLUSION

Endovascular AAA repair with adjunctive renal artery stenting by snorkel technique was very less invasive and useful for high-risk patients with pararenal AAA. Atherosclerotic lesion of the aortic arch and the head vessels as an access route of snorkel technique was problematic factor. Further careful follow-up will be needed to determine the durability of this technique.

IMPACT OF SINGLE NEEDLE DIALYSIS ON HEMODYNAMICS IN AN ARTIFICIAL AV-ACCESS

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OBJECTIVE

Single-needle dialysis is a therapeutic option used especially when blood removal and return are possible via one cannula only. Most papers on single-needle hemodialysis investigated its efficiency as compared to double-needle dialysis. As yet, the impact of single-needle therapy on hemodynamics within an artificial arteriovenous access has been unknown.

METHODS

Access model was manufactured using a transparent silicon elastomer to perform hemodynamic studies within a pulsatile flow system. In addition, hemodynamics were also studied using computational fluid dynamics (ANSYS 12.1, ANSYS Ltd., USA). A pulsatile mass flow profile at Reynolds numbers of 1390 (systolic) and 650 (mean) was specified as the inlet boundary condition. The mean flow rate of the single-needle dialysis machine was set to 200 ml/min so that flow rates amounted to -400 ml/min during the (arterial) withdrawal phase and +400 ml/min during the return (venous) phase.

RESULTS

During the withdrawal phase, a retrograde flow in the distal artery and also within the venous anastomosis was observed during the late diastolic phase. In the return phase, the wall shear stress at the venous wall is three times higher than in the withdrawal phase (40 Pa vs. 13 Pa)..

CONCLUSIONS

The long axis of a vascular endothelial cell is usually oriented parallel to the direction of the blood flow. Under increased shear stress, these cells become flat and elongated. Furthermore the oscillating flow in the arterial and venous anastomoses may cause the endothelial cells to change their orientations and shapes during every cardiac cycle. Thus, the single-needle technique promotes the development of intimal hyperplasia at the arterial and venous anastomoses.

MEDICAL SUPPORT IN FUKUSHIMA

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On March 11, 2011, Japan was hit by a major disaster—a massive earthquake followed by a tsunami and radiation exposure. This disaster has been described in Japanese as *mizou*, which means unprecedented. I studied vascular surgery at Klinikum Esslingen in Germany in 1998 and have been working as a trauma vascular surgeon at a level 1 trauma center in Japan since 2005. However, the 2011 Great East Japan Earthquake and Tsunami had a drastic effect on Japan as well as on my life. J-Village in Fukushima, formally the National Training Center owned by the Japan Football Association, currently serves as the forward base for countermeasures against radiation exposure. After the disaster, I visited J-Village twice a month to provide medical support to workers of the Fukushima Daiichi Nuclear Power Plant. Here, I report the medical activities and support offered at J-Village. At present, ambient radiation doses are low and the environment is stable. However, many years will be required before everything is resolved, and this will be an ongoing process. I believe the time has come for the majority of physicians in Japan who are not in the field of radiology to learn and understand radiation medicine.

DVT AFTER VARICOSE VEIN SURGERY

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DVT after varicose vein surgery is not common condition. We experienced 3cases of DVT after varicose vein suregry in recent 10years. Case 1:A 40 year old female. Lt femoral vein DVT was detected on 7 pod of high ligation of left GSV. Thrombolytic thrapy and femoral vein reconstruction were performed, but PTS was remained. Case 2:A 68 year old male. Lt ileofemoral DVT was detected on 4POD of left GSV stripping. Thrombolytic thrapy and iliac vein stenting were performed, DVT was diminished without PTS. Case 3:A 67 year old female.Lt popliteal DVT was detected on 2POD of left LSV high ligation. Anticoagulant therapy was performed, DVT was diminished without PTS. In case of DVT after varicose vein surgery, intensive thrombolytic and aniticoagulant therapy and early intervention can minimize PTS.

THE INCIDENCE OF DEEP VEIN THROMBOSIS IN RIKUZENTAKADA CITY AFTER THE GREAT EAST JAPAN EARTHQUAKE

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OBJECTIVE

This study evaluates the incidence of deep vein thrombosis (DVT) in evacuees of the 2011 Great East Japan earthquake.

METHODS

We screened for DVT in evacuees of Rikuzentakada city using portable ultrasonography at 3 weeks, 7 weeks, 23 weeks and 54 weeks after the Great East Japan Earthquake.

RESULTS

Three weeks after the earthquake, 78 evacuees were screened for DVT. The incidence of DVT was 2.7%. The proximal DVT was not detected. After 7 weeks, 216 evacuees were screened for DVT and the incidence was 10.6%. The incidence of DVT increased with age. The increased risk of DVT was also associated with high D-dimer level and history of cardiac disease. After 23 weeks, 346 evacuees were screened and DVT was found in 4.0% of people. However, high-risk thrombus was not found. Multivariate analysis identified high level of D-dimer as the predictor for DVT incidence. After 1 year, 6.8 % of evacuees had distal DVT.

CONCLUSIONS

In Rikuzentakata city, the incidence of DVT was low in the early period after the disaster. However, the rate of DVT increased as the periods of living in shelters get prolonged. At midterm follow up, the incidence of DVT was still high.

TEVAR OF ACUTE OR SUB-ACUTE UNCOMPLICATED TYPE B DISSECTION

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OBJECTIVE

The optimal treatment strategy for patients with acute type B aortic dissection (DAA(B)) remains controversial. There is consensus that in patients with uncomplicated DAA(B), medical therapy is preferred to open surgical treatment. Recently TEVAR are performed for many thoracic aortic aneurysms and its morbidity and mortality have been acceptable. So we try to perform TEVAR for uncomplicated patients to avoid prolonging hospital stay safely.

METHODS

From 2009.1 to 2012.6 we treated 60 DAA(B) patients. In 14 patients (11 men, 3 women; mean age, 68.7 years (45-82 years)), TEVAR was performed within 4-6 days after admission. Operative indications are that uncontrolled pain using dilators and/or pain killer, drug resistance hypertension and rapid growth of diameter of dissecting aneurysm by follow up CT. Former operation was performed in 3 patients. Bentall operation, hemiarch replacement and total arch replacement/EVAR were that. Before discharge and on follow-up visits (1.3.6.9.12 months after operation), imaging of the aorta was performed using CT.

RESULTS

Mean follow-up was 8 months (2-20 months). None of the patients were converted to open surgery and needed secondary intervention. And no new tear induced TEVAR was detected. 1 patient died of pneumonia with paraplegia. Primary entry was located at Lt. subclavian artery and distal arch in each 2 cases, descending artery in 9 cases and graft distal anastomosis of total arch replacement in 1 case. Additional procedure was performed in 4 cases, one was Lt. common carotid artery to Lt. subclavian artery bypass, bilateral axillary artery bypass and 2 was Lt. subclavian artery stenting. Endleak at operation was left in only one case. But all cases wasn't detected type 1 endleak by follow-up CT at 7 post operative days include former case. In all cases, diameter of aorta had been already decreased at 7 post operative days. Average ICU stay was 1.7 days and average hospital stay after operation was 12.6 days compared with 18 days in medical therapy group.

CONCLUSIONS

This study suggests that TEVAR coverage of the primary entry tear may be a promising new treatment for uncomplicated DAA(B) patients, so TEVAR is feasible treatment option in these patients. However several serious complications like TEVAR induced new tear may occur during and after TEVAR, so this technique requires further evaluation to assess its therapeutic potential.

MANAGEMENT OF AORTIC DISORDER IN PATIENTS WITH ADULT CONGENITAL HEART DISEASE

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BACKGROUND

The number of patients with adult congenital heart disease (ACHD) who have aortic disorder is increasing. This article discusses our experience and the problem of management.

PATIENT

From January 2000 to July 2012, 8 patients with ACHD underwent aortic surgery in our department. Preoperative characteristics and the surgical techniques are summarized in Table 1.

Table.1

Case NO.	Age /sex (yr)	Primary diagnosis	Initial treatments	Aortic disorder with ACHD	Other complications	Surgical techniques
1	52/M	CoA	none	aneurysm of aortic arch		Total arch replacement
2	22/F	CoA	2m:aortoplasty	recoarctation		extra-anatomical bypass
3	55/F	CoA, BAV	30y.o: extra-anatomical bypass	(*)	AS Aneurysm of LCC	modified Bentall procedure
4	65/F	CoA, BAV	none	(*)	AR,IE	AVR, (**)
5	19/M	ASR, BAV	medication	(*)		AVR, (**)
6	25/M	AS, BAV	16y.o: commissiotomy	(*)		AVR, (**)
7	50/M	VSD	medication	(*)	AR	VSD closure, (**)
8	40/M	AP window	2y.o: patch closure	(*)	Right pulmonary artery occlusion	RM bypass, (**)

(*): ascending-aortic dilatation, (**): graft replacement of the ascending aorta

CoA: coarctation of the aorta, AS: aortic valve stenosis, AR: aortic valve regurgitation, ASR:AS+AR

AVR: aortic valve replacement, BAV: bicuspid aortic valve, LCC: left coronary cusp, RM bypass :rt-main pulmonary artery bypass
extra-anatomic bypass : extra-anatomic ascending -to- descending aortic-bypass-grafting, IE: infective endocarditis

RESULTS

The patients, who had bicuspid aortic valve, needed aortic valve replacement and the graft replacement of the ascending aorta. In the case of aortic coarctation, two cases were initially diagnosed in adulthood. Another two cases underwent extra-anatomical bypass of CoA. Case number 8 underwent the graft replacement of the ascending aorta because of aortic aneurysm due to Teflon patch.

CONCLUSION

The survivors who underwent congenital cardiac surgery during childhood should have uninterrupted medical follow-up, because aortic disorder may encounter in the future.

VENOUS THROMBOEMBOLISM IN PREGNANCY. – HOW DO WE MANAGE? –

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INTRODUCTION

Venous thromboembolism (VTE) in pregnancy is caused by hypercoagulable state and compression of the inferior vena cava by the enlarging gravid uterus. However, the guidelines for prevention of deep venous thrombosis (DVT) and pulmonary embolism (PE) are for primary prevention, not for secondary prevention. Treatment and examination of pregnant patients are also excluded.

PATIENTS AND METHODS

Between January 2004 and June 2012, 8 pregnant patients with DVT were treated in Hirosaki University hospital. The medical records of these 8 patients were reviewed retrospectively.

RESULTS

DVT was diagnosed in 5 patients. Two of 5 patients (both at 12 weeks gestation) had distal DVT. These 2 patients had worn compression stockings and they delivered normal, healthy infants at full-term. Other 3 patients with DVT (at 35 weeks, 33 weeks and 19 weeks gestation) underwent anticoagulant therapy. Unfractionated heparin was given antepartum and warfarin was given postpartum. Three patients (at 22 weeks, 28 weeks, and 24 weeks gestation) had combined massive PE and DVT. These 3 patients all underwent pulmonary thrombectomy. One patient at 22 weeks gestation developed massive PE despite therapeutic anticoagulation. Insertion of intraaortic balloon pumping (IABP) was unable to maintain the placental blood flow and an infant had to be delivered preterm. Pulmonary thrombectomy and a caesarean section were carried out simultaneously in a patient at 28 weeks gestation. In a patient at 24 weeks gestation, fetal death had occurred although IABP had been placed. Temporary inferior vena cava (IVC) filters were placed in all 3 patients postpartum. There was one fetal death but no maternal death.

DISCUSSION

Anticoagulation therapy is an important component of thrombotic complication management in pregnancy but may result in fetal and maternal complications. There have been various reports stating that catheter embolectomy is effective. However, this procedure has a risk of radiation exposure. In our massive PE cases, surgical removal of thrombus stabilized hemodynamics of patients and prevented maternal death.

CONCLUSION

Surgical embolectomy should be a treatment choice for massive PE in pregnancy.

ROTATIONAL THROMBOELASTOMETRY (ROTEM[®]) BASED COAGULATION MANAGEMENT IN AORTIC SURGERY

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OBJECTIVE

Rotational thromboelastometry (ROTEM[®]) has been developed in Germany and has been used in the world. In Japan it has become a clinical use. But unfortunately usefulness of ROTEM[®] is not well known. We investigated the effect of ROTEM[®] based coagulation management in aortic surgery.

METHODS

A retrospective review was performed of 53 patients undergoing open thoracic aortic procedures between January 2011 and July 2012. In a ROTEM group (group R, n = 15) patients undergoing aortic surgery treated with allogeneic blood products (fresh frozen plasma, followed by platelet concentrates) according to ROTEM[®] tests (FIBTEM A10 is aimed at the value of at least 10mm; normal range 7-23mm) and a complete blood count. In control group (group C, n = 38) patients was treated with allogeneic blood products (platelet concentrates, followed by fresh frozen plasma) according to activated coagulation time (ACT) and a complete blood count. Preoperative variables, intraoperative variables, perioperative blood loss, and amount of blood products were analyzed.

RESULTS

Preoperative and intraoperative variables were similar between groups without rate of female patients (26.7% in group R vs 60.5% in group C; P=0.025). There were no significant differences about perioperative blood loss between groups. Intraoperative transfusion of red blood cells was not significantly reduced in the group R (754 mL in group R vs 972 mL in group C). But intraoperative transfusion of fresh-frozen plasma (FFP) was significantly reduced in the group R (1470 mL in group R vs 1512 mL in group C; P = 0.023). And the use of platelet concentrate was also significantly decreased in the group R (240 mL in group R vs 461 mL in group C; P = 0.021).

CONCLUSIONS

Rotational thromboelastometry (ROTEM[®]) based coagulation management in aortic surgery can reduce use of allogeneic blood products without increasing the bleeding.

Preoperative variables	group C	group R	
Age (y)	67.8±12.6	67.8±9.2	P=0.893
Female (no.)	23(60.5%)	4(26.7%)	P=0.025
Emergency (no.)	15(39.5%)	5(33.3%)	P=0.684

Intraoperative variables	group C	group R	
Operation Time (min)	475±197	508±193	P=0.152
Cardiopulmonary bypass (min)	241±105	241±81	P=0.187
Aortic crossclamp (min)	134±46	141±61	P=0.096
Total heparin dose (mL)	23.8±7.3	25.3±8.4	P=0.509
Total protamine dose (mL)	10.0±2.4	10.9±3.5	P=0.298
FIBTEM A10 (mm)	-	10.9±3.5	

FIBTEM A10 = 10min fibrin-specific clot formation

Perioperative blood loss (mL)	group C	group R	
Blood loss in operative	2161±2347	1846±1760	P=0.651
Blood loss during the first 24h in ICU	667±554	679±542	P=0.946

Intraoperative transfusion (mL)	group C	group R	
RBCs	972±1016	754±890	P=0.471
FFP	1512±1153	1470±1662	P<0.05
PC	461±334	240±203	P<0.05

RBC = red blood cell, FFP = fresh-frozen plasma, PC = platelet concentrate.

Postoperative transfusion (mL)	group C	group R	
RBCs	164±360	191±302	P=0.802
FFP	250±486	210±335	P=0.770
PC	79±165	173±167	P=0.067

Postoperative transfusion, during the first 24h in ICU

C (n = 38) R (n = 15)

Location of aortic repair	C (n = 38)	R (n = 15)
Root or ascending only	23.7% (9)	53.3% (8)
Arch involvement	18.4% (7)	6.7% (1)
Total arch	50.0% (19)	20.0% (3)
Descending or thoracoabdominal	7.9% (3)	20.0% (3)
emergency	39.5% (15)	33.3% (5)

A CASE OF HYBRID THORACOABDOMINAL AORTIC ENDOGRAFT WITH CELIAC AND SUPERIOR MESENTERIC ARTERY BYPASS

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Although surgical repair of thoracoabdominal aortic aneurysms (TAAA) is an effective therapeutic option with excellent long-term results, hybrid endovascular procedures are reported recently for the reasons of high risk for open surgery. We report a case of hybrid thoracoabdominal aortic endograft needed both celiac and superior mesenteric artery bypass.

[Case] A 68 year old man with saccular thoracoabdominal aortic aneurysm Crawford type IV, revealed more than 5mm/year² enlargement in its diameter, and was consulted to our institution for surgical indication. He had underwent open abdominal aortic aneurysmal repair with Y shaped graft for impending rupture 2 years ago. Because of difficulty for open TAAA repair due to obstructive lung disease (FEV1.0%=26%), thoracoabdominal endovascular aortic repair with the cover of celiac and superior mesenteric artery and bypass from right leg of Y shaped graft to superior mesenteric artery was planned. Intraoperative findings after the hybrid procedures revealed poor pulsation of celiac artery and its branches, so celiac artery bypass from left leg of Y shaped graft was needed additionally.

In case of hybrid thoracoabdominal aortic endograft including celiac and superior mesenteric artery, there is a possibility for poor abdominal visceral perfusion by sacrificing celiac artery. So we should consider the design of the procedures carefully.

TRIPLE DISASTERS INDUCED HIGH INCIDENCE OF DEEP VEIN THROMBOSIS AT CALF IN FUKUSHIMA, JAPAN

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Japan had terrible disaster on March 11. Especially in Fukushima, the nuclear power plants were also in trouble. Immediately after the triple disasters, thousands of people were forced to evacuate far from their home town, we here report the result of survey of deep vein thrombosis (DVT) in Fukushima prefecture.

From March 28 to May 11, 2,238 of 24,498 evacuees were screened by "Advance Medical team of Fukushima Medical University". The examination using ultrasound was performed at the veins below the knee, bilaterally. Examiners were vascular surgeons or vascular specialists in Japan and Jordan.

The condition of evacuees depends on the quality of refugee shelter. One or more of life lines such as water, electronic, and gas supplies were halted in each area even at the beginning of the survey. Quality and quantity of food supply were lack at any shelters. Toileting was self-controlled because of lack of drinkable water and installation outside the shelter in cold. Most of all evacuees slept all crowded together on the floor. In those conditions, the incidence of DVT was 9.8% in 219 out of 2238. The incidence at the shelter near shore line was high up to 35%. Most of all DVTs were old and mural at the soleus or gastrocnemius veins. Fresh and fulfilled thrombus were observed in 10 evacuees. They were transferred and admitted to near hospital due to intensive treatments. At the same time, elastic stockings below the knee were delivered under instruction by vascular specialist. Now, the data are still analyzing carefully.)

We confirmed the high incidence of DVT as the result of the observation in over 2,000 evacuees in special condition of Fukushima. Precise analysis and long-term follow are necessary. Also, we have to evaluate the prophylactic effect of elastic stocking against DVT.