ENDOVASCULAR TREATMENT OF PARA-ANASTOMOTIC ANEURYSMS AFTER OPEN AAA REPAIR: FENESTRATED GRAFTS ARE RARELY REQUIRED. HOW THEY CAN BE FIXED

D.Raithel, Z.Wu, L. Qu, W.Ritter

Klinikum Nürnberg

OBJECTIVE

Para-Anastomotic Aneurysms (PAA) after infrarenal aortic reconstruction are seen in more than 25% after 10 years and often need reintervention with a relatively high mortality with open repair. Therefore endovascular repair(EVAR) of PAAs is an alternative with low risk.

METHODS

Between 08/84 and 12/2009 we have treated 49 patients with PAAs (43 by EVAR and only 6 by open repair). Of the 43 patients (mean age 74.8 years) treated by EVAR 39 were males. 7 were symptomatic (4 ruptured), 36 asymptomatic. 12 patients had a proximal PAA, 8 a distal one and 19 a proximal and distal PAA. 14 patients had iliac aneurysms. A bifurcated graft was implanted in 33 patients, a tube graft in 5, a mono-iliac one in 2 and a cuff alone in 3.

RESULTS

Clinical success rate was was97,7%. One patient had to be converted, 2 patients had a proximal type I endoleak. Mortality(30days) was 0%.

In the mean follow-up of 34 mths in 3 patients CT revealed 3 proximal type I and 1 distal one endoleak. A proximal cuff was successfully implanted in 2 of these patients, but 1 patient had to be converted.

CONCLUSION

Our results show that endovascular repair in PAAs with bifurcated, monoiliac stentgrafts or cuffs is an alternative to open repair with low morbidity and mortality and good long-term results.

OPEN SURGERY TO THE INFERIOR VENA CAVA -USEFULNESS OF CARDIOPULMONARY BYPASS-

Yukio Kuniyoshi, MD, PhD

Department of Thoracic and Cardiovascular Surgery, Graduate School of Medicine, University of the Ryukyus

Accidental bleeding remains a concern during resection of tumors adjacent to great veins, or in repair of intravascular pathologies. As a result, surgeons often avoid radical operations. Using a femoro-femoral bypass, we operated on: 1) 3 patients with malignant tumor originating from the kidney and adrenal gland; and 2) 61 patients with Budd-Chiari syndrome (BCS).

The tumors were attached to veins, or grown into veins. By trying simple clamping of veins, systemic blood pressure dropped markedly, so cardiopulmonary bypass (CPB) was made available to support vein clamping.

In BCS, the operative procedures consist of resection of the occlusions in the inferior vena cava (IVC), and reopening of the hepatic veins, resulting in copious bleeding from the opened hepatic veins. CPB works to suction away the bleeding, and allows reinfusion into the body as so-called "rapid transfuser".

CPB is an essential and standard machine in open-heart or thoracic aortic surgery. On the other hand, many reports have described disadvantages to using CPB. Even so, CPB is one of the most useful supports for life-threatening bleeding during surgery.

"HYBRID DEBRANCHING WITH ENDOVASCULAR TREATMENT FOR THORACOABDOMINAL AORTIC ANEURYSMS"

K.-H. Orend

Universitätsklinikum Ulm

BACKGROUND

Hybrid procedures for thoracoabdominal aortic aneurysms (TAAA) have been widely accepted as an attractive alternative to open aortic reconstruction.

PATIENTS AND METHODS

Between 1999 and 2012, 52 patients underwent hybrid repair of a TAAA(Crawford typeI: 14, typeII: 16, type III: 10, type IV: 12)All patients had had three or more severe co-morbidities with previous aortic surgery in 14 cases.Elective surgery was performed in 39 patients; urgent repair was done in 13 patients.

RESULTS:

Primary technical success was 100%.

30-day mortality was 7,7% (4 of 52); all deaths resulted in emergent hybrid procedure patients(4 of 13 patients). Paraplegia rate was 0%, renal insuffiency was recognized in 8 patients.

During follow-up time 6 patients died and 2 patients had to undergo secondary interventions.

CONCLUSION:

In high-risk patients especially after prior aortic surgery hybrid repair of TAAA is feasible.

Hybrid procedures may reduce early morbidity and yield similar late survival even in patients considered high risk for open aortic reconstruction

"ENDOVASCULAR REPAIR OF TRAUMATIC THORACIC AORTIC TRANSECTION"

K.-H. Orend

Universitätsklinikum Ulm

BACKGROUND

Acute blunt traumatic thoracic aortic injury is a rare clinical entity with an incidence of 0.2-0,5% among hospital trauma admissions.

Meanwhile endovascular treatment of traumatic aortic transection/rupture is an established procedure with favourable midterm results.

PATIENTS

62 patients, mean age 39,8 \pm 18 years with traumatic lesions of the descending aorta had endovascular treatment between 1999 and 2012.

All patients underwent endovascular repair within 24 hours of admission.

All operations were performed under general anaesthesia in the operation room under fluoroscopy control by a C-arm image intensifier.

RESULTS

Technical success rate was 100%, no conversion to open repair was required.

30-day mortality was 8,0%;

We had one procedure-related mortality due to an acute stent graft compression syndrome.

Infolding endografts were observed in 3 patients.

Left subclavian artery was covered in 48 patients, in one patient revascularisation was necessary.

No neurologic deficit was reported.

CONCLUSION

Our results suggest that endovascular treatment of acute traumatic transaction/rupture of the thoracic aorta is safe, effective and can be performed with low rates of morbidity and mortality, especially in patients with severe multiple injuries.

This less invasive form of therapy allows for a rapid stabilisation of the aortic lesion.

SURGICAL TREATMENT FOR OCCLUSIVE AND DILATIVE LESIONS ASSOCIATED WITH TAKAYASU'S ARTERITIS

Motomi Ando, MD

Fujita Health University School of Medicine, Department of Cardiovascular Surgery

PURPOSE

Takayasu's arteritis is a disease of unknown etiology that affects the aorta and its main branches, and requires surgical intervention because of occlusive and dilative lesions. We investigated the surgical results.

METHODS

Between 1981 and August 2012, 132 patients with Takayasu's arteritis underwent surgery. There were 9 males and 123 females. The age of these patients ranged from 15 years to 76 years (mean, 48 years). Preoperative steroids were administered to 67 patients who presented with inflammatory findings. Diagnoses which needed a operation were obstructive disease of cervical vessels in 15 patients, coronary artery obstructive disease in 20, obstructive disease of great vessels in 24, dilatation of aorta with AR in 48 and aneurysmal dilatation of the aorta in 50, respectively. Operations performed were: cervical vessel bypass in 15, bypass for obstructive disease of great vessels in 20 (ascending-abdominal bypass in 6, axillar artery- abdominal bypass in 11, descending-abdominal bypass in 1, pulmonary bypass in 2), aortic valve replacement in 55 patients, composite valve graft replacement in 23, coronary artery bypass in 11, coronary ostial endarterectomy in 9, graft replacement of the aorta in 45, wrapping of the ascending aorta in 5.

RESULTS

Nine patients (6.8%) died during the hospital stay. The follow-up period ranged from 8 to 246 months (mean, 115 months). There were 17 patients of late deaths, and 13 patients died due to cardiovascular problems. The total actuarial survival rate was 80.6 % at 5 years and 75.0 % at 10 years.

CONCLUSIONS

132 patients with occlusive lesions and dilative lesions caused by Takayasu's arteritis underwent surgery and we evaluated early and late postoperative results. Steroid therapy before and after surgery seems to positively affect the overall prognosis of patients with Takayasu's arteritis.

EARLY AND LATE OUTCOMES AFTER OPEN AAAR, EVAR AND TEVAR PATIENTS WITH THORACIC AORTIC DISSECTION

H.Maeda, H.Umezawa, T.Hattori, T.Nakamura, K.Umeda, H.Kobayashi H.Kawachi, A.Iida, M.Shiono

Nihon University School of Medicine department of Cardiovascular Surgery

Surgical mortality rates for elective abdominal aortic aneurysm repair (AAAR) have steadily improved over last 20 years and a cumulative long- term survival rates after AAAR is same as normal population. Furthermore, endovascular aneurysm repair (EVAR) is most advantageous in high - risk patients. On the other hand, the treatment strategy for complicated acute or chronic type B dissection still remains controversial.

OBJECTIVE

To analyze early and late outcomes after open AAAR, EVAR and TEVAR patients associated with acute and chronic thoracic aortic dissection and mid-term results of six patients with complicated chronic type B dissection who underwent TEVAR retrospectively.

METHODS

From 1990 to 2011, 40 AAA and TAAA patients associated with thoracic aortic dissection including type A in 15 patients and type B with false lumen thrombosis in 14 patients, patent false lumen in 12 patients were treated surgically. There were 34 men and 6 women with a median age of 67.2 yeas. Median follow- up was 41.2 months (0.2 to 150 months).

From 2009 to 2012 six patients with chronic complicated type B dissection (symptomatic in four patients and enlargement of patent false lumen in two patients) underwent thoracic endovascular aneurysm repair (TEVAR) with a median follow-up of 15.5 months.

RESULTS

40 patients consist of AAAs in 37 and TAAAs in 3 patients who underwent open AAAR in 32, EVAR in 5 and TEVAR in 3 patients. One patient with patent false lumen underwent TEVAR and open AAAR simultaneously. Median time between onset of acute symptoms and AAA surgical treatments in these patients was 21.2 months (0.2 hr to 63 months). There were 11 patients who underwent surgical treatment for dissection prior AAAR. One patient died 5 days after open AAAR with acute type B dissection with onset time of 6 hours. In-hospital mortality was two (5%). During follow-up, four patients died due to no relation of AAA and dissection. The Kaplan-Meier survival curves stratified according to false-lumen status. The survival rate was highest in patients with patent false lumen with 10- year survival rate of 66.7% versus 87.5% in patients with a false lumen thrombosis.

In the patients with complicated chronic type B dissection who underwent TEVAR, all patients had an uneventful post TEVAR course. After discharge, the follow-up protocol included clinical examination and multi-detector row CT (MDCT) at 3,6, and 12 months. Enlargement of patent false lumen were completely thrombosed in two patients and remaining four patients were symptom free. No type I endoleaks were present at most recent follow-up.

CONCLUSIONS

early and late outcomes of after open AAAR, EVAR and TEVAR patients with thoracic aortic dissection have satisfactory results. Simultaneous TEVAR and AAAR for complicated type B dissection with large AAA seemed to be effective method to result in technical and clinical success.

TEVAR for chronic complicated type B dissection had reduction in early mortality and postoperative complications. However, the long – term outcomes of TEVAR for chronic complicated type B dissection remain unknown.

BENEFICIAL AND CAUTIONARY NOTE FOR THE USE OF ELEPHANT TRUNK TECHNIQUE

Yuji Miyamoto, MD

Dept of Cardiovascular Surgery, Hyogo College of Medicine

Since elephant trunk (ET) technique was introduced by Prof. Borst in 1983, ET has been applied to various situations. Because a single-stage operation with large incisions for extensive aortic replacement carries a substantial mortality and morbidity, ET was originally designed as the first stage procedure of staged operation to reduce the operative risk. Placing ET in arch replacement followed by second stage procedure is presently very common technique for this purpose. However, the cumulative risk of two major procedures and the additional risk of rupture between the two procedures have been demonstrated. To solve this problem, alternative surgical techniques have been explored, such as frozen ET and long ET. Using these techniques, a single-stage operation instead of two-stage can be performed with a relatively low risk. On the other hand, it has been known that spinal cord injury (SCI) sometimes occurs as a serious complication. Historically, the potential for stroke was the major concern after aortic arch surgery, however, the incidence of SCI now seems to be increasing as the frozen and long ET have emerged.

In this lecture, several papers regarding frozen ET and long ET are reviewed and our experience with ET is to be discussed. Patients: Since August 2004 to June 2012, 122 patients underwent total arch replacement with 4-branched prosthetic graft. Forty patients (true aneurysm 27, acute type A dissection 13) underwent ET procedure with a mean length of 12 cm (7-22cm). Adamkiewicz artery (AKA) was detected by CT scan in all elective cases since 2007. Results: There was one hospital death (2.5%). In true aneurysm, long ET was applied to 21 patients as a single-stage operation and aneurysm was thrombosed and shrunk in 16 (76%). Five patients required additional procedures (TEVAR 3, graft replacement 2). In acute type A dissection, partial or complete thrombosis occurred in 10 (77%) of 13 patients. Four (10%) of 40 patients having ET procedure had SCI. When the length of ET was longer than 15 cm, SCI occurred in 4 (27%) of 15 patients, however, no patient with ET shorter than 15cm had SCI. AKA was detected and preserved in 21 patients. No SCI occurred in these patients. Conclusion: ET was effective to reduce operative risk in extensive aortic arch replacement but long ET was associated with increased risk of SCI. We recommend short ET or long ET with preservation of the AKA to prevent SCI.

REMAINING FRONTIER OF AORTIC STENTGRAFTING, CAAD, ARCH, TAAA

Takao Ohki

Jikei University School of Medicine

PROXIMAL NECK ANGULATION AFTER ENDOVASCULAR ANEURYSM REPAIR

Hiroyuki Ishibashi¹, Takashi Ohta¹, Ikuo Sugimoto¹, Hirohide Iwata¹, Tetsuya Yamada¹ Masao Tadakoshi¹, Noriyuki Hida¹, Yuki Orimoto¹, Tsuneo Ishiguchi²

> ¹Vascular Surgery, Aichi Medical University ²Radiology, Aichi Medical University

Remodelling of proximal neck (PN) angulations of AAA after EVAR was analysed. A multi-detector CT scan of AAAs was reviewed, and the PN angulation was measured on a volume-rendered 3D image. Seventyeight patients (54 Zeniths and 24 Excluders) were enrolled in the study. PN angulation was 50+/-20 degrees preoperatively, 36+/-14 degrees one week after EVAR, 32+/-14 degrees after 1 year, and 28+/-13 degrees after 3 years. PN angulations less than 60 degrees (77%) were 41+/-13 degrees preoperatively, 31+/-12 degrees one week after EVAR, 28+/-12 degrees at 1 year, and 26+/-13 degrees after 3 years. An angulation greater than 60 degrees (23%) was 78+/-14 degrees preoperatively, 51+/-11 degrees one week after EVAR, 44+/-11 degrees at 1 year, and 40+/-12 degrees after 3 years. The greater the preoperative PN angulation was, the greater its reduction immediately after EVAR (P<.001, r=0.72). The diameter shrinkage of AAAs with a PN angulation greater than 60 degrees was 3+/-6- mm after one year; a significantly smaller shrinkage than with a PN angulation less than 60 degrees (7+/-7-mm, P<.05). AAAs with a PN angulation greater than 60 degrees had a larger angulation reduction and a smaller diameter shrinkage after the EVAR procedure. The PN angulation of AAAs treated by Zenith was 49+/-22 degrees preoperatively, 34+/-14 degrees one week after EVAR, and 25+/-13 degrees after 3 years. The corresponding angulation of AAAs treated by Excluder was 52+/-17 degrees, 41+/-14 degrees, and 38+/-9 degrees, respectively. The PN angulation reduction of Zenith and Excluder was similar one week after the EVAR procedure. However, unlike Excluder, the PN angulation in Zenith continued to reduce for a long period at a slow pace. There were no significant correlations between PN angulation reduction and diameter change, and between PN length and diameter change (P=ns, respectively). Although the instructions for use of most commercially available stent-grafts provid e for a PN angulation of less than 60 degrees, PN angulation was not a major issue in a mid-term follow-up of AAAs with adequate PN length for patients in this series who received a Zenith or Excluder graft.

COMPLICATIONS OF EVAR

Hiroshi Kondo, Motomi Ando, Masayosi Kobayashi, Kan Kaneko, Toshimitu Sato Yoshiro Higuti, Kentaro Amano, Yusuke Sakurai, Mika Noda

Department of Cardiovascular Surgery, Fujita Health University

OBJECTIVE

Although several randomized trial and single center study rep orted good results EVAR of AAA, the longterm results of EVAR is still d ebated for the incidence of complication and the necessity of re-interve ntion and or surgical conversion. We evaluated the impact of complication is on clinical outcome in a series of patients undergoing EVAR of AAA by using commercial devices.

METHODS

Between January 2008 and May 2012, 125 patients who had AAA were treated at our institute with EVAR. There w ere 107 male and 18 female patients, with a mean age of (76.4 \pm 6.1) ye ars. Devices were COOK Zenith®, GORE Excluder®, and Medtronic EN DURANT®. Patients were followed-up with abdominal x-ray and CT angio graphy at 3 months, 6 months, and annually.

RESULTS

The average follow up period was 1 to 54 months with a mean of 12.8 months and the follow-u p rate was 96.0% (120/125). The surgical success rate was 100%. The mort ality with elective surgery was 0.8% (1/120). The all over complication rate was 15.8% (19/120), including aneurysm expansion due to type 2 end leak 4 in Zenith® (3.3%), main body collapse 1 in Excluder® (0.8%), limb occlusion 4 in Zenith® (3.3%), cholesterol crystal embolization n 1 in Zenith® (0.8%), cerebral infarction 1 in Excluder® (0.8%), minor amputation due to embolism 1 in Excluder® (0.8%), stent-graf t infection 1 (0.8%), lymphorrhea 5 (4.1%), and postoperative bleeding 1 (0.8%). Re-intervention was 9 (7.5%) and no surgical conversion.

CONCLUSIONS

This study shows that elective EVAR can be performed with good pr imary success and low mortality, but complication rate was relatively hi gh. Complication included aneurysm expansion, graft related complication, embolism, and surgical site trouble. It is important to prevent from t hese possible EVAR complications.

MIDTERM RESULTS OF EVAR OUTSIDE OF INSTRUCTIONS FOR USE (IFU)

Kosuke Ujihira, Kiyofumi Morishita, Tuyoshi Shibata, Toshifumi Saga, Toshio Baba Toru Mawatari

Hakodate Municipal Hospital

OBJECTIVE

An increasing number of patients have undergone EVAR irrespective of hostile anatomies. However, the clinical results of EVAR remain to be undetermined. To evaluate the outcome after EVAR, we performed a comparison of mid-term outcomes following EVAR within and outside of IFU.

METHODS

Charts were retrospectively reviewed from April 2007 to April 2011: 159 consecutive patients with AAA underwent EVAR at our department. One hundred twenty-nine patients (81.1%) of them operated within IFU (within-IFU group) were compared with the remaining 30 patients (18.9%) who underwent EVAR outside of at least one IFU parameter (outside-IFU group).

RESULTS

The mean follow-up was 13.8 months (range, 0.3-31.5 months) in the outside-IFU group and 17.6 months (range, 0.1-49.2 months) in the within-IFU group.

In the outside-IFU group, all operations were safely completed without major endoleak, except one case of type-3 endoleak.

But postoperative endoleak probably occurred more in patients with proximal aortic neck-problems (4 endoleaks (33.3%): type-1a:2, type-1b:1, type-3:1) than within-IFU group (13 endoleaks (10.1%), P=0.057). Two in the 4 endoleaks in the group with proximal aortic neck-problems required reintervention because of postoperative aneurysmal growth > 5mm: one case of type-1a endoleak caused by stent-migration underwent additional EVAR at 31 months postoperatively, one case of type-3 endoleak caused by fabric tear experienced an open repair at 15months.

Two minor endoleaks (type-1b:1, type-2:1) were postoperatively detected in 18 patients (11.1%) with iliac artery-problems without any necessity of reintervention. No other graft-related complications or aneurysmal growth > 5mm occurred, and no patients died from aneurysm-related deaths.

CONCLUSIONS

Mid-term results suggest that EVAR might be a safe and effective technique for the treatment of AAA with hostile anatomies. But as estimated, our studies revealed that problems of proximal aortic neck were probably related to postoperatively detected endoleak. Cautious follow-up and larger studies are required to evaluate the comparable long-term results of EVAR in adverse anatomies.

IMPACT OF TYPE II ENDOLEAK AFTER ENDOVASCULAR ANEURYSM REPAIR ON AAA SAC BEHAVIOR

Noriyuki Miyama, Akira Sato, Hitoshi Goto, Munetaka Hashimoto, Daijirou Akamatsu Takuya Shimizu, Ken Tsuchida, Keiichirou Kawamura, Noriaki Ouchi

Tohoku University School of Medicine, Division of Advanced Surgical Science and Technology

OBJECTIVE

The management of type II endoleak after endovascular aneurysm repair (EVAR) remains controversial. The purpose of this study was to assess the effects of type II endoleak after EVAR on the sac behavior of abdominal aortic aneurysm (AAA).

METHODS

Between November 2007 and November 2011, 113 AAA patients electively underwent EVAR with bifurcated stentgrafts. Of these, 76 patients followed using enhanced CT scan over six months after EVAR were retrospectively reviewed regarding the incidence and source of type II endoleak. The patients with inflammatory AAA, type I or III endoleak were excluded.

RESULTS

The median follow-up periods were 14 months (range 6-46). Thirty-three patients (43%) had type II endoleaks following EVAR. No significant differences were noted among devises. Sac regression (>5mm) of AAA following EVAR was observed in 53% (23 of 43) of patients without endoleak, and no sac enlargement (>5mm) was noted in patients without endoleak. In comparison, only 15% (5 of 33) of patients with type II endoleak had sac regression and 18% had sac enlargement. Type II endoleaks originated from lumbar arteries (LA) (19 patients), inferior mesenteric artery (IMA) (5 patients), and both (9 patients). About half (8 of 14, 57%) of endoleak from IMA was spontaneously diminished, whereas only 14% from LAs. Five patients with persistent sac growth underwent transarterial embolization. The embolizations of LA were performed in three patients, IMA in one patient, and multifocal LAs + IMA in one patient. Although all patients had initial success, recurrent endoleaks from LA were observed in two patients. No persistant sac enlargement after embolization, rupture, AAA-related death, or open conversion was observed during the study period.

CONCLUSIONS

This study suggested that type II endoleak inhibited the sac regression of AAA after EVAR; especially, type II endoleak from LA may cause adverse outcomes regarding spontaneous resolution and recurrence of secondary intervention, in the comparison with IMA.

ENDOVASCULAR TREATMENT FOR RUPTURED ABDOMINAL AORTIC ANEURYSM: ENDOVASCULAR TREATMENT OR OPEN SURGERY?

Satoshi Taniguchi, Wakako Fukuda, Yoshiaki Saito, Kenichi Watanabe, Takashi Ogasawara Masahito Minakawa, Kazuyuki Daitoku, Kozo Fukui, Ikuo Fukuda

Department of Thoracic and Cardiovascular Surgery Hirosaki University School of Medicine

INTRODUCTION

Ruptured abdominal aortic aneurysms (rAAA) are catastrophic events with high mortality. Given the minimally invasive nature of endovascular aneurysm repair (EVAR) compared to open repair, the use of EVAR in the emergent setting has been proposed. Endovascular aneurysm repair for ruptured abdominal aortic aneurysm (rEVAR) has the potential to reduce mortality of rAAA patients. In this study, we evaluated the short-term results of rEVAR compared with open repair.

METHODS

Between October 2008 and March 2012, we retrospectively reviewed the outcome of 24 patients who underwent rAAA repair. All patients underwent open surgical repair (OSR) before September 2010 because we could not prepare the commercially available devices in the emergency situation. After October 2010, EVAR first protocol for rAAA was established and treatment options (rEVAR or OSR) for patients were selected systemically. Operative mortality, operation time, blood transfusion and operative bleeding were evaluated between EVAR and OSR.

RESULTS

Nineteen patients with rAAA were surgically treated before September 2010. In these 19 patients, anatomical suitability for EVAR was evaluated retrospectively. 12 patients (63.2%) had suitable anatomy for EVAR. After September 2010, 5 patients underwent rEVAR. rEVAR group had shorter operation time, less operative bleeding and required less blood transfusions compared to OSR group. Operative mortality was 15.8% in OSR group and 0% in rEVAR group. The operative mortality for 12 patients who were anatomically suitable for EVAR was 16.6%.

CONCLUSION

Our study shows that rEVAR is feasible in selected patients and is associated with reduction in blood loss and mortality. We recommend rEVAR for treatment of rAAA.

HEALTH-RELATED QUALITY OF LIFE IN PATIENTS AFTER ELECTIVE OPEN OR ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSM

Christina Babiak, Fiona Plock, Matthias Thiere, Karl-Heinz Orend

Department of Cardiothoracic and Vascular Surgery, University of Ulm

OBJECTIVE

The objective of this prospective study was to describe the health-related quality of life (QoL) in patients after elective open surgery for abdominal aortic aneurysm (AAA) versus endovascular aneurysm repair.

METHODS

68 Patients with AAA were treated either with endovascular (n=32) or open aneurysm repair (n=36). Two instruments (SF 36, WHOQoL-Bref) were applied for measuring health-related quality of life.

RESULTS

Both groups showed a significant decrease in QoL one week after the treatment with almost complete recovery to the baseline within 3 or 6 months.

No significant difference in QoL could be measured between the treatment methods. Both instruments showed similar results.

CONCLUSIONS

Due to multidimensional and personal factors QoL in treatment options for AAA is difficult to measure.

Nevertheless this objective should be further pursued in order to meet the individual requirements and expectations of the patients in treatment for AAA.

SURGERY FOR COLON CANCER COMBINED WITH ABDOMINAL AORTIC ANEURYSM

Yoshihisa Morimoto, Takaki Sugimoto, Yuki Yoshioka, Naohisa Masunaga

Awaji hospital, Hyogo

OBJECTIVE

Therapeutic strategies for patients who require procedures for both abdominal aortic aneurysm and colon cancer are controversial. Prognostic factors for them should be clearly identified.

METHODS

Fifteen patients who underwent surgical intervention for both colon cancer and abdominal aortic aneurysm between January 1, 2002, and June 30, 2012 were reviewed retrospectively. Abdominal aortic aneurysms were replaced with prosthetic grafts and colon cancers were removed in all of the cases.

RESULTS

The surgical stages of colon cancers were stage I in 8 patients, stage II in 2 patients, stage III in 4 patients, and stage IV in 1 patient. According to our original therapeutic strategies, one patient underwent simultaneous procedures and 13 received staged procedures. There was no hospital death and no prosthetic graft infection. All 14 patients were discharged, and 3 died of cancer recurrence during an average follow-up period of 28.3 months. The cumulative survival rate was 86.6% at 1 year and 78.5% at 3 years. One-year survival rates were 80.0% in stages I and II colon cancer and 55.0% in stages III and IV gastric cancer.

CONCLUSION

Prognosis of patients who underwent surgical intervention for both colon cancer and abdominal aortic aneurysm was mainly limited by the clinical stage of colon cancer

ENDOSTAPLING SYSTEM-APTUS SCHRAUBENSYSTEM

Katharina Wrobel, Andreas Gussmann

Helios Klinikum Bad Saarow, Pieskower Straße 33, 15526 Bad Saarow

The Endostapling System is able to repair endoleac or problematic endograft. We present 3 cases of using the Endostapling system. The little screws provides a less invasive option than open surgery to access and repair these leaks. Type 1 endoleac can be successfully treated.

ENDOSCOPICALLY ASSISTED IN SITU GREATER SAPHENOUS VEIN GRAFTING

Kimihiro Yoshimoto, Junich Ohba, Ryota Murase, Atushi Okuyama, Takahiko Masuda Akira Adachi, Tsukasa Miyatake

Department of Cardiothracic Surgery, Asahikawa City Hospital

OBJECTIVE

The arterial reconstruction of lower extremity with in situ greater saphenous vein is an important method of limb salvage surgery. In this procedure, long continuous skin incisions or mltiple skip incisions along the saphenous vein are usually nessesary for side branch occlusion. They can be fraught with hazard of wound complications and cosmetic problems. In this study, we used endoscopic vein harvest equipment to minimize these complications.

MEHTHODS

We performed femoral to infrapopliteal artery in situ bypass with the endoscopic assisted technique. Only two small skin incisions for arterial accesses, femoral artery and distal popliteal artery (below knee) or posterior tibial artery were needed. Through these incisions, endoscopic vein harvest system (Karl Storz) was incerted subcutaneously along the saphenous vein to locate and seal all of the side branches of it. After completion of the proximal anastmosis, the valves ware lysed through the distal end of the saphenous vein with a flexible valvulotomy cutter. Then distal anastmosis was completed. Pulse dopplar evaluation was used to ensure the occlusion of side branches.

RESULTS

August 2008 to June 2012, five cases were operated in this method, All patients were male and the ages were 44-72 (62.8 +/-11.4). In all cases, intermittent claudication was disappered after the operation. In one case, emergent thrombectomy was needed on the same day after the operation. There were no wound complications (infection, hematoma, cellulitis, pain, etc). One bypass was occluded three years after the operation with rich collateral pathways without ischemic symptoms. Other in situ bypasses have remained patent during 4-47 months flow-up periods.

CONCLUSIONS

Endoscopically assisted in situ greater saphenous vein side branch occlusion provides safe and effective results without wound complications.

STAGED APPROACH FOR SPINAL CORD PROTECTION IN HYBRID THORACOABDOMINAL AORTIC ANEURYSM REPAIR

Moritz S. Bischoff¹, Johannes Scheumann², Robert M. Brenner² Dittmar Böckler¹, Randall B. Griepp²

¹Department of Vascular and Endovascular Surgery, Heidelberg University Hospital, Heidelberg, Germany ²Department of Cardiothoracic Surgery, Mount Sinai School of Medicine, New York, USA

OBJECTIVE

To try to minimize spinal cord injury following hybrid repair of thoracoabdominal aortic aneurysms (TAAA), we investigated the impact of sudden intercostal artery occlusion by thoracic stent-grafting after open lumbar segmental artery ligation in a porcine model.

METHODS

After randomization into two groups, 20 juvenile Yorkshire pigs $(27.1 \pm 0.6 \text{ kg})$ underwent open lumbar SA sacrifice (T13-L5) followed by endovascular coverage of all thoracic SAs (T4-T12) at 32° C, either in a single operation (group 1) or in two stages separated by seven days (group 2). Collateral network pressure (CNP) was monitored by catheterization of the SA L1, and postoperative hind limb function was assessed using a modified Tarlov score.

RESULTS

The CNP in group 1 decreased to 34% of baseline, whereas CNP after lumbar SA ligation in group 2 fell to 55% of baseline (74 ± 2.4 to 25 ± 3.6 mm Hg vs 74 ± 4.5 to 41 ± 5.5 mm Hg; p<0.0001). Subsequent thoracic stenting (group 2) led to another significant but milder drop (p=0.002 versus stage 1) from the restored CNP (71 ± 4.2 to 54 ± 4.9 mm Hg). Five of ten pigs in group 1 suffered paraplegia, in contrast to none in group 2 (median Tarlov score 6, vs 9; p=0.0031). Histopathologic analysis showed more severe ischemic damage to the lower thoracic (p=0.05) and lumbar spinal cord (p=0.002) in group 1.

CONCLUSIONS

The results underline the potential of the staged approach in hybrid procedures. Furthermore they highlight the need for established adjuncts for preventing spinal cord injury in hybrid and pure stent-graft protocols in which sudden occlusion of multiple SAs occurs.

CLINICAL CASES OF LEFT-SIDED INFERIOR VENA CAVA IN PATIENTS FOR THORACOABDOMINAL AORTIC ANEURYSM REPAIR

Masaho Okada, Naonobu Mikami, Fumito Mizuno, Yasuhisa Noguchi, Takashi Kobata Koichi Morioka, Yoichi Kawahira, Hiroo Shikata, Toshiaki Akita

Department of Cardiovascular Surgery, Kanazawa Medical University, Ishikawa, Japan

OBJECTIVE

Anomalies of inferior vena cava (IVC) are not frequently. A left-sided IVC usually joins the left renal vein which crosses anterior (or rarely posterior) to the abdominal aorta to join a normally positioned suprarenal IVC. The exposure and preparation of lt. sided IVC is very crucial for thoracoabdominal (TAAA), or abdominal aortic aneurysm repair. We experienced clinical cases of left-sided IVC and reviewed the anatomy associated imaging and clinical implications of these cases.

METHODS

From May 2009 to May 2012, there were 2 patients who had left-sided IVC in our patients indicated for graft replacement of TAAA. The age and gender of the patients were 53 years old woman and 60 years old man. Their primary diseases were TAAA. We performed for them graft replacement of TAAA. For current cases, we examined the anatomical feature of left-sided IVC with the finding of clinical imaging.

RESULTS

For first case, we did not identify the left-sided e IVC preoperati vely. For second case, we identified the left-sided IVC preoperatively. They were indicated for repair of the descending thoracic and thoracoabdominal aorta. In first case, we did not identify the left-sided IVC and we had the difficulty of exposure for TAAA in the retroperitoneal space. The operation was performed and the exposure of the left-sided IVC was very difficult. The operation time was extended because of the difficulty of bleeding control. The patient died from the intestinal necrosis postoperative period. In second case, the exposure of the left-sided IVC did not have trouble and graft anastomosis was performed below the left renal vein which crosses anterior to the abdominal aorta to join a normally positioned suprarenal IVC.

CONCLUSIONS

Anomalies of IVC have possibility of misdiagnosis on imaging. As the enhanced CT scan is performed with injection of radiopaque from upper limb regularly, the enhancement of IVC below the renal artery can be faint. More car eful diagnosis and pre-operative planning of surgical strategy can solve the technical problem in anomalies of IVC.

ABDOMINAL AORTIC ANEURYSM PATIENTS WITH INFERIOR VENA CAVA AND RENAL VEIN ANOMALIES

Hideomi Kawachi, Hideaki Maeda, Hisaki Umezawa, Tsutomu Hattori, Tetsuya Nakamura, Tomofumi Umeda, Ayako Iida, Motomi Shiono

Nihon university school of medicine cardiovascular surgery

PURPOSE

The aim of this study was to report of characteristics and patterns of abdominal aortic aneurysm (AAA) patients with inferior vena cava (IVC) and renal vein anomalies.

PATIENTS AND METHODS

Between 1990 and April 2011, this series consists of 7 (1%) patients with IVC and renal vein anomalies of 706 AAAR patients during the same time of this study who underwent AAA repair at our single institute. There were 6 men and a woman with a mean age of 70.0 years.

RESULTS

CT scan showed left-sided IVC in 4 patients, doubling IVC in 1 patient and retroaortic left renal vein (LRV) in 2 patients.

AAAs were located infrarenal AAA in 6 patients and juxta-renal AAA in 1 patient. All patients had uneventful post operative course.

CONCLUSION

AAA patients with IVC and LRV had an increasing risk of intraoperative bleeding due to vein injury. we advocate the importance of accurate preoperative imaging and planning to perform safe open conventional AAAR.

CASE REPORTS OF THE CHIMNEY PROCEDURES FOR THOROCIC AORTIC ANEURYSMS

Yuki Seto, Hirono Satokawa, Shinya Takase, Misawa Yukitoki, Hiroki Wakamatsu, Hiroyuki Kuosawa, Takashi Igarashi, Kagoshima Akihito, Tsuyoshi Fujimiya, Hiroharu Shinjo

Department of Cardiovascular surgery, Fukushima Medical University, School of medicine

OBJECTIVE

The number of thoracic endovascular repair (TEVAR) increase as a treatment in patients with thoracic aortic aneurysms in Japan, since the supplied stent grafts were commercially available in 2008. However, the arch aortic aneurysms with TEVAR are still challenging cases because their vicinity of the aortic side branches. We experienced four cases of thoracic endovascular repair using chimney procedure, and reported their early results.

METHODS

Four patients, who were considered to be high risk for open surgery, underwent TEVAR with chimney procedure. Two-debranched TEVAR had been initially planned in three cases, which required the additional TEVAR proximally for Type I endoleak. Planned chimney technique was applied in only one case. First, Axillo-axillo bypass and the bypass to left cervical artery from its branch were established. The left cervical artery was ligated proximally to the anastomosis site. Second, a thoracic endovascular stent graft was delivered via the femoral artery or the external artery or the abdominal aorta. A 0.035 inch guide wire was pulled through the artery, then an additional leg stentgraft for abdominal endovascular repair (Excluder, Gore) as a chimney graft was delivered from the right axially artery. It was deployed at the site where its distal edge was located to brachio-cepharic artery, followed by the thoracic stentgraft (TAG, Gore) deployed at the site of zone0 in proxima 1 landing. Balloon expansion was done both stentgrafts at the same time. When type I endoleak was detected after the deployment, the coil embolization was performed to the gutter between stentgrafts via left cervical artery. Finally, the origin of left subclavian artery was embolized with coil.

RESULT

The patient age ranged from 77 to 81 years old. All the four chimney techniques were successfully finished without arterial and aneurysmal related complication. No endoleak was detected after deployment during operation. No perioperative death was seen. The follow up duration ranged from 6 months to 16 months. One case had multiple cerebral infarction with bleeding, whose left cervical artery was atheromatous thickness. After rehabilitation, he discharged our hospital in post-operative day 30. One case of Type I endoleak was detected 6 months later, wheres the aneurysm diameter did not change. One case of Type II endoleak from left subclavian artery was seen 7 days after procedure, required re-coil embolization one month later.

CONCLUSION

A Chimney procedure was performed safely for the high risk patient in our hospital. However, close and long- term follow-up were required.

TREATMENT OF TRAUMATIC AORTIC INJURY

Watanabe Ken-Ichi, Taniguchi Satoshi, Hattori Kaoru, Ogasawara Takashi, Daitoku Kazuyuki Minakawa Masahito, Fukui Kozo, Suzuki Yasuyuki, Fukuda Ikuo

Department of Thoracic and Cardiovascular Surgery

INTRODUCTION

The traumatic thoracic aortic injury is a severe and life-threatening clinical entity. Endovascular repair of traumatic aortic injury is a rapidly performed, less invasive alternative to open repair that can improve survival and decrease morbidity.

PATIENTS AND METHOD

Clinical records of 19 patients (mean age, 41.3 years; range 16 to 76 years; 17 male, 2 female) with acute traumatic aortic injury treated by surgery between 1985 and 2011 were reviewed retrospectively. The cause of injury was falls in 2 patients and traffic accidents in 17 patients. Associated injuries were seen in other parts of the bodies; head in 6 patients, face 3, abdomen 12, extremity 10, and skin surface 2. Seventeen patients had two or more organs injuries. Traumatic injury severity score (TRISS) was used for evaluating the patients. Probability of survival (Ps) was 8.7 - 98.4 %(mean 67). The site of aortic tear included the aortic isthmus in 18 patients and the 7th intercostal space in 1 patient because of the bone fracture.

RESULTS

Eight patients underwent emergency operation within 24 hours. Elective surgery was performed in 11 patients. Endovascular repair was performed in 6 patients and direct suture of the aorta was performed in 2 patients. Nine patients were treated with femoro-femoral cardiopulmonary bypass, 1 patient underwent left heart bypass and simple cross-clamping of the aorta was performed in 2 patients. Selective cerebral perfusion was required in 2 patients and circulatory arrest was employed in 2 patients. There was one operative death due to retroperitoneal bleeding. Operation time and postoperative hospitalization of open repair vs endovascular repair were not significantly different (354.5 vs 229.7 minutes and 55.4 vs 36.8 day).

CONCLUSIONS

Patients who suffer blunt traumatic rupture of the aorta with multiple organ injury should be evaluated properly on admission. Endovascular treatment offers these polytraumatized patients a less invasive operative treatment option. Long-term follow up especially for young patients is necessary after the endovascular treatment.

THERAPEUTIC OPTIONS FOR AORTIC DISSECTIONS

Rainer Wrobel, F. Kramer, H. Rimpler

Klinikum im Friedrichshain, Landsberger Allee 49, 10409 Berlin, Klinik für Gefäßchirurgie, Station 27

The aortic dissections is an acute vascular emergency an can quickly lead to death. We introduce our cases in the time of 2005 to 2010. We show anamnestic dates, diagnostics and treatment. Because of various symptoms the recognition is difficult. The combination of endovascular procedures and operations are to be considered.

SURGICAL MANAGEMENT OF ORGAN ISCHEMIA ACCOMPANIED WITH ACUTE AORTIC DISSECTION

Kazuyuki Daitoku, Mari Chiyoya, Kaoru Hattori, Yoshiaki Saito, Wakako Fukuda Anan Nomura, Takashi Ogasawara, Ken-ichi Watanabe, Satoshi Taniguchi Masahito Minakawa, Kozo Fukui, Yausuyuki Suzuki, Ikuo Fukuda

Department of Thoracic and Cardiovascular Surgery Hirosaki University School of Medicine

BACKGROUND

Organ malperfusion associated with acute aortic dissection (AAD) is a life-threatening condition. The optimal therapy for organ malperfusion accompanied with AAD remains controversial. Although immediate reperfusion therapy is required for organ ischemia in order to minimize ischemia-reperfusion injury, central repair cannot completely relief organ malperfusion.

OBJECTIVE

The aim of this retrospective study is to evaluate optimal management for organ ischemia accompanied by acute aortic dissection and to investigate optimal treatment for organ ischemia.

PATIENTS AND METHODS

From January 2002 to July 2012, we experienced 256 acute aortic dissection cases (120 type A, 136 type B). Forty nine (33 type A, 16 type B) patients with organ ischemia were included in this study. We divided obstructive branch pattern as follows:

Type 1: arterial obstruction because of the aortic flap.

Type 2: arterial obstruction because of branch avulsion.

Type 3: arterial obstruction because of thrombus.

We analyzed the relationship among branch obstruction which induced organ malperfusion, surgical procedure, morbidity and mortality.

RESULTS

Case distributions of ischemic organ were one region 33, two regions 13, three regions 2, and four regions 1. Nine of 13 patients who had two or more ischemic organs were died in spite of surgery. 1) Nine cases were involved in coronary artery. Aortic flap obstruction (Type 1) were 4 cases, arterial avulsion (type 3) were 4 cases, and combination with type 1 and 3 obstruction was one. Type 3 coronary obstruction needed modified Bentall procedure or added coronary artery bypass grafting. Percutaneous cardiopulmonary support (PCPS) usage for low output syndrome (LOS) after weaning from cardiopulmonary bypass was effective. 2) Twelve cases were involved in carotid artery. Emergency operation was performed in 8 cases. Intentional delayed surgery was conducted in one case. 3) Nine cases were involved in visceral organ. Type 1 obstruction was observed in 7 cases. Two patients underwent central operation. One of them received artificial conduit bypass from the ascending to bifemoral artery in addition to central operation. However, the patient died because of ischemic colitis. Stenting was performed in three patients (one type A, two type B) who had type 1 (flap) obstruction in order to maintain the flow to celiac artery prior to central operation. 4) Twelve cases were involved in iliac artery. In type A dissection, 3 patients underwent central repair and 1 patient had ascending to bifemoral artery bypass in addition to the central operation. Stent placement was indicated in two cases. One of them was died because of MNMS. In type B dissection, small-sized stenting for patients with lower limb ischemia (4 cases) were effective.

CONCLUSION

The treatment of AAD with malperfusion is challenging. We must use various reperfusion techniques, including percutaneous intervention, to save the patient.

SURGICAL TREATMENT OF PRIMARY INTIMAL PULMONARY SARCOMA: A CASE REPORT

Chiho Tokunaga¹, Toru Tsukada¹, Shizu Aikawa¹, Hiroaki Sakamoto¹, Yoshiharu Enomoto¹ Shinya Kanemoto¹, Yuji Hiramatsu¹, Mitsuaki Sakai², Yukio Sato², Yuzuru Sakakibara¹

> ¹Department of Cardiovascular Surgery, University of Tsukuba ²Department of Thoracic Surgery, University of Tsukuba

OBJECTIVE

Primary pulmonary sarcoma is a very rare tumor and fewer than 250 cases have been only reported. The prognosis of primary pulmonary sarcoma is extremely poor and it is reported as 1.5 months without surgical resection. Here we report our experience of surgical treatment of primary pulmonary sarcoma.

CASE REPORT

62 years old woman was admitted with complainants of cough and hemosputum. Chest CT scan revealed a large tumor that is arising from the left pulmonary artery and extending into the right pulmonary artery and the main pulmonary trunk. There was no sign of distant metastasis. The tumor occupied the left pulmonary artery and emergent surgery was planned to prevent sudden death.

Upon induction of anesthesia, her circulatory condition was rapidly collapsed and the heart was arrested. Emergent sternotomy was performed and she was placed on cardiopulmonary bypass. On cardiopulmonary bypass, the main pulmonary artery and the right pulmonary artery was opened. The tumor stacking in the right pulmonary artery was removed and resected with the main pulmonary artery wall. The defect was repaired with a bovine pericardial patch. After CPB termination, the left pneumonectomy was completed. Pathologically, the tumor was diagnosed as an intimal sarcoma of the pulmonary artery and the surgical margin was negative. She was fully recovered and discharged after rehabilitation. An adjuvant therapy was not admitted. At 27 months after surgery, she is doing well without any evidence of recurrence.

DISCUSSION

Primary pulmonary sarcoma is a rare tumor with a poor prognosis. The limited experience of this rare tumor makes it difficult to define the standard treatment regimen. The complete surgical resection would be the most effective treatment. The adjuvant therapy including chemotherapy and radiotherapy may also contribute to prolong the survival of patients, although the role of these treatments has not yet been clearly defined. Further investigation of this disease and evaluation of additional therapy would be necessary to establish the standard treatment protocol.

CONCLUSION

Intimal pulmonary sarcoma was successfully treated with the complete resection of the tumor by the resection of the main pulmonary artery and the left pneumonectomy without adjuvant therapy. Aggressive surgical treatment would be the most effective treatment for this malignant disease.

SURGICAL TREATMENT OF PRIMARY PULMONARY ARTERY SARCOMA

Kan Kaneko, Motomi Ando, Yasushi Takagi, Masayoshi Kobayashi, Hiroshi Ishikawa Toshimitsu Sato, Munetoshi Akita, Hiroshi Kondo, Yoshiro Higuchi, Kentaro Amano Yusuke Sakurai, Mika Noda

Department of Cardiovascular Surgery, Fujita Health University

OBJECTIVE

Primary pulmonary artery (PA) sarcoma is a rare malignant tumor that is frequently misdiagnosed as chronic pulmonary thromboembolism (CPTE), because of similar clinical and radiologic findings. The mean survival time is 14–18 months. Surgical resection (including, pneumonectomy, local excision, and endarterectomy) is the best treatment option. We present 4 cases of primary PA sarcoma and describe the surgical treatment of these cases.

METHODS

Between February 2004 and May 2012, we surgically treated 4 patients (age, 43–53 years; 2 men and 2 women) with primary PA sarcoma. CPTE was initially diagnosed in all cases, and some of the patients were treated with thrombolysis, without any effect. They were referred to our hospital, and we suspected a tumor arising from the PA.

We performed pulmonary endarterectomy (PEA) in 3 patients with cardiopulmonary bypass, profound hypothermia, and intermittent circulatory arrest, similar to the protocol for CPTE surgery. Tumor resection appeared to be complete in these patients. We did not perform PEA for 1 patient because the tumor extended beyond the PA. The tumor was incompletely resected from the PA. Pathological findings of the resected specimens indicated PA sarcoma in all the patients.

RESULTS

One patient who underwent PEA died soon after the surgery because of postoperative cardiac failure. The other 3 patients were discharged and showed remarkable clinical improvement. However, recurrence was observed in all 3 patients. One patient received chemotherapy, but did not show improvement; he died 16 months after the surgery.

Local recurrence was observed in a 41-year-old woman who underwent PEA 10 months after the surgery. Computed tomography showed a small mass in the right main pulmonary artery wall. A redo operation was performed for this patient. The PA with the tumor was resected and the PA was reconstructed using a prosthetic graft to achieve complete tumor resection. The patient is still alive, with no sign of recurrence, 5 months after the second surgery (15months after the initial surgery). Recurrence was also observed in the patient who underwent incomplete tumor resection and the patient is still alive 4 month after the surgery.

CONCLUSIONS

Primary PA sarcoma prognosis is very poor, even with aggressive surgical treatment. In our cases, PEA resulted in clinical improvement; however, local recurrence was soon observed after the surgery. En bloc resection of the PA and tumor and reconstruction of the PA might improve patient prognosis.

THE SURGICAL STRATEGY FOR THE ANEURYSM OF THORACIC AORTA IN AN AGING SOCIETY

Takayuki Okada, Takahiro Maruyama, Takashi Kusunose, Tomohiko Sumida, Naoki Minato

Thoracic and Cardiovascular Surgery, Kansai Medical University

Among higher aging society, it is very difficult to evaluate risks and chose criteria of surgery with more beneficial treatment as usual fashioned.

According to our surgical series, Kansai Medical University, Osaka, Japan, related on the aneurysm of thoracic aorta, there was high ratio of patients over-75s in 23 (30%), which included urgent cases in 8, compared to overall 77 patients from May 2009 to February 2012.

To itemize cases of two groups as part of replacement as below, the elective cases in 49: ascending-root 5, ascending 3, hemi arch 4, total arch 22, descending 5, thoraco-abd 7, other 1. The urgent cases in 28: ascending root 1, ascending 14, hemi arch 2, total arch 9, thoraco-abd 1 and the repair of ruptured ascending 1. Elephant trunk repair for total arch replacement was performed in 22 of all. As a concomitant surgery was required, CABG 11, AVR 2, MVP 1 and PV isolation 2. We lost one patient in the urgent group due to ischemic enteritis, however the others were alive until now.

Regarding to our surgical cases with 'the autologous pericardial or adventitial inversion technique', it seems more beneficial points to precede less bleeding procedure.

There are several knacks for these inversion techniques not only for using soft and feasible tissue but also for making less oozing from suture lines and needle holes even if presumed beating over high blood pressure.

On the other hand, in thoraco-abdominal aortic aneurysm (TAAA) cases, we have already made good outcome for using 'the segmental retrograde replacement of the TAAA without retrograde perfusion from the femoral artery', which would bring less incidence of embolic events and atheroma related ischemia and furthermore less CBPB time.

It is considerable and valuable for treating aged patients with less residual function of all organs to use these techniques as above. We would like to share the outcome of our series with some bibliographical considerations.

EARLY AND LONG-TERM OUTCOME OF AORTIC ARCH REPLACEMENT USING SELECTIVE CEREBRAL PERFUSION

Masahito Minakawa, Mari Chiyoya, Zaiqiang Yu, Kaoru Hattori, Wakako Fukuda, Yoshiaki Saito, Anan Nomura, Takashi Ogasawara, Kenichi Watanabe, Satoshi Taniguchi, Kazuyuki Daitoku, Kozo Fukui, Yasuyuki Suzuki, Ikuo Fukuda

Department of Thoracic and Cardiovascular Surgery, Hirosaki University School of Medicine, Hirosaki, JAPAN

OBJECTIVES

This study was designed to evaluate early and long-term outcomes of the total aortic arch replacement (TAR) using selective cerebral perfusion (SCP) for the patients with aortic arch true aneurysm.

METHODS

From January 2002 to December 2010, we performed 82 cases (71 male, 11 female, age 72 ± 7 years old) of the TAR for aortic arch true aneurysm. Preoperative evaluations of the brain and neck arteries were undergone by magnetic resonance imaging (angiography), and severity of atherosclerosis of the aorta was evaluated by CT scan. The grade of atherosclerosis of the ascending aorta and aortic arch was determined using classification by Katz. Those evaluations were used to determine aortic cannulation site for the cardiopulmonary bypass. Selective cerebral perfusion and trifurcated graft were used in all cases.

RESULTS

Permanent neurologic dysfunction was1 (1.2%), temporary neurologic dysfunction was 10 (12.2%) cases. Hospital death was 3 (3.7%) consisting of rupture of residual aneurysm (2 cases) and acute myocardial infarction (1 case). Stenosis in both carotid and vertebral artery, long SCP time more than 180 min, concomitant operation of CABG, long operation time more than 10 hours, long CPB time more than 5 hours were significantly related with postoperative stroke. There was no significant relationship with severity of atherosclerosis and postoperative stroke. 5-year survival rate was 72.9%. Long-term death was 13 cases.

CONCLUSIONS

CPB strategies determined by preoperative evaluation and TAR using SCP and trifurcated graft would be beneficial to reduce stroke ratio, and contribute to long-term outcome.