

explanation of the risks, benefits, and alternatives of portosystemic shunt embolization to the patient is paramount.

Abstract No. 329

Preclinical evaluation of Amplatzer Vascular Plug Micro in a canine model

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Purpose: To evaluate the efficacy of a new generation Amplatzer Vascular Plug Micro (AVPM) delivered through a micro catheter in a canine model under Good Laboratory Practice (GLP) conditions.

Materials and Methods: The AVPM is a cylindrical self-expanding device with 2 lobes constructed from fine wire nitinol braid with 3–6 mm diameters in 1mm increments. Twenty-four arteries of 3 dogs were embolized. One AVPM device was placed in each internal thoracic, thoracodorsal, dorsal scapular and brachial arteries, respectively, through a 2.8 F micro catheter in all 3 animals. Angiography was performed to monitor occlusion time every minute after plug placement. Device stability and recanalization were evaluated at 1 week, 1 month and two months by follow-up angiography. Animals were sacrificed after 2 months follow-up and the specimens were harvested for pathological examination.

Results: All plugs were successfully deployed in the target vessel via 2.8F micro catheter without difficulties. The mean diameter of the target arteries was 2.53 ± 0.49 mm (1.77–3.42 mm). The mean diameter of the AVPMs was 4.3 ± 1.0 mm (3–6 mm) with mean device oversize rate of 69 ± 22 % (33–118%). The vessel occlusion time was 2–10 minutes with mean of 5.71 ± 2.22 minutes. The vessel recanalization rates were 25% after 1 week, 100% at 1 month and 2 months. One plug moved 5mm distally at 1 week follow up and remained stable at 1 and 2 months. Pathology showed full apposition of the device along the arterial wall. The inflammatory reaction was minimal to mild, which was confined to the neointimal tissue in direct contact with the device and did not extend within the wall of the implanted artery or in the perivascular tissue.

Conclusion: The Amplatzer Vascular Plug Micro delivered and deployed through micro catheters was demonstrated to be safe and feasible for quickly occluding arteries under 4mm. The high incidence of recanalization observed in this study reflects the known higher plasma-based thrombolytic activity in canine compared to humans and was seen in previous AVP studies.

Abstract No. 330

Transcatheter arterial embolization of acute gastrointestinal bleeding with n-butyl cyanoacrylate

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Purpose: To assess the clinical usefulness of transcatheter embolization with n-butyl cyanoacrylate (NBCA) for the treatment of acute gastrointestinal (GI) bleeding.

Materials and Methods: We retrospectively studied the outcomes of 24 patients who underwent emergency transcatheter embolization for acute GI bleeding. They were consisted of 18

men and 6 women and mean age was 70.1 years old. Bleeding was from the right colic artery (n=5), left gastric artery (n=4), right gastric artery (n=4), pancreaticoduodenal artery (n=2), ileocaecal artery (n=3), gastroduodenal artery (n=2), jejunal artery (n=1), ileal artery (n=1) and branch of IMA (n=2). Cause of bleeding was related to peptic ulcer (n=7), colon diverticulum (n=6), ruptured pseudoaneurysm (n=6), gastric GI neoplasms (n=3) and AVM (n=1). Of the 24 patients, 16 patients showed hemodynamic instability and 5 patients had coagulopathy. Six patients underwent coil embolization prior to NBCA administration for flow control. After the microcatheter was advanced close to the corresponding vessel, NBCA-Lipiodol mixture (1:1–1:3) was injected. Outcomes including hemostasis, recurrent bleeding and complications were evaluated.

Results: Successful embolization was achieved in all cases. Bleeding was stopped and immediate hemodynamic stabilization was exhibited in all cases after embolization. Although one patient with ruptured pseudoaneurysm died within 30 days because of multi-organ failure, rebleeding was observed in none of all patients. There was no major complication in all cases and neither end-organ damage nor organ ischemia related to the procedure was observed except two cases of asymptomatic gastric ulcer formation.

Conclusion: NBCA embolization is a feasible technique for acute GI bleeding and it takes less time than conventional coil embolization and can prevent recurrent bleeding with a low risk of critical gastrointestinal ischemia, especially when the patient has an unstable hemodynamic state and/or coagulopathy.

Educational Exhibit

Abstract No. 331

Percutaneous transarterial embolization of internal iliac artery aneurysm type II endoleak via ultrasound-guided direct transgluteal puncture of the superior gluteal artery: two case reports

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Learning Objectives: To demonstrate a previously unreported technique for gaining transarterial access to an internal iliac artery aneurysm endoleak type II when surgical and conventional transarterial access is not possible.

Background: Percutaneous intraarterial coil embolization of Type II endoleaks is becoming the treatment of choice in patients who are not surgical candidates or who have endoleaks which are amenable to percutaneous repair. At our institution, we employ both translumbar (fluoroscopic-guided) and intraarterial approaches when repairing type II endoleaks post endovascular aortic aneurysm repair. To our knowledge, this is the first case report describing access to an internal iliac artery aneurysm endoleak type II using ultrasound-guidance to facilitate direct transgluteal puncture of the superior gluteal artery.

Clinical Findings/Procedure Details: Two case reports will be presented.

Conclusion and/or Teaching Points: We describe two cases in which conventional transarterial access to IIAA endoleak type II was not possible secondary to exclusion from EVAR. We instead used a previously unreported technique of gaining access to the endoleak via ultrasound-guided direct transgluteal puncture of the superior gluteal artery. We were able to effectively treat the endoleaks via this route without complication. Short-term follow-up demonstrated no evidence of endoleak. We present another safe and effective

tive alternative to the growing number of techniques to gain access to pelvic endoleaks when other means are not feasible.

Abstract No. 332

Fertility after uterine artery embolization for postpartum hemorrhage

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Purpose: Uterine artery embolization (UAE) and hysterectomy are both used to manage postpartum hemorrhage. The outcomes of postpartum hemorrhage UAE on future fertility have been variably mentioned in prior reports, but a dedicated study has not yet been reported to evaluate fertility after UAE for treatment of postpartum hemorrhage.

Materials and Methods: A search of the PUBMED database was performed from January 1995 to September 2011. The keyword search included the terms: uterine artery embolization and postpartum hemorrhage. The inclusion of studies was based on the reporting of relevant data: total patients, patients desiring fertility, resulting pregnancies, and births.

Results: Our analysis includes 10 studies with 420 total patients treated for postpartum hemorrhage with UAE. Not all patients avoided eventual hysterectomy, but of those that did, 112 desired another pregnancy. 111 total pregnancies and 92 live births resulted. Several studies did not distinguish the exact number of pregnancies or births per patient, and as a result this analysis simply examines the total number of pregnancies and births.

Assuming 1 pregnancy or birth per patient, 99% of the patients were able to become pregnant, and 82% of those pregnancies achieved a live birth. A chi square analysis shows statistical significance ($p = 0.027$).

Conclusion: Fertility preservation is a strong motivation for choosing UAE over hysterectomy for postpartum hemorrhage. These results demonstrate fertility is successfully preserved in many patients. It does not escape the authors' attention that fertility outcomes are superior to hysterectomy.

	Postpartum Hemorrhage Treated With UAE	Desired Pregnancy Post UAE	Pregnancies Post UAE	Live Births Post UAE
Boyer et al. 2006	36	3	3	2
Chauler et al. 2008	41	16	17	16
Descargues et al. 2004	25	11	10	6
Eriksson et al. 2007	20	7	7	7
Gaia et al. 2008	111	29	19	18
Hardman et al. 2009	53	14	14	11
Ornan et al. 2003	27	6	6	6
Salomon et al. 2003	277	6	5	4
Sentilhes et al. 2009	68	17	26	19
Stancato-Pasik et al. 1997	12	3	4	3
Totals	420	112	111	92

Educational Exhibit

Abstract No. 333

Ovarian artery embolization in uterine fibroids: a pictorial review

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Learning Objectives: In this pictorial review we will discuss the indications, procedural technique and complications of ovarian artery embolization in the treatment of uterine fibroids.

Background: Ovarian artery embolization is a well established adjunct procedure in treatment of selected patients with uterine fibroids, where the fibroids derive their blood supply from the ovarian arteries. We present our experience in a large tertiary hospital.

Clinical Findings/Procedure Details: Prior to performing ovarian/uterine artery embolization patients are assessed for contraindications. Risk of early ovarian failure and menopause associated with ovarian artery embolization is explained to the patients. Access is obtained into the right femoral artery. A 5F Cobra catheter is used to cannulate the contralateral uterine artery followed by selective cannulation of the horizontal portion of the left uterine artery using a micro catheter. A preliminary angiogram is performed to look for cervical, vaginal or vesical branches. Embolization is performed with 500–700 micron embospheres reconstituted with 10 cc of ultravist 300 contrast per vial. The procedure is repeated on the right after cannulating the right uterine artery.

Routine aortogram to look for prominent ovarian arteries and blush of the uterine fibroids is performed. If one is found, selective cannulation is performed using a combination of SOS catheter and a micro catheter. The micro catheter is advanced the end of the straight vertical portion to prevent reflux of the embolic material into the aorta. A check angiogram is performed to look for any blush of the uterine fibroids. If one is found embolization is performed with 500–700 embospheres to slow flow. After the procedure, the patient is admitted overnight with a narcotic based patient controlled analgesia for pain relief and monitoring of hemodynamic status. Patient is discharged the day following the procedure and a follow-up gynecology appointment is arranged in four weeks after embolization.

Conclusion and/or Teaching Points: Ovarian artery embolization as an adjunct to uterine artery embolization in the treatment of uterine fibroids can reduce the incidence of clinical treatment failure, particularly when the fibroids have a ovarian artery supply.

Abstract No. 334

Quantitative estimation of splenic infarction using Murray's law before partial splenic embolization

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Purpose: For hypersplenism, portal hypertension, or hematologic disorders, etc., partial splenic embolism (PSE) is often performed. However, severe complications such as splenic abscess, gastritis, or pancreatitis may limit the indication. To prevent abscess formation due to contamination of the infarcted splenic parenchyma with bacteria carried from the gastrointestinal tract via the reversed portal circulation, around 30% of normally vascularized splenic mass should be preserved to keep the normal immune function and the normal direction of blood flow through the splenic circulation. However, the estimation of splenic infarction during PSE is often difficult. According to Murray's law, flow rate is in accordance with the vessel diameter (D) to the third