

## OC 1.1

## Endovascular Treatment for Acute Mesenteric Ischaemia

Khalid Omar Bashaeb, Marawan El Farargy, George Antoniou

*Pennine Acute Hospitals NHS Trust, Pennine Acute Hospitals NHS Trust, Manchester, United Kingdom. E-mail: kobashaeb@hotmail.com*

**Background:** Acute mesenteric ischemia (AMI) is associated with a significant morbidity and mortality. Endovascular techniques have emerged as a viable alternative treatment option to conventional surgery. We performed a systematic review of the literature and meta-analysis of reported outcomes. **Methods:** Our review conformed to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement standards with the protocol registered in PROSPERO (CRD42016035667). We searched electronic information sources (MEDLINE, EMBASE, CINAHL, CENTRAL) and bibliographic lists of relevant articles to identify studies reporting outcomes of endovascular treatment for AMI of embolic or thrombotic aetiology. We defined 30-day or in-hospital mortality and bowel resection as the primary outcome measures. We used the Newcastle-Ottawa scale to assess the methodological quality of observational studies. We calculated combined overall effect sizes using random effects models; results are reported as the odds ratio (OR) and 95% confidence interval (CI). **Results:** We identified 19 observational studies reporting on a total of 3362 patients undergoing endovascular treatment for AMI. The pooled estimate of peri-interventional mortality was 0.245 (95% CI 0.197–0.299), that of the requirement for bowel resection 0.326 (95% CI 0.229–0.439), and the pooled estimate for acute kidney injury was 0.132 (95% CI 0.082–0.204). Eight studies reported comparative outcomes of endovascular versus surgical treatment for AMI (endovascular group, 3187 patients; surgical group, 4998 patients). Endovascular therapy was associated with a significantly lower risk of 30-day mortality (odds ratio 0.45, 95% CI 0.30–0.67,  $P$  1/40.0001), bowel resection (OR 0.45, 95% CI 0.34–0.59,  $P$  < 0.00001) and acute renal failure (OR 0.58, 95% CI 0.49–0.68,  $P$  < 0.00001). No differences were identified in septic complications or the development of short bowel syndrome. **Conclusions:** Endovascular therapy confers improved outcomes compared to conventional surgery, reduced mortality, risk of bowel resection and acute renal failure. An endovascular-first approach should be considered in patients presenting with AMI.

## OC 1.2 (Second place oral presentation prize winner)

## Embolization of Genicular Arteries for Chronic Hemarthrosis Post Knee Prosthesis

Olivier D'archambeau, Elisa Luyckx, Thijs Van Der Zijden, Maurits Voormolen, Maurits Voormolen

*University Hospital Antwerp, Antwerp, Belgium. E-mail: olivier.darchambeau@uza.be*

**Background:** Post-operative hemarthrosis after knee prosthesis can be invalidating due to painful swelling of the knee and diminished mobility. We describe the technique and clinical results

of endovascular embolisation of genicular arteries. **Methods:** From 01.2007 until 12.2016, 31 patients were treated (17 m, 14 w) with a mean age of 67 y (range 48-90). A total of 38 embolisation procedures were performed (31-1, 5-2 and 1-3), 26 right and 12 left sided. The mean time from surgery to symptoms was 24, 4 months (range 1-64) and embolisation was 27,4 months (range 1-70). Surgery type was total knee prosthesis (TKP) in 29 patients, unicondylar prosthesis in 2. The technical approach was ipsilateral in 33 procedures and contralateral in 5. All embolisations were performed using 4F diagnostic catheters, 2.7F microcatheters and microspheres (range: 100-500  $\mu$ ). The technical endpoint was subtotal devascularisation in order to avoid ischemic complications. Clinical endpoint was symptomatic improvement. **Results:** Technical success was achieved 100%. In all cases, the superior lateral and medial genicular arteries could be embolised. In 12/38 procedures (32%), one or both inferior genicular arteries could not be catheterised due to the superposition of the TKP. Symptomatic improvement was achieved in 26/31 patients (84%). Post-procedural pain was noted in all patients, resolving inside 24 hrs in most. Two complications occurred, one low grade infection and one aseptic necrosis. **Conclusions:** Endovascular embolisation of genicular arteries is safe and efficient for the treatment of chronic hemarthrosis post knee prosthesis placement. Clinical improvement is seen in most patients. Complications are rare.

## OC 1.3

## Radiation and Contrast Reduction Strategies in Endovascular Aneurysm Repair Procedures

Khalid Omar Bashaeb, Andy Mayes

*The Pennine Acute Hospitals NHS Trust, Manchester, United Kingdom. E-mail: kobashaeb@hotmail.com*

**Background:** The aim was to maximise reduction of radiation dose and intravenous contrast use in patients undergoing Endovascular Aneurysm Repair (EVAR) using current hybrid theatre technology. **Methods:** A combined retrospective and prospective study of patients undergoing EVAR using current technologies was performed. We developed and implemented dose reduction strategies (DRS) with three study groups, a. Pre-Hybrid, b. Post-hybrid installation pre-DRS implementation and, c. Post hybrid installation with DRS implementation. The pre-hybrid group was performed using a C-arm image intensifier (OEC 9900, GE) and post hybrid installation using a Discovery IGS 740 (GE Healthcare). DRS included use of fusion imaging, fluoroscopy frame rate reduction, extra low dose protocols, digital zoom and image collimation. All standard bifurcated endografts were included. Dose Area Product (DAP), procedure time, screening time and total intravenous contrast media used for each patient was recorded. **Results:** The mean DAP pre-hybrid was 41.67 Gy $\text{cm}^2$ , which increased to 63.24 Gy $\text{cm}^2$  post-hybrid installation. This reduced to 36.57 Gy $\text{cm}^2$  after DRS implementation (43% reduction) despite an 8% increase in screening time in the post-DRS group (1218 secs vs 1118 secs). The contrast volume reduced from a mean of 80 ml of higher strength Niopam370 (Bracco, UK) intravenous contrast media pre-hybrid to 70.35 ml of lower strength Niopam300 (Bracco, UK) post-hybrid pre-DRS and to 54.19 ml after DRS implementation,

an overall reduction of 32%. **Conclusions:** Current technologies alone may not result in radiation dose reduction. Developing DRS leads to significant reduction in DAP and contrast media volume. The benefit is reduction in radiation dose to patients and operators and contrast use reduction in patients.

## OC 1.4

### Different Techniques of Carotido-Cavernous Fistula Embolization: Single Center Experience

**Farouk Hassan**

*Faculty of Medicine, Cairo University, Cairo, Giza, Egypt.  
E-mail: faroukkeden@yahoo.com*

**Background:** Different techniques of carotido-cavernous fistula (CCF) endovascular embolization were described in the literature. This study reports, validates and compares these techniques in our series of 34 cases, aiming to standardize the most effective and safest approach. **Methods:** A retrospective analysis of all patients that underwent endovascular embolization of either direct or indirect CCF between 2011 and 2016 at a tertiary care center was performed. The technical and clinical results of different techniques were analyzed. **Results:** Among our 34 patients, 29 had direct CCF (DCCF) and 5 had indirect CCF (ICCF). Among the 29 DCCFs, 1 was caused by intracavernous aneurysmal rupture which was coiled, 1 was caused by spontaneous rupture of a carotid dissection which was treated by carotid occlusion and 27 were caused by direct head trauma. Among these 27 cases, 3 were treated by occlusion of the fistula using detachable balloon, 13 were treated by cavernous sinus occlusion either from arterial or venous approaches using coils or coils and onyx and 11 were treated by carotid occlusion using coils and/or detachable balloons  $\pm$  histoacryl glue. Among the 5 ICCFs, 3 were treated by cavernous sinus occlusion, and 2 slow flow cases were conservatively managed. No procedure related complications. Recurrence occurred in 2 cases which were successfully treated in a second session. **Conclusions:** CCF can be effectively and safely treated by different endovascular approaches taking into consideration some technical points.

## OC 1.5 (Third place oral presentation prize winner)

### Endovascular Coil Embolization of Ruptured and Unruptured Intracranial Aneurysms: Review of a 13-year Single Center Experience

**Mustafa Belal Hafeez Chaudhry,  
Tanveer UI Haq, Syed Naseer Ahmed,  
Waseem Akhtar Mirza, Waseem Akhtar Mirza,  
Syed Ather Enam**

*The Aga Khan University, Karachi, Pakistan.  
E-mail: belal.ibnehafeez@gmail.com*

**Background:** To report our experience with the endovascular coil embolization (ECE) of ruptured and unruptured intracranial aneurysms (ICA) during the past 13 years at tertiary care University hospital. **Methods:** A retrospective study was performed at Radiology Department, The Aga Khan University between April 2003 to April 2016. All patients with ICA undergoing ECE were included. They were divided in groups of conventional technique (CT) and remodeling technique (RT)

based on technique of ECE. Chi square was used to determine if there was a significant association between procedure technique and success. **Results:** In total, 189 patients (95 men and 94 women) underwent ECE, of these, 156 (82.5%) patients presented with ruptured ICA and 33 (17.5%) patients with unruptured ICA. 50 (32%) patients presented with Grade II subarachnoid hemorrhage (SAH) based on the Hunt and Hess scale, followed by 41 (26.3%) with Grade III SAH. 33% ICA were located in ACommArtery, followed by 17% in internal carotid artery. Mean age was 46.5 years (Range: 10-78 years). 92 (48.5%) patients had wide neck ICA. In total, 164 (86%) patients were embolised with CT and 25 (14%) patients with RT. Overall, 170 (90%) patients (46% women and 45% men) underwent successful embolization (greater than 95% occlusion of the dome without any coil prolapsing into the parent vessel). No significant difference in procedural success rate in either group [CT vs. RT: 146 (89%) vs. 24 (96%);  $P < 0.4769$ ]. Complications occurred in 41 (22%) patients; 9.5% had major complications with bad outcome; 12.5% had minor complications with good clinical outcome. Infarction was commonest complication (12%). Total 9 (4.7%) patients died including 4 (2.1%) expiries secondary to procedure related complications. 155 (82%) patients had good clinical outcome with Modified Rankin Scores of 0-2. **Conclusions:** ECE of ICA is a safe and effective technique with a small associated risk of permanent morbidity-mortality. In correctly selected patients employed technique gives good procedural success. Risk of further bleeding is small with vast majority of patients achieving independent recovery.

## OC 1.6

### Carotid Angioplasty and Stenting: A Single Center Experience

**Farouk Hassan**

*Faculty of Medicine, Cairo University, Cairo, Giza, Egypt.  
E-mail: faroukkeden@yahoo.com*

**Background:** Carotid artery stenting is an alternative to endarterectomy in treatment of carotid artery stenosis. Comparative studies have shown different results regarding the outcome of both techniques. **Methods:** A retrospective analysis of all patients that underwent carotid artery stenting between 2011 and 2016 at a tertiary care center was performed. Periprocedural and delayed, minor and major complications rates as well as the rate of restenosis over the follow up period were analyzed. **Results:** A total of 74 patients who underwent 76 procedures of carotid artery stenting were included for analysis. Average age of patients was  $65 \pm 9$  years, with 45 male (60.8%). Symptomatic stenosis was seen in 54 cases (71%) and asymptomatic stenosis was seen in 22 cases (29%). Filter protection device was used in 66 cases (86.8%) and 10 cases (13.2%) were done without protective device. Pre-stent dilatation was performed in 12 cases (15.8%). Post-stent dilatation was performed in 74 cases (97.4%). Minor complications occurred in 3 cases (4%) in the form of 1 case of intraprocedural transient ischemic attack, one case of minimal dissection and one case of retroperitoneal hematoma. No major complications occurred. Two cases (2.3%) of insignificant restenosis were encountered. **Conclusions:** Carotid artery stenting is an effective and relatively safe alternative to carotid endarterectomy. Further studies assessing the value of embolic protective devices and the best type of stent should be conducted.