30 day mortality occurred in one patient (3.85%) due to paradox embolism and mesenteric ischemia. Access site complications occurred in 2 patients (7.7%).
Conclusions: Submassive pulmonary embolism ha excellent results with catheter directed thrombolysis, however additional mechanical thrombectomy and angioplasty is necessary in several patients to achive good clinical outcome.

TCT-512

Treatment of Masive Pulmonary Embolism with Percutaneous Rheolytic Thrombectomy: Hospital and Follow-up results

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Background: Massive Pulmonary Embolism (MPE) is an important cause of death around the world. In unstable patients (pts), Percutaneous Rheolytic Thrombectomy (PRT) is a treatment option, especially in those unable for surgical thrombectomy or with absolute contraindications for fibrinolysis. We are reporting retrospective in-hospital and late outcome of unstable pts treated with PRT.
Methods: Between December 2009 and April 2013 in two university Hospitals in Buenos Aires, Argentina, we included 14 consecutive pts with MPE according to the American College of Chest Physicians guidelines and confirmed by multislice computed tomography and doppler ultrasound (US), moderate to severe right ventricular failure and contraindication or fibrinolysis therapy failure. All pts (or direct relatives) signed an Informed Consent Form previously to treatment with Angiojet thrombectomy system (Bayer HealthCare, Germany). Pre-procedure Shock Index (heart rate/systolic arterial pressure) and pulmonary systolic pressure pre and post procedure were obtained. Miller score was estimated after pulmonary angiogram was performed. Primary endpoint was in-hospital death and any bleeding. During follow-up an US was done at 3 months after discharge to assess right ventricular function and pulmonary pressures. Long term follow-up was done to assess heart failure or functional class.
Results: Mean age was 64.5 +/- 14.3 years, 64.3% were male, with BMI >30=71.4%, previous malignant neoplasia in 14.2%, chronic obstructive pulmonary disease=9.1% and immobility=71.4%. Pre-procedure shock index was 1.43+/-0.23. After procedure Miller Score and systolic pulmonary pressures improved significantly ($p< 0.001$ for both). After PRT and before 30 days one patient died and no bleeding was reported. During 25.7 +/-21 months of follow-up global mortality was 28.5% (none cardiac related) and 2 pts showed evidence of mild cor pulmonale.
Conclusions: Percutaneous Pulmonary Rheolytic thrombectomy was safe and effective for the treatment of these high risk patients. Long-term outcome was related to the underlying pathology.

TCT-513

Ultrasound – Assisted Catheter Directed Thrombolysis in Massive and Sub-Massive Pulmonary Embolism: A Meta-analysis

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Background: There are limited therapuetic options for high risk patients with massive or sub-massive pulmonary embolism. The use of ultrasound-assisted catheter directed thrombolysis(UA-CDT) has shown to be particularly promising in various small studies. We aimed to conduct a meta-analysis of the available published studies.
Methods: An extensive time unlimited literature search using MEDLINE, EMBASE & Cochrane databases using MeSH key words 'pulmonary embolism', 'ultrasound' and 'catheter-directed' identified 7 studies including a total of 240 patients. Of these 197 patients underwent use of Ekosonic catheter directed thrombolytic therapy (UCDT) for massive or sub-massive PE. Hemodynamic measures including mean & systolic pulmonary artery pressure, RV-LV ratio, heart rate and cardiac index were assessed before and after therapy. Meta-analysis was performed using Cochrane Collaboration Review Manager(version 5.1). Effect size was estimated using random effects model and mean difference with 95% confidence intervals were calculated.
Results: One hundred and thirty patients were treated with UCDT. Massive & bilateral PE was reported in 74(30.8%) & 152(63.3%) patients respectively. UCDT resulted in a significant reduction in PA systolic (mean -15.22mmHg;95% CI -21.01–9.43) & mean PA pressures(mean -9.35mmHg;95% CI -13.03- -5.68), in addition to a 24% increase in cardiac index. The RV size, assessed by the ratio of RV to LV dimensions, was reduced with UCDT(mean -0.35;95% CI -0.42- -0.28), & the heart rate decreased by 16.9 beats/min (95% CI -26.46 - -7.34). The Miller pulmonary artery occlusion score (in 87 patients)showed a significant reduction of 10.12 points (95% CI -12.21 - -8.02). Thirty & 90-day all-cause mortality was 3.1% (6/197)& 4.6%(7/152) respectively with UCDT. Recurrent events & major bleeding was reported in 2/115(1.7%) & 7 patients(3.5%)respectively.
Conclusions: In this largest meta-analysis to-date evaluating the impact of UCDT on massive & sub-massive PE, UCDT is associated with significant improvements in hemodynamic measures of RV & LV function. The procedure appears to be safe & is associated with low 30 & 90-day mortality compared to RIETE(8.65%) and ICOPER registries(17.4%).

TCT-514

Percutaneous Transluminal Angioplasty of the Subclavian Arteries. Long-Term Follow up

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Background: To review feasibility, safety and long-term results of subclavian artery angioplasty.
Methods: 407 patients (males: 245, mean age: 66.1 ± 12 y) underwent percutaneous treatment for subclavian artery (SA) occlusive disease (stenosis: 295, occlusion: 112). Left: 312, Right: 95, Innominate Artery: 28. Etiology: atheromatous: 397, others: 10 (Takayasu: 6) Mean % stenosis 83.4 +/- 7.8. Mean lesion length: 23.9 +/- 8.7 mm Indications for treatment were upper limb ischemia (ULI) (n=177) Vertebrobasilar insufficiency (VBI) (n=157), associated VBI and ULI (n=123), coronary steal syndrome (n=20) asymptomatic patients with severe coronary disease (n=73) 39 patients had associated Vertebral Artery stenosis, 81 carotid stenoses. 337 prevertebral lesion, 45 post vertebral, both 25. Access: femoral (n=287), brachial (n=81), both (n=39). "Pull through technique": 8 cases. An isolated balloon angioplasty was performed in 59 cases and 348 stents were implanted (balloon expandable: 276, self expandable: 72).
Results: Technical success was obtained in 387 lesions (95 %) 100% for stenoses. Only 92 occlusions were recanalized (82 %). Four periprocedural events occurred (1.2 %), 1 major (fatal stroke), 1 T.I.A., 2 arterial thromboses. During the follow-up (mean follow-up: 75.7 months ± 38.5), we had 40 restenoses (10 %). 13 occurred following angioplasty alone (18.8 %) and 27 following angioplasty and stent implantation (7.8 %) ($P< 0.01$). 10 were treated by new angioplasty alone, 30 by repeat stent implantation. Primary (PI) and secondary (PII) patencies on an intention to treat basis at 10-year follow-up were 80.2 % and 86.5 % respectively. In patients without initial stent placement, the rates were 67.5 % and 75.5 % while in those with stents, the rates rose to 91.5 % and 98.2 % ($P < 0.01$). PI for all recanalized lesions were 85.8 %, 79.1 % without stent, 91.8 % with stent ($P < 0.04$) and PII 92.8 %, 88.5 %, 98.1% respectively ($P < 0.02$).
Conclusions: P.T.A. is currently the treatment of choice for subclavian artery lesions. It is a safe and effective procedure associated with low risks and good long-term results. Stents seem to limit the restenosis rate and improve long-term results.

TCT-515

PUDENDAL ARTERY ANGIOPLASTY FOR THE TREATMENT OF COMPLEX ERECTILE DYSFUNCTION IN MALES

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Background: Erectile Dysfunction (E D) is an important and growing health problem. It is estimated that more than 200 million men (between the age of 40 – 70 years) suffer from ED . The real prevalence could be much higher as it is under reported and under treated. Out of the many etiologies, 80 % of cases are because of vasculogenic origin. Venous leak and Arterial Inflow problems (usually pudendal artery stenosis) are the most common etiologies. In patients who fail PDE – 5 inhibitors therapy (Complex ED), vasculogenic causes should be strongly suspected.
Methods: The workup is done by excluding the endocrinal, urological and psychological causes and then subjecting these patients to a penile Doppler study (after intra cavernosal injection of papaverine). In patients where the peak systolic penile velocity is less than 25 cm /sec, pudendal artery stenosis is strongly suspected. These patients then undergo a selective angiography for identification of pudendal artery stenosis. If the stenosis is found they are subjected to super selective pudendal artery cannulation and angioplasty or stenting using drug eluting balloon (DEB) or zatrolimus eluting stents (DES). Patients are followed up at 3, 9, 12 months and then after every year by Duplex scans.
Results: 36 consecutive worked up patients of complex ED with pudendal artery stenosis underwent pudendal artery angioplasty (with DEB or DES). The procedure was successful in all patients There were no death, perineal or penile gangrene. The mean penile velocity increased from base line of 16 cm / sec to 44 ,50,58 cm /sec at 3, 6, 12 months respectively. Improvement > 4 points in International Index of Erectile Functions (IIEF -6) score at 3 , 6 and 12 months were 68 % , 75 % and 78 % respectively.
Conclusions: Angioplasty of focal stenosis of internal pudendal artery by DEB or DES appears to be a very promising therapy for male erectile dysfunction. It is safe, feasible and leads to sustained improvement of male erectile dysfunction in about 75 % of carefully selected cases. However still many cases are ineligible for this procedure . Larger studies are required to be able to accept it as a standard therapy to treat male Erectile Dysfunction.

TCT-516

THE MULTILAYER FLOW MODULATOR STENT FOR THE TREATMENT OF PERIPHERAL AND VISCERAL ANEURYSMS

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Background: Arterial aneurysms (An) are traditionally treated surgically, but more and more by interventional procedures with a high technical success rate, but some problems are not solved like protection of aneurysm rupture, endoleaks, stent

thrombosis, collateral branch thrombosis. We used a new concept of stent, the Multilayer Flow Modulator (MFM*) to treat An. and try to avoid some drawbacks encountered with endografts.
Methods: This MFM* is a 3 Dimensional braided tube made of several interconnected layers without any covering. Our earliest in vitro (theorical simulation), computerized Fluid dynamics, Molecular Modelization and in vivo tests demonstrated that this MFM* reduces the velocity in the aneurismal sac up to 90% by modifying the hemodynamic conditions. A saccular aneurysm without collateral branch will thrombose quickly. If a collateral branch is present the flow is directed towards this branch leading to shrinkage of the aneurysm. Animal experiments show excellent results. Moreover, as demonstrated in animal and human studies this MFM* preserves the collateral branches allowing the possibility to cover any artery without compromising the flow (renal, digestive arteries, supra aortic vessels…)
Results: 44 peripheral An. (iliac:23, femoral:1, popliteal:5, renal:8, mesenteric:2, carotid: 2, Subclavian : 2, Caeliac trunk :1) were treated with the MFM* (male:31, mean age 62+/-8 y) (57 stents ⌀ 5 to 14 mm; length 40 to 120 mm) were implanted to treat these aneurysms, by femoral approach (39 cases), brachial approach (1 case), Technical success in all patients. No complications. All An. thrombosed with diameter reduction in some pts. The thrombosis could take several weeks depending on the importance of collateral branches. 6 month to 36 month follow up will be presented and we will discuss the time needed to achieve exclusion of the An. All the side branches remained patent.
Conclusions: A new concept of stent, the MFM* (without any covering) is developed to treat An. It opens a new approach to treat peripheral An. avoiding most of the complications encountered with current endovascular techniques. The results obtained seem promising. A larger study is ongoing.

TCT-517

Endovascular Management of Massive Broncho Pulmonary Fistula – a Series of 28 Cases

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Background: Broncho –Pulmonary Fistula (BPF) occurs in 2-3 per 100, 000 population. They could be congenital or acquired and are usually associated with Hereditary Hemorrhagic Telengiectasia (70 %). They could be either single or multiple, Central (PA to LA Fistula) or Peripheral (PA to PV Fistula). Usually they are asymptomatic (30 – 55 %) but sometimes they present with cyanosis, dyspnea on exertion, neurological symptoms (migraine, vertigo, TIA, paresis, numbness, syncope, confusion, cerebral abscess, seizures) or haemoptysis and haemo thorax. Diagnosis is confirmed by contrast (air bubble) echocardiography or CT / conventional angiography. Pneumonectomy, lobectomy, local excision and ligation of the pulmonary artery used to be the available treatment but carried a significant morbidity and mortality. Currently Endovascular Treatment is emerging as a promising alternative and our series is perhaps the largest one.
Methods: The diagnosis is confirmed by angiography, which is performed in many views to delineate the point of communication. Long sheath is introduced and a Berman catheter is then advanced via the long sheath and the balloon is inflated. The large flow across the BPF guides the balloon catheter to the branch supplying the BPF. The Fistula is closed either by coil embolization (Bioptome assisted) or Amplatzer ASD Device or Vascular Plug (I , II , III). The saturations (ideally PO2) usually normalizes after complete occlusion.
Results: N : 28 AGE : 26 +/- 3.5 YRS CENTRAL : 3/28 PERIPHERAL : 25/28 COIL EMBOLISATION ; 8 DEVICE CLOSURE : 23 (in 3 pts add coils were used) TECH SUCCESS : 100% REPEAT PROCEDURE : 5/28 SpO2 Pre op : 70 +/- 2% SpO2 Post op : 95.4 +/- 3%.
Conclusions: Most of the massive Broncho Pulmonary Fistula can be managed by endo vascular techniques and pneumectomy or any other major surgery can be avoided. This series of 28 successfully treated cases of Central and Peripheral Broncho Pulmonary AVM is probably one of the largest series.

TCT-518

Is The Retrieval Of IVC Filter Safe?

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Background: We wanted to study the feasibility and safety of IVC filters retrieval in patients with DVT with pulmonary thromboembolism (PTE) with IVC filter.
Methods: We retrospectively analyzed the data of patients who presented with DVT with massive or sub-massive PTE and were treated with catheter thrombolysis and IVC filter (Eclipse vena caval filter from Bard company) implantation in our unit in the year 2012 -2013. CT pulmonary angiogram, venous colour Doppler and in some cases MR venogram was done within 24 hrs before retrieval of filter. In conventional contrast venogram, if the filter is patent and free from significant clot burden (< 25% filled with thrombus), removal is then performed. Success of retrieval was defined as complete and intact whole filter removal. Complications during the procedure of retrieval like failure to remove the filter, distortion of the filter, migration of filter, presence of thrombus in the filter, local puncture site hematomas were noted.
Results: A total of 32 patients of DVT with acute PTE and Retrieval IVC filters implantations, were included in this study. Out of them 22 (68.75%) males and 10 (31.25%) females with mean age of 46.2 ± 12.6 years. In 15 patients(M:F::11:4) retrieval was attempted after complete clearance of DVT and PTE with average time period of 45 days (minimum - 25 days, maximum – one year). Successful retrieval was done in 13 patients (86.7%).Failed to retrieve in two patients (13.3%) in whom the implantation duration was one year. There were no distortion or migration of filter or local puncture site hematoma were noted. In 11 patients (11 out of 13- 84.6%) there was a small thrombus at the apex of the filter, which were confirmed by histo-pathology. No fatal complication like massive PTE or embolization of filter or IVC rupture or tears were noted.
Conclusions: The success rate of retrieval of IVC filters were good (86.7%) beyond the window period retrieval time coated by the company (15 to 21 days).Presence of small thrombus from the retrieved filter is very high (84.6%) without any clinical events.

TCT-519

The Multilayer Flow Modulator Stent for the Treatment of Popliteal Aneurysm

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Background: Popliteal Artery Aneurysms (PA) are traditionally treated surgically. Endovascular procedures with implantation of stent grafts or covered stents have been proposed as an alternative to surgery. Results are encouraging but some problems remain (aneurysm rupture, endoleaks, collateral branch thrombosis…). We used a new concept of stent, the Multilayer Flow Modulator (MFM*) to treat aneurysms and try to avoid some drawbacks encountered with endografts.
Methods: This MFM* is a 3 Dimensional braided tube made of several interconnected layers without any covering. Our earliest tests in vitro (theorical simulation, computerized Fluid dynamics, Molecular Modelization) and in vivo demonstrate that this MFM* reduces the velocity in the aneurismal sac up to 90% by modifying the hemodynamic conditions. A saccular aneurysm without collateral branch will thrombose quickly. If a collateral branch is present the flow is directed towards this branch leading to shrinkage of the aneurysm. Animal experiments show excellent results. Moreover, as demonstrated in animal and human studies this MFM* preserves the collateral branches allowing the possibility to cover any artery without compromising the flow (renal, digestive arteries, supra aortic vessels …)
Results: 5 PA were treated with the MFM* (male: 5, mean age: 65 y.) 9 stents (Ø6 to 8 mm, length 40 to 120 mm) were implanted by percutaneous ipsilateral femoral approach through 8F sheath. Technical success in all patients. All aneurysm thrombosed. Mid-term follow up will be presented. No stent fracture. This MFM* seems well indicated for this popliteal location.
Conclusions: A new concept of stent, the MFM* is developed to treat aneurysm. It opens a new approach to treat peripheral aneurysms avoiding most of the complications encountered with current endovascular techniques. The results obtained seem promising. A larger study is ongoing.

TCT-520

Gel Foam Embolization: Preoperative requisite

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Background: Juvenile nasopharyngeal angiofibroma (JNA) or nasopharyngeal angiofibroma is an uncommon fibrovascular mass arising in the nasopharynx of prepubertal and adolescent males. The tendency of the lesion for massive bleeding leading to life threatening complications has led to its considerable importance in medical fraternity. Preoperative biopsy is generally avoided for fear of massive lethal bleeding. The condition is most commonly treated by surgical excision and the surgical approach is chosen according to the disease stage. In view of their hypervascular nature and propensity for massive bleeding Juvenile angiofibromas may benefit from preoperative devascularization to reduce intraoperative blood loss. In our cases preoperative gel foam embolization was undertaken to reduce the vascularity.
Methods: We present a case report of 6 cases which were admitted in the otorrhionology and surgery department with history of nasal breathing , nasal bleeding and vertigo. Using 7F arterial sheath through transfemoral approach multipurpose cathter (Asahi)was passed into the common carotid via the aorta. Selective injection was made into the vessel which helped visualization of the angifibroma. A 0.014 X 190 BMW (Abott)coronary guide wire was used to gain proximity to the root of the angiosarcoma. A Stride Microcatheter was passed over the guide wire. Selective injection through the microcatheter revealed the various branches of the angiofibroma. Gel foam which was prepared externally was injected through the microcatheter into the root of the angiosarcoma. Subsequent injections revealed gel embolization of the feeding vessel rendering the area almost avascular. The patient was subsequently taken up for the excision surgery within 2-3 days.
Results: Post surgery,blood supply retrieved in 5-6 days.
Conclusions: We conclude preoperative angiography is mandatory for identification of the feeding vessels in view of preoperative embolization before surgery in all cases of JNA . The use of the appropriate guide wire , microcatheter and proper formation of the gel solution is necessary for the successful attainment of avascular field preoperatively.