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Safety and Clinical Outcomes of Endovascular Treatment for Extrinsic Pulmonary Artery Stenosis: A Systematic Review

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Background: Endovascular stent implantation for extrinsic pulmonary arterial stenosis (PAS) in adults is anecdotal.
Method: We systematically reviewed etiology, clinical characteristics, safety and outcomes of the published cases of extrinsic PAS treated with endovascular approach.
Result: A total of 113 published cases of extrinsic PAS were reviewed. The most common etiology of extrinsic PAS was mediastinal mass (31%), primary tumors of pulmonary artery (27%), fibrosing mediastinitis (18%), pulmonary pseudoaneurysm (17%), anastomotic stenosis post lung transplantation (7%) and radiation induced pulmonary stenosis (1%). Mean age at presentation was 52 years ± 14.75 with a M:F ratio of 1:1. Dyspnea (41%) was the most common presenting symptom followed by chest pain (29%), hemoptysis (11%), cough (11%), peripheral edema (7.4%), right heart failure (6%) and pulmonary hypertension (3%). Right Pulmonary artery was involved in 40%, bilateral pulmonary artery in 35% and left pulmonary artery in 15% of cases. 41(36%) cases reported stent implantation with Palmaz, Wall stent and stent grafts being commonly used stents. In all cases endovascular treatment was associated with symptom improvement along with reduction in trans-lesional gradient. 6 (15%) cases reported immediate complications after stent implantation. In 7 (17%) cases in-stent restenosis was reported at 6 months follow-up. There was no immediate peri-procedural mortality.
Conclusion: Stent implantation is an effective and safe alternative option for the treatment of extrinsic PAS.

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Same Day Discharge Right and Left Catheterization to Test Vasoreactivity in Pulmonary Hypertention by Basilar and Radial Access

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Background: Pulmonary Hypertension is a frequent disease in third level hospitals, with elevated morbidity and mortality in short time. To choose the medical treatment is fundamental to do a pulmonary vasoreactivity test.
Objective: To show and classify the results of the vasoreactivity test in the different groups of pulmonary Hypertension, done by basilar and radial Access.
Material and Method: By consecutive simple we captured cases in which left and right catheterism is done in patients with pulmonary hypertension, since November 2010 to September 2013. By basilar access we did the right catheterism, oximetries and pressure are registered, in superior vena cava, Inferior vena cava, Right Ventricle and Pulmonary Trunk. By radial Access pressures and oximetries are registered in aorta and Left Ventricle. Cardiac output is determined by Fick Method. The vasoreactivity was evaluated with adenosine infusion in the pulmonary trunk, in doses of 100 mcg/kg/min with a maximum of 12 mgs. A positive test is considered when Mean Pulmonary arterial pressure (mPAP) decrease more than 10 mmHg or a (mPAP) less than 40 mmHg without affection of the cardiac output.
Results: 114 procedures were done, 57% women, mean age 44 years, 74 patients of the group 1, 26 of the group 2, 8 of the group 3 and 6 of the group 4. Only 12% of the patients responded to adenosine infusion, 11 patients from the group 1 and 3 patients from de group 3 (Pulmonary Hypertension classification, Dana Point 2008). The mPAP decreased on average of 17 mmHg, and it was sustained in average 7.2 minutes. All procedures were done successfully and same day discharge. Complications: 2 patients referred severe chest pain with the adenosine infusion, but not persistent electrocardiographic abnormalities are founded. 10% of patients presented pain in the Access site that was controlled with analgesics.
Conclusions: Basilar and radial Access was accepted in 100% percent of the patients, and all are same day discharged. The were no major complications and the vasoreactivity test was positive only in 8% of the patients, principally patients of the group 1.

Neurovascular Intervention

CRT-205

Impact of Veins Endovascular Procedures on the Quality of Life in Patients with Multiple Sclerosis

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Background: Chronic cerebrospinal venous insufficiency (CCSVI) is a new challenge of extracranial venous pathway, which provides at present still controversial insight into the vascular role of multiple sclerosis (MS). The aim of our open-label study was to evaluate quality of life (QoL) of MS patients after endovascular procedures.
Materials and Methods: MS patients diagnosed by revised McDonald criteria who fulfilled Doppler sonography criteria for CCSVI. To evaluate the efficacy of the vascular procedures on QoL Multiple Sclerosis Impact Scale (MSIS-29), Fatigue Severity Scale (FSS), Modified Fatigue Impact Scale (MFIS) and Overactive bladder self-administered questionnaire (OAB-V8) were used. MSIS-29, FSS, MFIS and OAB-V8 were evaluated at baseline, 3, 6, and 12 months after vascular angioplasty.
Results: In our study 72 consecutive MS patients were included. FSS ($p<0.001$) and MFIS scores - total score, as well as three subscales scores (physical, psychosocial and cognitive) significantly improved after vascular procedures ($p<0.05$). The physical subscale correlated with the degree of pyramidal impairment. The important improvement of the bladder function using OAB-V8 ($p<0.01$) and QoL assessed by MSIS-29 questionnaire ($p<0.01$) were obtained.
Conclusions: The endovascular procedure demonstrated a beneficial effect on the quality of life of MS patients. The amelioration of cerebral venous drainage significantly reduced the perception of fatigue, increased the mental health and emotional stability, respectively. Additionally, important improvement of the bladder dysfunction even in MS patients with the progressive course of disease was achieved. Also, the sexual function improved. The relationship between CCSVI and hypoperfusion was demonstrated. The role of better cerebrospinal fluid flow after vascular procedures is discussed. It seems that the endovascular procedures in MS patients may influence the clinical picture of MS patients. Further investigations also in other neurodegenerative diseases are recommended.

CRT-206

Safety and Efficacy of Carotid Stenting in the Treatment of Carotid Artery Stenosis: Immediate Results and Long Term Follow-Up in Our Experience

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Background: Carotid artery stenting (CAS) may be an alternative to surgical endoarterectomy for the treatment of atherosclerotic carotid artery stenosis.
Purpose: to analyze retrospectively the procedures of CAS performed in our Centre between January 2004 and December 2012.
Methods: This analysis includes 604 procedures performed in 554 patients (382 men; mean age: 72 years old). Symptomatic patients with carotid artery stenosis > 50% were the 45%; we treated asymptomatic patients affected by > 70% stenosis. 398 patients (72%) were considered at high surgical risk: 207 (37%) with severe controlateral stenosis; 136 (24%) with severe or unstable angina, poor left ventricular function, left main disease or trivascular coronary artery disease, severe cardiac valve disease; 35 patients (6%) presented restenosis after surgical treatment. 28 (5%) patients were

treated with urgent coronary artery by-pass grafting (CABG) immediately after CAS; 108 (19%) patients underwent staged CABG one month after CAS. Distal cerebral protection devices were used in 85% of the procedures. Soft plaques were present in 110 patients (18%). 49 (9%) patients were submitted to CAS for bilateral carotid artery stenosis.

Results: we obtained a successful immediate angiography result in 99% of the patients. Major complications occurred in 11 patients (1.9%) and included: death (1 fatal stroke), major stroke (3), intracerebral hemorrhagic stroke (1), minor stroke (5), acute instent thrombosis (1 patient treated with thromboendoarterectomy and stent removal). Puncture site hematoma occurred in 4 patients treated with vascular surgical repair, one patient died for hemorrhagic shock.

Follow-up: we have a complete follow up in 95% of the patients. Instent restenosis occurred in 6 patients (1%) and was successfully treated with a new CAS. 50 patients died (22 for cardiovascular causes), but no one died for causes directly related to CAS.

Conclusions: in our experience CAS is a safety procedure with low complications also in high risk patients; the long term efficacy of CAS is very good with low rate of restenosis.

Peripheral Vascular Intervention

CRT-207

Role of Nitinol Stent Fractures in the Development of In-Stent Restenosis in the Superficial Femoral Artery

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Background: In-stent restenosis (ISR) in the superficial femoral artery (SFA) remains to be an Achilles heel of endovascular treatment of obstructive PAD. Stent fracture (SF) was identified as one of possible causes of ISR, but data on the role of SF in development of ISR remains controversial.

Methods: We studied 97 consecutive patients (105 limbs) with angiographically confirmed obstructive nitinol self-expandable stent ISR in the SFA. Mean age of the group was 73.31±8.28 years, 45% females, 31% smokers, 65% Diabetes. We excluded patients with Viabahn stents. Stents were evaluated by fluoroscopy/ CINE using at least 2 orthgonal views for SF presence. We analyzed SF rates, severity and angiographic relationship to restenosis, number of stents, stented length, stent diameter and type, run off score, smoking, age, sex, and presence of co-morbidities were analyzed as well.

Results: Mean time from stent implantation to presentation with ISR was 15.5±15.3 months. Out of 105 limbs with ISR, SF was present in 31 (30%) limbs and among those only 3 (10%) limbs had SF angiographically associated with ISR. SF occurred more frequently in males ($p<0.036$). Mean stented length was numerically but not statistically longer in patients with SF than in those without, 218.1±101 versus 194.8±103.2 ($p=0.297$), respectively. There were no differences in other procedural and demographic characteristics between groups with and without SF.

Conclusions: Stent fractures in SFA play a modest role in the development of ISR. In our study, the association was seen in only 10% limbs (3 out of 31 limbs) with SF, which corresponds to 2.9% of total 105 limbs with ISR. Majority of the patients with ISR did not have SF. Stent fracture occurred more frequently in males.

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Comparison of Peripheral Arterial Chronic Total Occlusion Crossing Strategies in the XLPAD Registry

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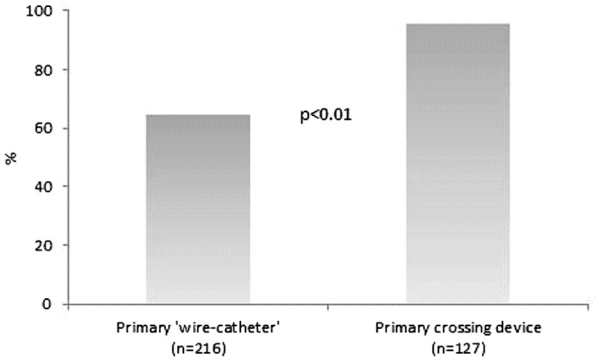
Background: Successful treatment of superficial femoral artery (SFA) and below-the knee (BTK) chronic total occlusions (CTO) involves selection of an optimal crossing strategy ('wire-catheter' vs. dedicated CTO crossing device).

Methods: We analyzed data from the multi-center *XL*PAD registry between July 2005 and September 2013 to compare primary CTO crossing strategies.

Results: A total of 343 SFA and BTK CTO interventions on 246 patients with symptomatic peripheral arterial disease were performed; 63.0% lesions were attempted with a primary 'wire-catheter' and 37.0% with a primary crossing device. In the primary 'wire-catheter' group 64.4% lesions were successfully crossed, 34.3% required a provisional crossing device and 1.4% were failures. Provisional use of a crossing device following a failed primary 'wire-catheter' attempt was successful in 95.9% cases. In the primary crossing device arm, 95.3% of lesions were successfully crossed. Figure 1 depicts comparative success rates with the primary 'wire-catheter' and crossing device strategies. Lesion lengths in the primary 'wire catheter' and crossing device arms were 138.9±84.9 and 135.7±79.6 mm (p=0.75) with stent lengths of 166.9±150.6 and 163.2±153.1 mm (p=0.84), respectively.

Conclusion: In contemporary practice, most operators select a primary 'wire-catheter' strategy to cross infra-inguinal peripheral arterial CTO, which is associated with lower success compared to a primary crossing device strategy.

Figure 1: Success Rates of Primary Crossing Strategies



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