ISACCO PRIZE II

VASCULAR ENDOSTAPLING: NEW CONCEPT FOR ENDOVASCULAR FIXATION OF STENT-GRAFT

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Aim. To evaluate the feasibility of a new vascular endostapling system in treating infrarenal abdominal aortic aneurysms by endografts (EVAR).

Methods. Eight patients (6 men, 2 women) underwent EVAR with the endovascular stapling system that provides transmural aortic fixation of the endoprosthesis with high pull-out force proportional to the number of the endostaples deployed.

Results. Twenty of the 29 endostaples were successfully implanted and secured with the Endostaple system. No patients had evidence of perioperative endoleak based on CT scan. No endograft device related complications have been documented during follow up at 30 days postoperatively.

Conclusion. The initial experience established the safety and feasibility of EVAR using the Endorefix endostapling system. However, further clinical evaluation is mandatory to draw robust conclusions about the utility of this new concept for fixation of stentgrafs.

SEALING OF STENTGRAFTS

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Aim. Complete exclusion of the aneurysm sac from systemic pressure and hence durable prevention of aortic aneurysm rupture is the main intention of endovascular aortic aneurysm repair (EVAR). Given lacking primary sealing of all known stentgrafts for non-newtonian fluids thrombus formation within the stentgraft fabric and at the landing zones seems to account for the sealing. Focus of this experimental study was to determine the permeability and thus flow rates of specified samples of red thrombus and of various thrombosed fabric-materials used in stentgrafts.

Methods. Cylinders of clotted porcine blood (2 cm of diameter and 1 cm in length) were exposed to physiologic saline solution with pressures of 40, 80 and 120 mmHg. Furthermore vascular graft materials (type A-, type B-polyester, polyurethane and polytetrafluoroethylene) were clotted 3 times by human blood and exposed to physiologic saline-solution with a pressure of 80 mmHg. The permeate was captured and permeabilities were determined for each sample. Finally scanning electron microscopy was performed in each probe.

Results. The determined permeability for porcine red thrombus was 1.22, 0.37 and 0.04 mm4/Ns for rising pressures. This corresponds to flow-rates of 0.73, 0.44 and 0.07 mL/h through the examined samples. The determined permeability for thrombosed graft materials was 0.07 and 0.33 mm4/Ns for type A- and type B-polyester and 0.09 mm4/Ns for polyurethane. Only polytetrafluoroethylene was impermeable for the used test-solution with and without sealing. Calculated flow-rates for a given graft (2 cm caliber and 10 cm length) of the various above mentioned graft fabric-materials would be 72, 330, vs 57 mL/h for a pressure gradient of 100 mmHg. The SEM-examination could confirm the porous character of fresh red thrombus and clotted graft materials.

Conclusion. Our tests concerning permeation of fluid through fresh red thrombus and thrombosed graft fabrics support the theory of thrombus formation inherently does not lead to a secure stentgraft-sealing. Similar results of persistent permeability were found for intraluminal (fibrinous) thrombus in aortic aneurysms. Even very small flow-rates through thrombus and thrombosed graft materials may – with time – lead to a systemic increase of pressure within an excluded aneurysm sac after EVAR and thus prevent a therapy success. Changes in stentgraft-design may solve this problem.

FEASIBILITY, SAFETY AND TOLERABILITY OF CONTINUOUS INFUSION OF ILOPROST BY ELASTOMERIC PUMP DEVICE IN PATIENTS WITH CRITICAL LEG ISCHEMIA

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Aim. The ILOPROST, stable analogue of prostacylin, is an option for patients with critical limb ischemia (CLI) who are no longer candidates or are at risk for revascularisation. Often these patients are hospitalised for at least 28 consecutive days to be treated, and the treatment consists in a continuous 6 hrs intravenous infusion, at dose from 0.5 to 2.0 ng/kg/min once daily. The aim of this study was to assess the patients' tolerability and compliance, of a continuous infusion 24 hrs, by a portable infusion system (elastomeric pump device) to reduce the hospitalisation time, and providing an effective treatment.

Methods. Twenty-four CLI-patients (20 men and 4 women), who were not candidates for revascularization have been treated in two different Italian Angiology Care Units (Padua and Sciacca). All patients given their informed consent regarding treatment and possible adverse events. Also their nearest relatives were informed and prompt physician referral was given by the units. After a 24 hrs hospitalisation in which the tolerable dosage was found, the elastomeric infusion pump device was applied and the patients was sent home. The dose varied between 25 and 50 micrograms per day, according to the patients' sensi-

tivity and to SPC (summary product characteristic). The treatment has been carried out for a medium period of 20 days. The considered end points were: rates of adverse events, amputations, deaths, complete relief or a marked reduction of pain, as well as the healing of ulcerations.

Results. No patients died; 2 patients needed major amputation. 16 patients significantly improved the healing of skin wound lesions, and 4 did not show any significant improvement. Pain was significantly reduced in 20 patients. The adverse events: 5 headaches, 4 flushings, 2 hypotensions. No patients complained cardiovascular symptoms and signs possibly related to the drug continuous infusion. The cumulative prevalence of adverse side effects reached the 12.5%, as reported by the GISAP study (Int Angiol 1994, 13:70-74), whilst the favourable results were 65%, more than GISAP.

Conclusion. Our results suggest that the portable elastomeric infusion of ILOPROST could be an interesting tool with a good safety, tolerability and compliance for the management of CLI-patients, reducing hospitalization. Larger perspective studies should be addressed.

PERFORATING VEINS ANATOMY FROM VISIBLE HUMAN PROYECT: VIDEO RECONSTRUCTION OF A FEMALE CORPSE

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Aim. Today, surgeons practice more of their tasks in 3D real looking images in 2D, this implies that they need to develop new perceptions and psychomotor skills. Recent studies? have shown that certain virtual applications from an educational context are assisting to change the behaviour of the curves of learning.

Methods. The sequential images obtained from the national Library of Medicine's Visible Human Project 3 have a resolution of 1 056 per 1 528 pixels and a memory size of 40 Gb, these images portray the 5 100 cryosections of human flesh, each measuring 0.33 mm wide, which were taken from a female corpse. These cryosections are being used to provide a tridimensional view of the venous anatomy of the lower limbs paying close attention to the perforating veins located in this area.

Results. The combination of these images provides a view of the segments of the body which recreates the spacial position of the perforating veins in the lower limbs y allows browsing.

Conclusion. This work synthesizes the three-dimensional reconstruction of the venous anatomy of a female corpse from the VHP's database. This was being used to obtain images of the perforating veins in the lower limbs based on the nomenclature of veins of the lower limbs published in the international interdisciplinary consensus. The images are used to help with the development of new forms of three-dimensional perceptions of learning about endovascular and minimal access practices. The images used in this conference video are really new and surprising.[1-3]

References

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PATENCY RATE AND COMPLICATIONS OF POLYTETRAFLUOROETHYLENE GRAFT COMPARED WITH POLYURETHAN GRAFT FOR HEMODIALYSIS ACCESS

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Aim. The survival of the patients requiring dialysis depends on a well functioning and long term patency of the vascular access for hemodialysis. Prosthetic vascular grafts are inevitably used for the patients whose vessels are unsuitable for an autogenous arterio venous (A-V) fistula. The purpose of this study was to compare the patency rate and associated complications using different types of grafts.

Methods. This prospective study was conducted on patients who did not have an appropriate vein for arteriovenous fistula from January 2004 thorough July 2006. They were divided into 2 groups, sex, and age and basic data matched. Polytetrafluroethylene (PTFE) and Polyurethane (PVAG) were the two types of grafts used in this study. The functionality of the graft was assessed immediately a day and 2 weeks after operation. The clinical follow up was performed each 3 month until 24 months.

Results. One year patency was reported to be 64% and 52% in PTFE and PVAG group, respectively. There was no significant difference in one and two year patency, number and types of complications, between PTFE and PVAG as vascular access.

Conclusion. It could be concluded that either PTFE or PVAG grafts can be used with the same expected outcomes.

PATHOLOGICAL TORTUOSITY AND ATHEROSCLEROSIS OF CAROTID ARTERIES ARE RISK FACTORS FOR RETINAL VEIN OCCLUSION

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Aim. To investigate ocular blood flow and blood flow in carotid arteries in patients with occlusion central retinal vein and its branches

Methods. 190 patients (190 eyes) with retinal vein