Experience of single pre-close device for percutaneous abdominal aortic aneurysm repair

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Background: Totally percutaneous endovascular abdominal aortic aneurysm repair by using multiple pre-close devices for large arteriostomy closure has been previously described. However they were needed more than 2 devices. Here we report the results of a percutaneous technique using single pre-close device.

Methods: A total of 60 sites in 30 consecutive patients (29 male; mean age 74.1 ± 7.1 years) with endovascular stent-graft treatment from May 2013 through March 2014 were required for large-bore sheath insertion. In 58 of 60 sites we performed percutaneous suture. Stent-graft devices were introduced through 20Fr (n = 2), 18Fr (n = 20), 16Fr (n = 24), 14Fr (n = 2), 12Fr (n = 10) sheaths. Two sites we chose cut-down suture. Because one femoral site was implanted stent and one had severe calcification. After deployment single pre-close device (Perico ProGlide), large-bore sheaths were inserted. After treatment hemostasis was achieved using pre-close sutures placed before procedure. If bleeding or oozing persisted manual compression was performed. All femoral site were followed physical examination, ankle brachial pressure index (ABI) and computed tomography angiogram (CTA).

Conclusions: Percutaneous closure technique using single pre-close devices is useful for hemostasis in endovascular stent-graft treatment for abdominal aortic aneurysm.

A NEW CONCEPT OF STENT: THE MULTILAYER FLOW MODULATOR STENT FOR THE TREATMENT OF THORACO ABDOMINAL AND ABDOMINAL AORTIC ANEURYSMS.

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Background: Thoraco Abdominal Aortic Aneurysms (TAAA) and Abdominal Aortic Aneurysms (AAA) are traditionally treated surgically but more and more by interventional procedures (endografts, fenestrated, branched grafts, chimney techniques).

We used a new concept of stent, the Multilayer Stent Flow Modulator (M.F.M) to treat these aneurysms (A) and try to avoid some major complications.

Methods: This selfexpandable M.F.M is a 3 D braided tube made of several inter-connected layers without any covering. We will explain and demonstrate the key principles of the stent leading to thrombosis, shrinkage of the A, eliminating the risk of rupture. Moreover, this M.F.M preserves the collateral branches allowing the possibility to cover any artery without compromising the flow (renal, digestive arteries, lumen aortic vessels...)

Results: Based on recent published series: our personal Moroccan series, 10 TAAA, 8 AAA in very high risk pts. o Technical success: 100% o At 30 days no neurological complication, branch patency 100% no death o During the follow up 3 death not device related. CT scan control at 1, 3, 6, 12, 18 months with calculation of A. Diameters and Volumes. o Collateral branches patency: 100%. o Progressive thrombosis and shrinkage of the aneurysmal sac depending on the size of the collaterals. o Significant mean diameter reduction between baseline and 6 months: 17.25 mm reduction for the transversal diameter 13.83 mm for the antero posterior diameter in the TAAA group. o Overtime the ratio thrombus volume / Total Volume is increasing and the ratio Residual Flow Volume / Total Volume is decreasing. - French registry: 23 pts, 30 day mortality: 0%. At 1 year: branch patency 97%, neurological complication 0%. - Other series: 48 pts. The problems of the thrombosis, shrinkage and volume reduction of the aneurysmal sac will be discussed. The complications rates with M.F.M appear lower in comparison with current endovascular techniques, and with surgery.

Conclusions: The M.F.M represents an alternative to current devices to treat TAAA and AAA. The first results are promising, it is a safe procedure with a low complication rate. No neurological complications are observed. A larger study is ongoing.

Quantitative Chemical Analysis and Antimicrobial Activity of a Novel Triple-Antimicrobial-Bonded Graft for Preventing Perioperative Aortic Infection

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Background: Several graft manufacturers have proposed using antibiotic-bonded grafts to prevent or treat graft infection. We tested our novel triple-antimicrobial-bonded graft’s ability to prevent infection for 8 weeks after implantation and used chemical assays to assess the graft’s potential to resist infection over this extended time period.

Methods: We added 9 Sinclair miniature pigs to our previous pilot cohort (n = 6). In the current phase, all pigs received a 6-mm vascular Dacron graft in the infrarenal portion of the abdominal aorta. Five pigs received grafts chemically bonded with a 60- mg/mL solution of rifampin, minocycline, and chlorhexidine; the other 4 pigs received unbonded grafts. Before implantation, the 5 bonded grafts and 3 of the unbonded grafts were immersed for 15 min in a 2-mL solution containing 1 to 2 × 107 CFU/mL Staphylococcus aureus (ATCC 29213); the 4th unbonded graft served as a control. After 8 weeks of observation, plasma levels of rifampin were measured by quantitative high performance liquid chromatography (HPLC) assay.

Results: All S. aureus–treated bonded grafts (n = 7) showed no bacterial growth on explantation. The unbonded, untreated grafts (n = 3) showed low level bacterial growth (1.8 × 103, 7.27 × 103, and 1.2 × 103 CFU/graft); S. cohnii sp urealyticus, but not S. aureus, was isolated, suggesting accidental direct perioperative contamination. Two pigs that of the group received S. aureus–treated (n = 5), unbonded grafts were euthanized because of severe infection with S. aureus (bacterial counts: 6.25 × 106 and 1.38 × 107 CFU/graft).

Conclusions: Our results suggest that triple-bonded aortic grafts prevented perioperative aortic graft infection for 8 weeks in a porcine model. Plasma levels of rifampin were sufficient to prevent or eradicate infection during that period and possibly for another 8 weeks thereafter. After this graft’s protective effects and safety have been further elucidated, its use may be recommended for in situ replacement of infected grafts and possibly for routine primary cases, especially in patients who are immunocompromised, have hostile abdomen, or undergo redo procedures.