

Results: At five years, 7.3% (CI 2.7–11.9%) of the elective intended to treat patients with EVAR had an increase in aneurysm diameter. 38.2% of patients were registered with endoleaks during the follow up period but only 5.7% had secondary procedures. 13% of patients had secondary procedures for other reasons. 12.2% of patients had early and 6.5% late complications during the follow up period. Aneurysm rupture was seen in 1.6% of patients. During the 5 years of follow up there was no statistical difference in standardized mortality ratio in patients treated with elective EVAR compared to the general population.

The 1 year mortality of those electively treated with open AAA repair and EVAR was 7.6%, and 6.3% respectively. There was no statistically significant difference seen in 1 year mortality between elective open operation and elective EVAR.

Conclusion: Adhering to proven indications for use of EVAR gives a low long-term risk for increased diameter, low mortality rate and low rate of secondary procedures in treated aortic aneurysms compared to other published results. With this approach no statistical difference in standardized mortality was seen in patients treated with EVAR compared to the general population. This is the case even if the risk for AAA rupture after treatment will still not be entirely excluded with EVAR. The strict application of EVAR does not increase the mortality from AAA even if the number of open repairs will increase.

Hypogastric Artery Management during EVAR

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Introduction: Hypogastric artery (HA) revascularization in patients affected by abdominal aortic aneurysm (AAA) and submitted to endovascular repair (EVAR) is open to debate. Aim of our study is to analyze the outcomes in patients undergoing EVAR with exclusion of one or both hypogastric arteries.

Methods: In a prospective series of EVAR patients needing HA exclusion, we retrospectively reviewed our results in terms of peri-operative (30 day) and follow up rates of intestinal and spinal cord ischemia, buttock claudication (BC), skin necrosis, and sexual dysfunction (SD) in male patients. In case of aneurysms involving a single common iliac artery or iliac bifurcation, the unilateral HA was excluded by coil embolization, vascular plug deployment or simple coverage by endograft. In case of aneurysms involving both iliac arteries revascularization of at least one hypogastric artery was attempted. Techniques of hypogastric salvage included branch devices, flow modulator stents, sandwich, and periscope and bell bottom techniques.

Results: From January 2008 to December 2014, 427 patients underwent elective EVAR; among those 104 (24.3%) had iliac involvement needing HA exclusion. In 73 patients with unilateral iliac involvement (70.1%, group UH) as many single hypogastric arteries were excluded. Thirty-one patients (29.9%) had bilateral iliac involvement (group BH): 16 of those (51.6%) had one HA excluded with revascularization of the contralateral one (group BHR); in the remaining 15 patients (48.4%) both hypogastric arteries were excluded (group BHE). No 30 day or follow up aneurysm related mortality, intestinal or spinal cord ischemia were recorded. At 30 days skin necrosis was observed in 2 patients. BC, and SD rates in group UH were 17.8% and 8.2% respectively; in group BH, BC and SD rates were significantly greater in group BHE than in group BHR (53.3% vs. 18.5% and 46.4% vs. 12.5%, respectively; $p < 0.05$). At a mean 18.6 months follow up (range 4–47), in group BHE, BC and SD rates were persistently higher than in group UH and BHR (respectively, 40% and 46.6% vs. 8.2% and 6.8% in UH, and 6.2% and 12.5% in BHR, $p < 0.05$). Data analysis disclosed that HA coil embolization was significantly associated with 30 days BC and SD (OR 3.92; 95% CI 1.27–12.1; $p < 0.05$).

Conclusion: Our results suggest that at least one HA should be salvaged in case of bilateral involvement. Unilateral HA exclusion seems to be related to acceptable complication rates at follow up. Coil embolization seems to be related to a higher peri-operative complications rate respect to plug or coverage.

Glycated Haemoglobin Influences the Growth Rate of Abdominal Aortic Aneurysms. A Sub Study from the Population based VIVA Randomised Screening Trial

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Introduction: Several studies have reported a paradoxically negative association between abdominal aortic aneurysms (AAA) and diabetes with a reduced prevalence and progression rate by almost half. However, reason remains unsolved and could be due to elevated blood sugar level, systemic level of insulin, medication or other factors. This study aimed to evaluate the role of elevated blood sugar, as glucose can induce cross-links in the extracellular matrix.

Methods: The cohort study was based on “VIVA”, the randomised clinically controlled screening trial of men aged 65–74 in Central Denmark Region. The screening included a questionnaire, ankle brachial index measurement and measurement of the abdominal aorta by ultrasound. Furthermore, follow up for up to five years were offered to AAA cases below 5 cm in diameter, while those above were referred for surgical evaluation. At follow up, full blood samples were drawn for glycated haemoglobin (HbA1c) and analysed.

We defined diabetes as HbA1c above 47 mmol/mol or an already verified diagnosis. The analyses were performed both as a conventional case-control study, comparing patients with AAA with and without diabetes, and as a cohort study concerning growth rate.

Results: At baseline, we found 619 (3.3%) AAAs. 114 were lost to follow up or referred for vascular evaluation. In addition, full blood samples were only possible at 9 of the 13 screening locations leaving 346 AAA patients. Sixty-nine (20%) had defined diabetes (38 with known diagnosis, 31 with high HbA1c). Compared with the patients without defined DM, the patients with diabetes differed in comorbidity seeing as they had more angina (20.9 vs. 13.0%), peripheral arterial disease (39.1 vs. 25.7%), and hypertension (71.0 vs. 50.4%). Median baseline aortic diameter was 35.4 vs. 34.0 mm with and without diabetes respectively ($p = 0.83$), while the median growth-rate was 1.66 vs. 2.66 mm/year with and without diabetes respectively ($p < 0.000$). We found a significant association between AAAs growth rate and HbA1c (Spearman's rho: -0.159, $p = 0.004$), but no association between the maximal antero-posterior AAA diameter and HbA1c (Spearman's rho: -0.088, $p = 0.112$).

Conclusion: Exploring the association between AAA and diabetes, we found an inverse relation between the growth rate of AAAs and the level of HbA1c indicating that long lasting elevated blood sugar impairs aneurysmal progression, probably by inducing cross links in the extracellular matrix.

Prosthetic Vascular Graft Infections: Cultures from NPWT Foams Are of No Value

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Introduction: In recent years prosthetic vascular graft infections are increasingly operated in a graft-preserving manner together with the use of negative pressure wound therapy (NPWT). The use of NPWT in vascular graft infection shortens the time to complete wound healing, has a high success rate, and the complication rate is low. During NPWT either polyurethane- or polyvinyl alcohol containing sponges are exchanged on a regular basis. The aim of this study was to compare bacteria retrieved from the NPWT-sponges with the bacteria detected by conventional methods in order to examine if microorganisms from NPWT sponges help to determine the bacterial burden of vascular wounds.

Methods: Diagnostic accuracy of NPWT sponges was assessed. The standard of reference was a microbiological culture, obtained after open biopsy or graft explantation. We calculated sensitivity, specificity, positive predictive (PPV) and negative predictive values (NPV).

Results: 109 negative pressure wound therapy treatment cycles were performed among 104 patients with prosthetic vascular graft infections.