

Selected Abstracts from the February Issue of the European Journal of Vascular and Endovascular Surgery

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The "Open" Chimney Graft Technique for Juxtarenal Aortic Aneurysms with Discrepant Renal Arteries

Ducasse E., Lepidi S., Brochier C., Deglise S., Berard X., Alberti D., Midy D. *Eur J Vasc Endovasc Surg* 2014;47:123-9.

Objectives: A straightforward original Chimney Graft (CG) protocol has been developed at our institution in selected cases of juxtarenal aortic aneurysm (JRAA). The aim of this study was to present our clinical experience of consecutive series with use of uncovered self-expanding stent (SES) as "Open Chimney" (OCh) in the endovascular repair (EVAR) of JRAA.

Methods: A standard endograft with suprarenal fixation struts is delivered with its proximal covered edge just below the highest RA in JRAA presenting the ostium of the two renal arteries at a different aortic level and the distance between the highest renal artery and the beginning of the aneurysm (improved landing zone) ≥ 10 mm. The low-lying renal artery is maintained patent by the OCh graft (standard SES) delivered from left brachial access (6 Fr). All clinical, anatomical, and operative data were prospectively collected and retrieved for the study analysis.

Results: From July 2010 to November 2012, OCh EVAR was offered to 22 consecutive patients considered unfit for JRAA open repair. All procedures were technically successful with aneurysm exclusion and patent OCh graft. One small perioperative type Ia endoleak spontaneously disappeared at the 3-month CT control. One patient died because of acute decompensated heart failure. One patient presented a left hemispheric stroke. The median follow-up of 18 months (range, 7-35) showed aneurysm exclusion in all patients without type I and III endoleaks, SES stenosis, and/or renal impairment.

Conclusions: OCh-EVAR is a straightforward technique that can be employed in selected cases of JRAA, avoiding the more complex and expensive fenestrated EVAR.

Measurement of Maximum Diameter of Native Abdominal Aortic Aneurysm by Angio-CT: Reproducibility is Better with the Semi-automated Method

Mora C., Marcus C., Barbe C., Ecarnot F., Long A. *Eur J Vasc Endovasc Surg* 2014;47:138-49.

Objectives: We sought to identify the technique yielding the best reproducibility from among various measures of native maximum abdominal aortic aneurysm (AAA) diameter with computed tomography angiography (CTA).

Methods: Ten parameters of maximum diameter in 68 native AAA were measured double-blind by three radiologists on orthogonal planes, curved multiplanar reconstructions, and, finally, using semi-automated software. The semi-automated software creates the AAA lumen centreline and automatically provides cross sections perpendicular to this centreline. The maximum diameter in any direction is automatically calculated once the slice of interest has been selected. Intra- and inter-observer reproducibility and discordance >5 mm were analysed.

Results: Intra-observer reproducibility was high. The limits of agreement were within the clinically accepted range $[-5; +5$ mm] in 27/30 (90%) comparisons. The method common to all three observers that yielded the lowest values was the semi-automated method. Inter-observer reproducibility was poorer. The limits were outside the clinically accepted range in 26/30 (87%) comparisons. The semi-automated method led to lower intra- (0%) and inter-observer (5.88%) discordance rates.

Conclusion: Even using precise methodology, the reproducibility of maximum diameter measurements of native AAA on CTA may exceed recommended thresholds. The semi-automatic method yielded the lower discordance rates and provided a more relevant anatomical approach for measuring the maximum diameter of an AAA.

Contemporary Treatment of Popliteal Artery Aneurysm in Eight Countries: A Report from the Vascunet Collaboration of Registries

Björck M., Beiles B., Menyhei G., Thomson I., Wigger P., Venermo M., Laxdal E., Danielsson G., Lees T., Troëng T. *Eur J Vasc Endovasc Surg* 2014;47:163-70.

Objectives: To study contemporary popliteal artery aneurysm (PA) repair.

Methods: Vascunet is a collaboration of population-based registries in 10 countries: eight had data on PA repair (Australia, Finland, Hungary, Iceland, New Zealand, Norway, Sweden, and Switzerland).

Results: From January 2009 until June 2012, 1471 PA repairs were registered. There were 9.59 operations per million person years, varying from 3.4 in Hungary to 17.6 in Sweden. Median age was 70 years, ranging from 66 years in Switzerland and Iceland to 74 years in Australia and New Zealand; 95.6% were men and 44% were active smokers.

Elective surgery dominated, comprising 72% of all cases, but only 26.2% in Hungary and 39.7% in Finland, ($P < .0001$). The proportion of endovascular PA repair was 22.2%, varying from 34.7% in Australia, to zero in Switzerland, Finland, and Iceland ($P < .0001$). Endovascular repair was performed in 12.2% of patients with acute thrombosis and 24.1% of elective cases ($P < .0001$). A vein graft was used in 87.2% of open repairs, a synthetic or composite graft in 12.7%.

Follow-up was until discharge or 30 days. Amputation rate was 2.0% overall: 6.5% after acute thrombosis, 1.0% after endovascular, 1.8% after open repair, and 26.3% after hybrid repair ($P < .0001$). Mortality was 0.7% overall: 0.1% after elective repair, 1.6% after acute thrombosis, and 11.1% after rupture.

Conclusions: Great variability between countries in incidence of operations, indications for surgery, and choice of surgical technique was found, possibly a result of surgical tradition rather than differences in case mix. Comparative studies with longer follow-up data are warranted.

The Angiogenic Effects of Ischemic Conditioning in Experimental Critical Limb Ischemia

Karakoyun R., Koksoy C., Yilmaz T.U., Altun H., Banli O., Albayrak A., Alper M., Şener Z. *Eur J Vasc Endovasc Surg* 2014;47:171-8.

Objectives: Ischemic conditioning (IC) is a method of angiogenic stimulus for limb ischemia. Here, we aimed to investigate the effects of short-term repeated ischemic stimulus on critical lower limb ischemic injury.

Methods: Rats were divided into four groups consisting of 40 animals in each group: sham, ischemia, local IC, and remote IC groups. Right-leg critical limb ischemia was achieved through ligation of the iliac artery and vein in male Sprague-Dawley rats except the sham group. Repeated transient ischemia using the tourniquet method was used for IC of lower extremities in the local and remote groups. IC was performed on the right leg for the local group and on the left leg for the remote group. Ten rats in each group were sacrificed for evaluation on days 1, 7, 14, and 30. Endothelial progenitor cell (EPC) counts were measured. Gastrocnemius muscles were evaluated for the degree of ischemia. Laser Doppler blood flow measurements were performed in order to make comparison between the blood flows of the limbs of the groups.

Results: The blood flow in the right limb of rats in the sham (1.65 perfusion units [PU]) and local IC (1.67 PU) groups was significantly higher than the ischemic group (1.17 PU) ($P = .001$ and $P = .022$ respectively). The levels of EPCs in the ischemia (1.09 ± 0.5) and remote IC groups (1.36 ± 0.8) were significantly higher than the sham (0.38 ± 0.2) group on day 7 ($P = .026$ and $P = .002$ respectively). Remote IC and local IC groups exhibited increased histopathological ischemia on day 7 when compared with sham group ($P = .001$, $P = .01$ respectively). The angiogenic scores on the 7th, 14th and 30th days for local IC and remote IC groups were significantly higher than sham and ischemia groups.

Conclusions: IC seems to be the potent activator of angiogenesis in ischemic tissue. This study provides preliminary data showing that repeated short ischemic stimuli may reduce critical ischemic injury by promoting angiogenesis.