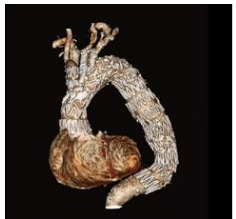
KIDNEY AND COMPLEX ANEURYSMS:

The real story

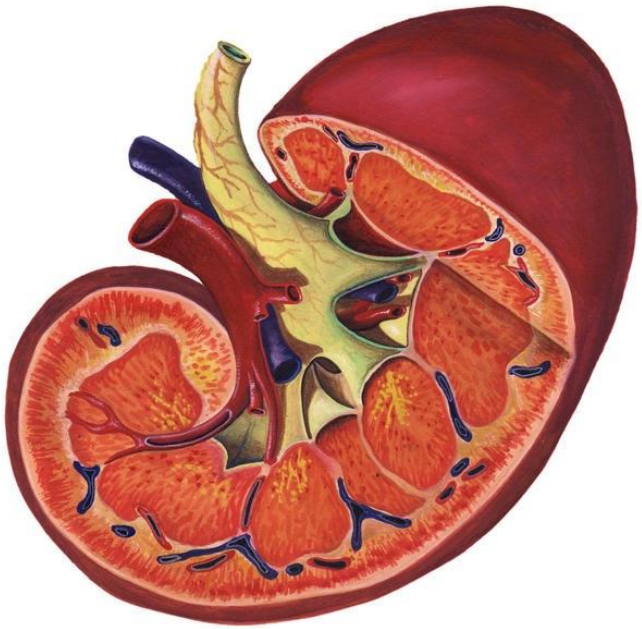
T Martin-Gonzalez, A Hertault, R Spear, J Sobocinski, R Clough, R Azzaoui, S Haulon

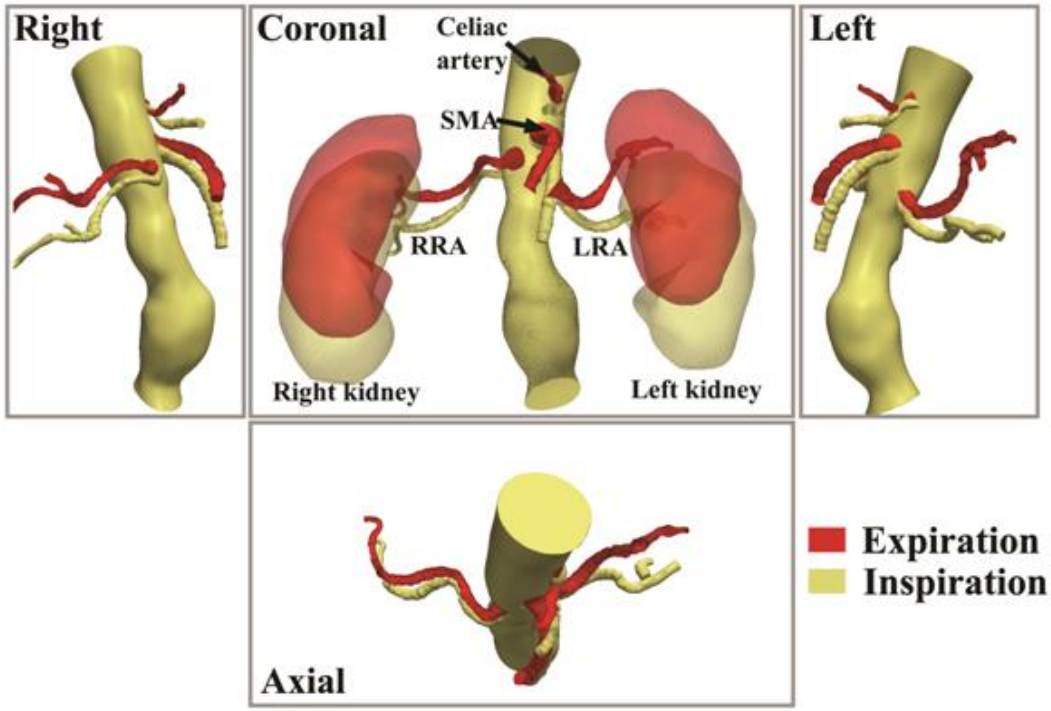
Aortic Center, CHRU Lille

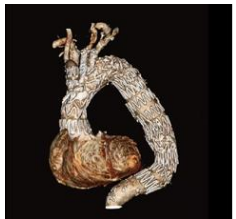


20TH INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES
in aortic endografting 2016
May 20 & 21 - LILLE - FRANCE

Introduction







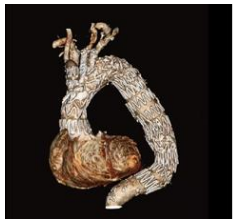
Introduction

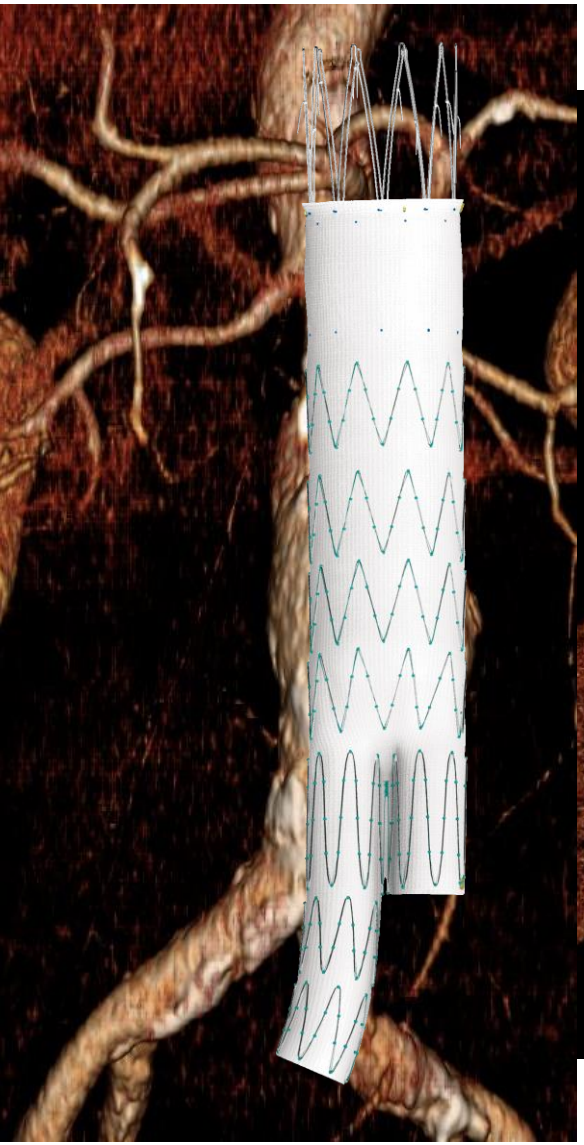
- Postoperative renal impairment → +++ complication
- Several definitions renal impairment

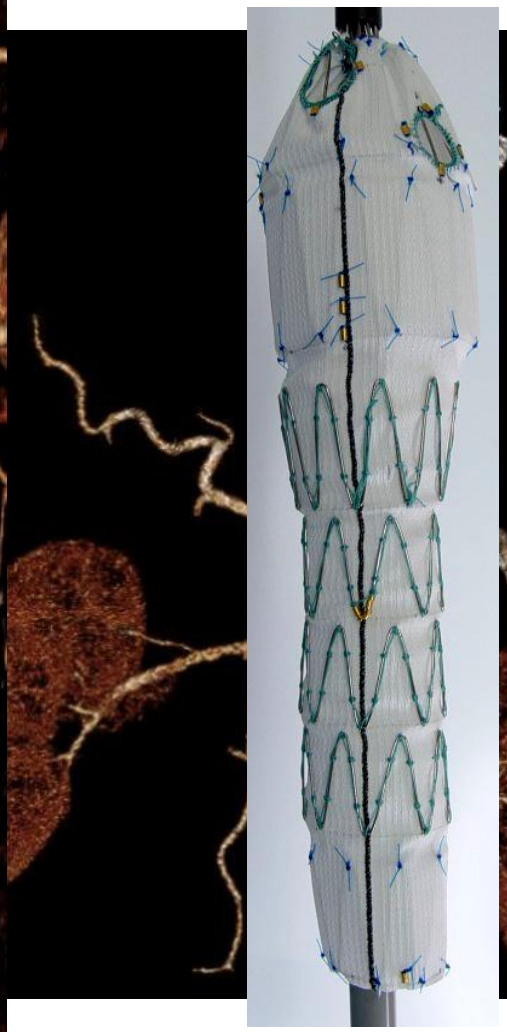
Katsargyris A, Oikonomou K, Klonaris C, Töpel I, Verhoeven ELG. Comparison of outcomes with open, fenestrated, and chimney graft repair of juxtarenal aneurysms: are we ready for a paradigm shift? J Endovasc Ther Off J Int Soc Endovasc Spec 2013;20(2):159–69.

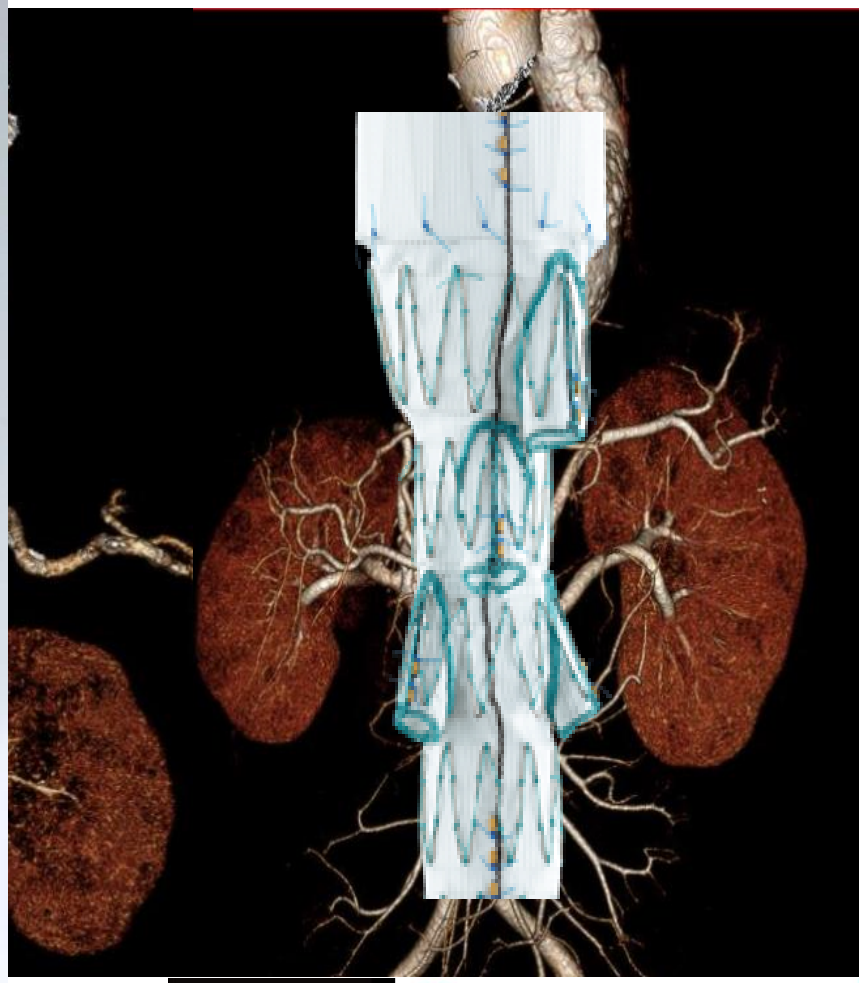
Kristmundsson T, Sonesson B, Dias N, Törnqvist P, Malina M, Resch T. Outcomes of fenestrated endovascular repair of juxtarenal aortic aneurysm. J Vasc Surg 2014;59(1):115–20.

- Poorly description mid- and long-term renal function









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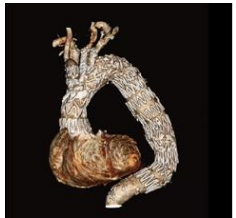
Study 1

Renal outcomes analysis after endovascular and open aortic aneurysm repair

Teresa Martin-Gonzalez, MD, Claire Pinçon, PhD, Adrien Hertault, MD, Blandine Maurel, MD, PhD, Damien Labbé, MD, Rafaëlle Spear, MD, PhD, Jonathan Sobocinski, MD, PhD, and Stéphan Haulon, MD, PhD, *Lille, France*

JVS 2015

- Compare renal outcomes EVAR/OR
- eGFR MDRD – RIFLE classification
- Renal volume



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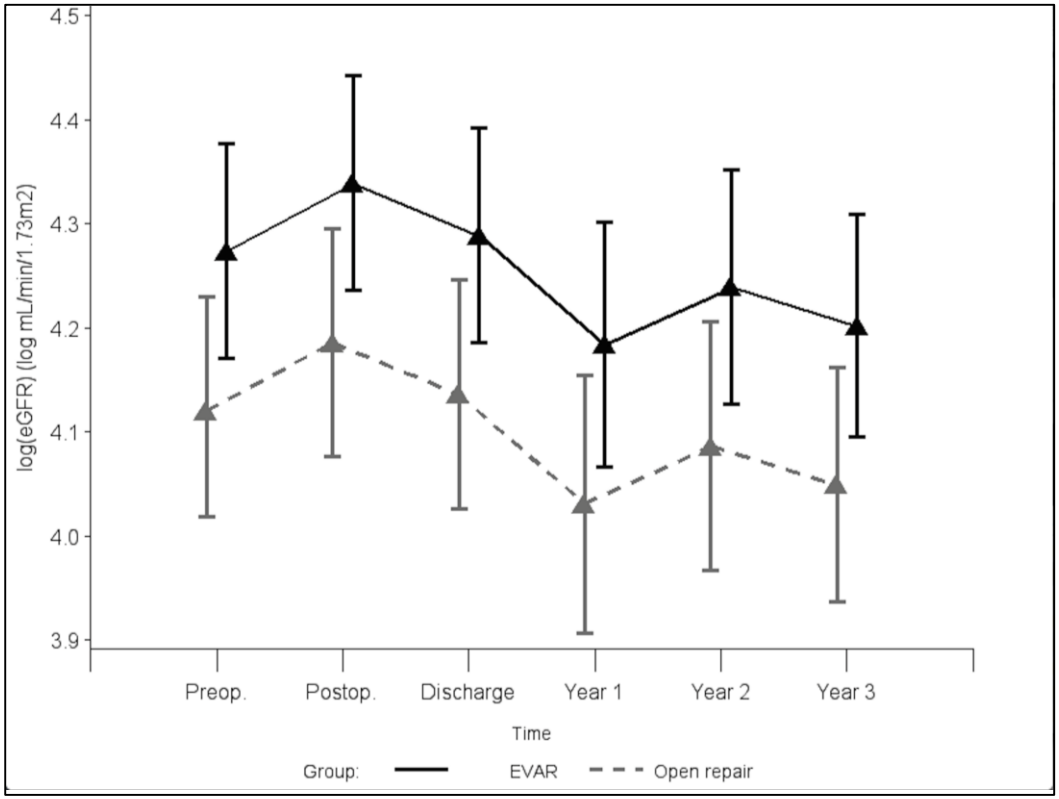
JVS 2015

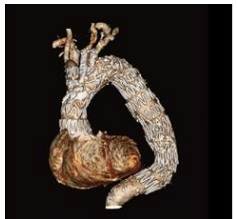
eGFR during FU (OR vs EVAR)



Decrease with time:

1-year (p=0.002)

3-year (p=0.0007)



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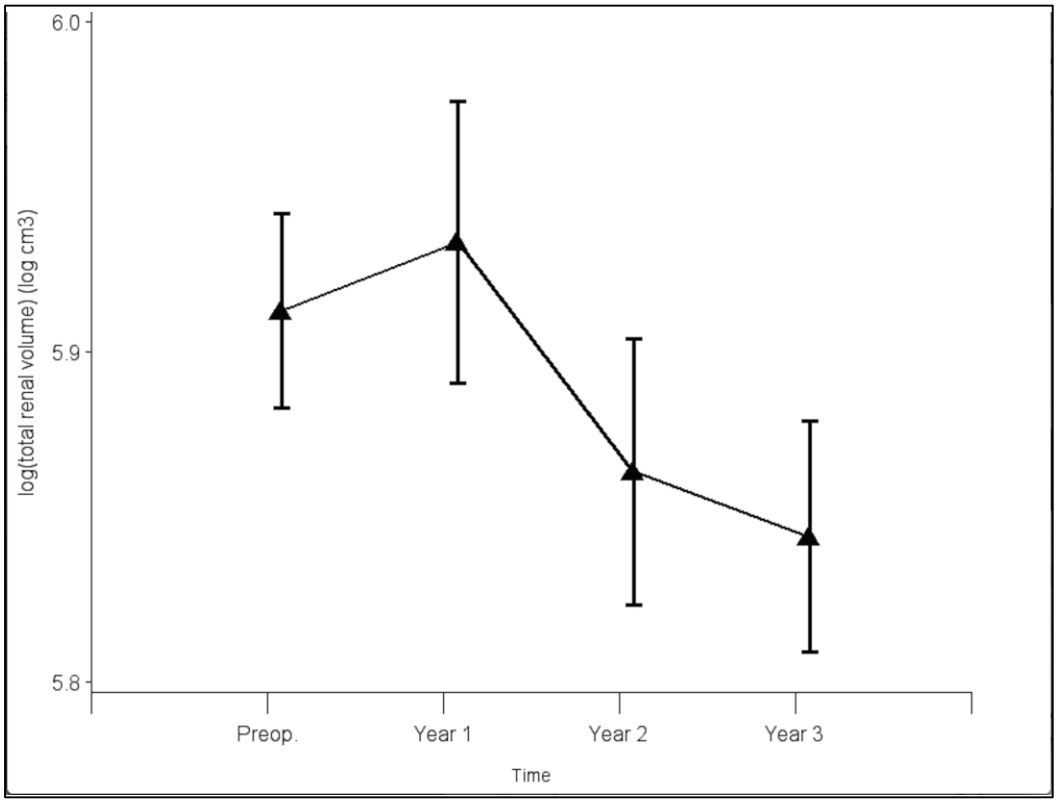
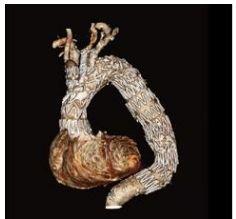
JVS 2015

Total renal volume during FU (OR vs EVAR)



- Decrease with time (p=0.008)
- Decrease 16% per log ml/min/1.73m^2



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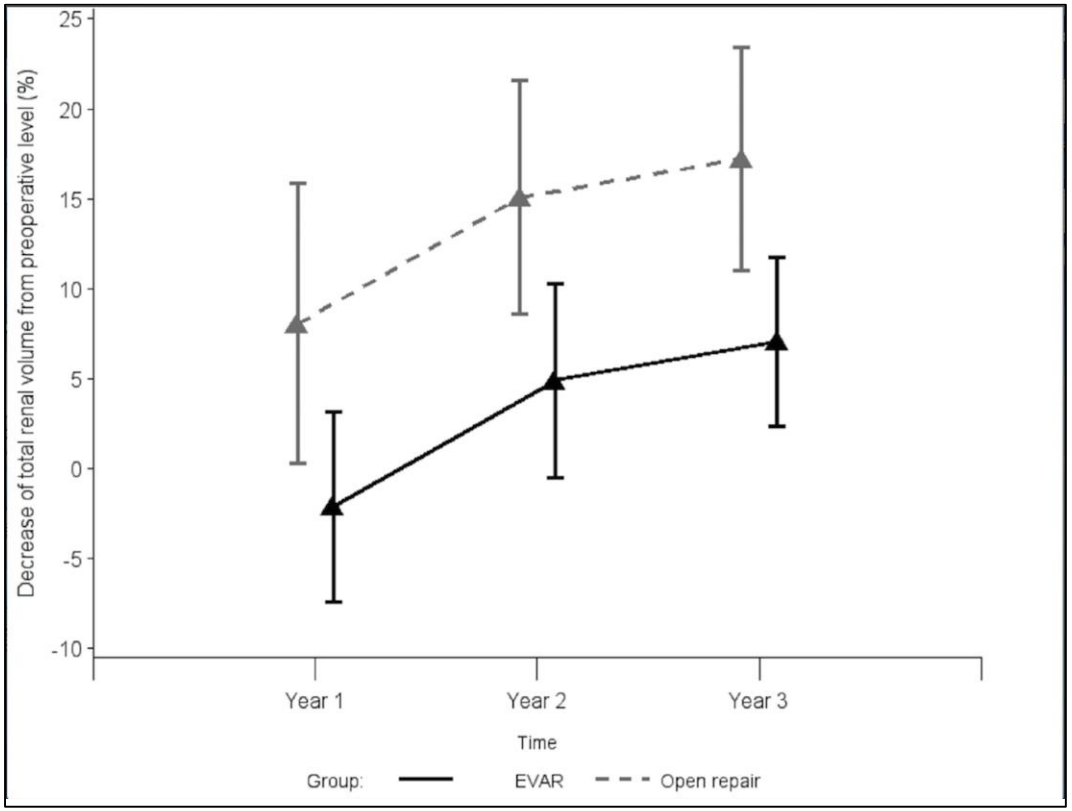
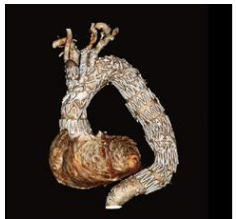
Decrease in total renal volume during FU (OR vs EVAR)



- Significant decrease at 3y-FU (p=0.01)
- Greater mean decrease in OR



Study 2

Renal Outcomes Following Fenestrated and Branched Endografting

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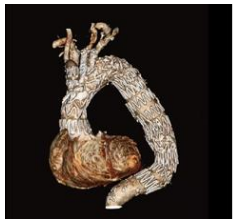
- Renal outcomes after complex FEVAR/BEVAR
- eGFR MDRD – RIFLE classification
- Renal volume and length and angulation
- Renal composite outcomes

(kinking, fracture, stenosis, occlusion, endoleak)



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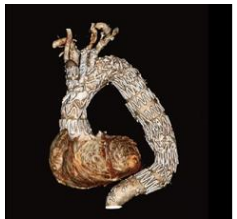
Postoperative acute renal failure (RIFLE)

- RIFLE criteria → 29% (64 patients)
- Higher mortality before 6 months
- 41% returns to baseline level at 1 year
- Preoperative CKD increase risk ARF
  (OR=5.880 [2.745; 12.595], p<0.0001)



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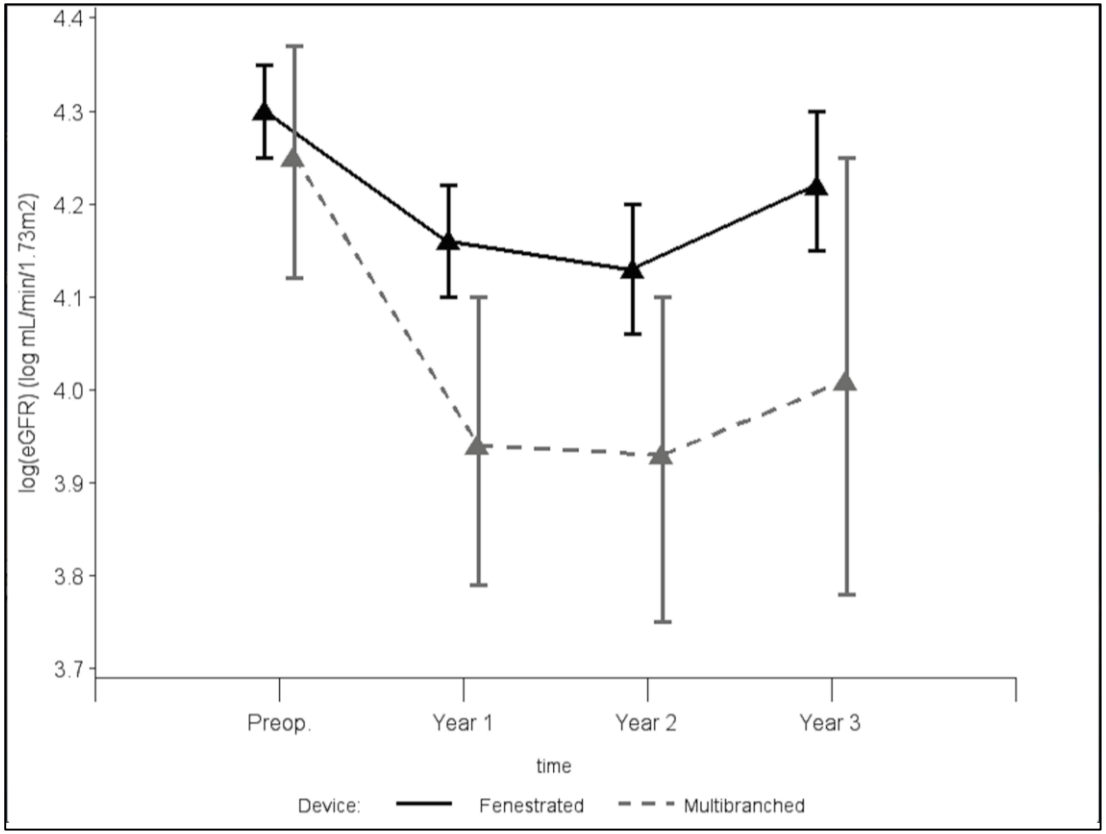
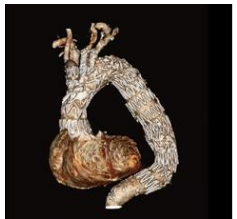
eGFR during FU (FEVAR vs BEVAR)



- Decrease with time ($p<0.0001$)



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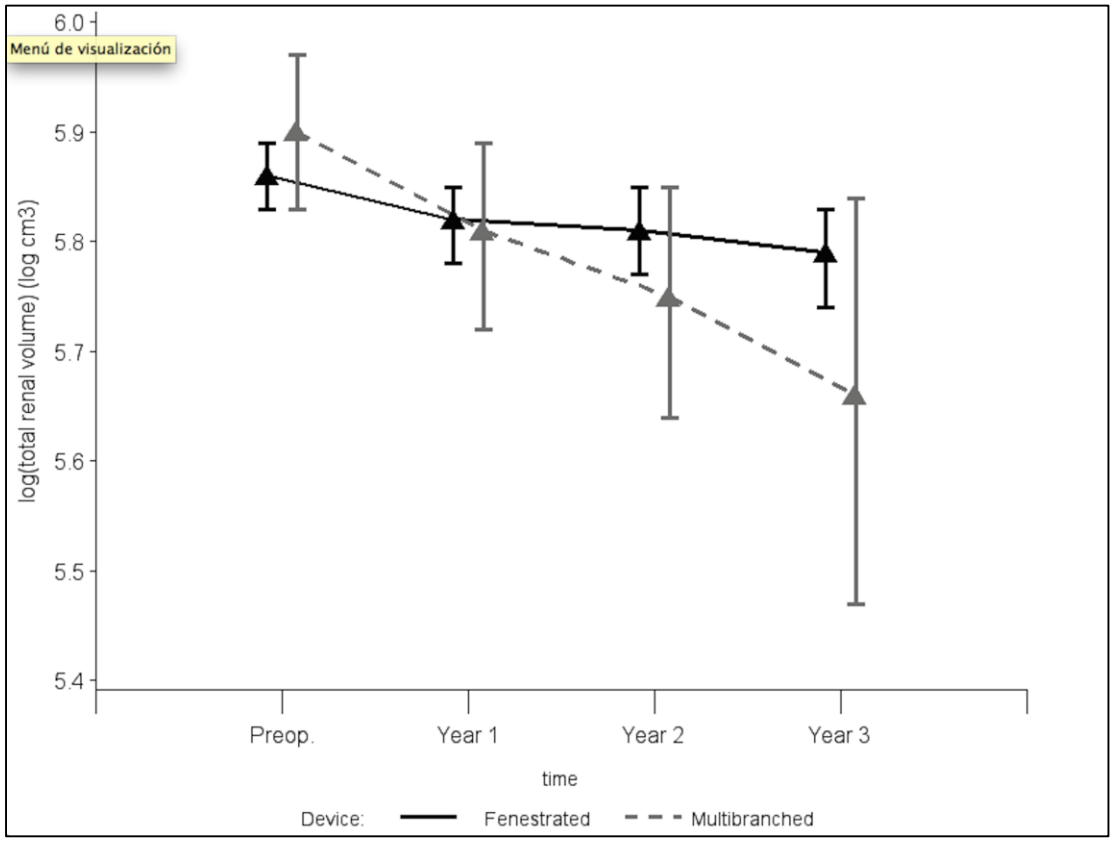
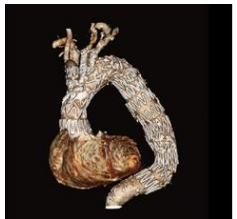
Total renal volume during FU (F vs B)



- Decrease with time (p=0.0006)
- Patients with eGFR>20% → higher volume decrease (p=0.03)



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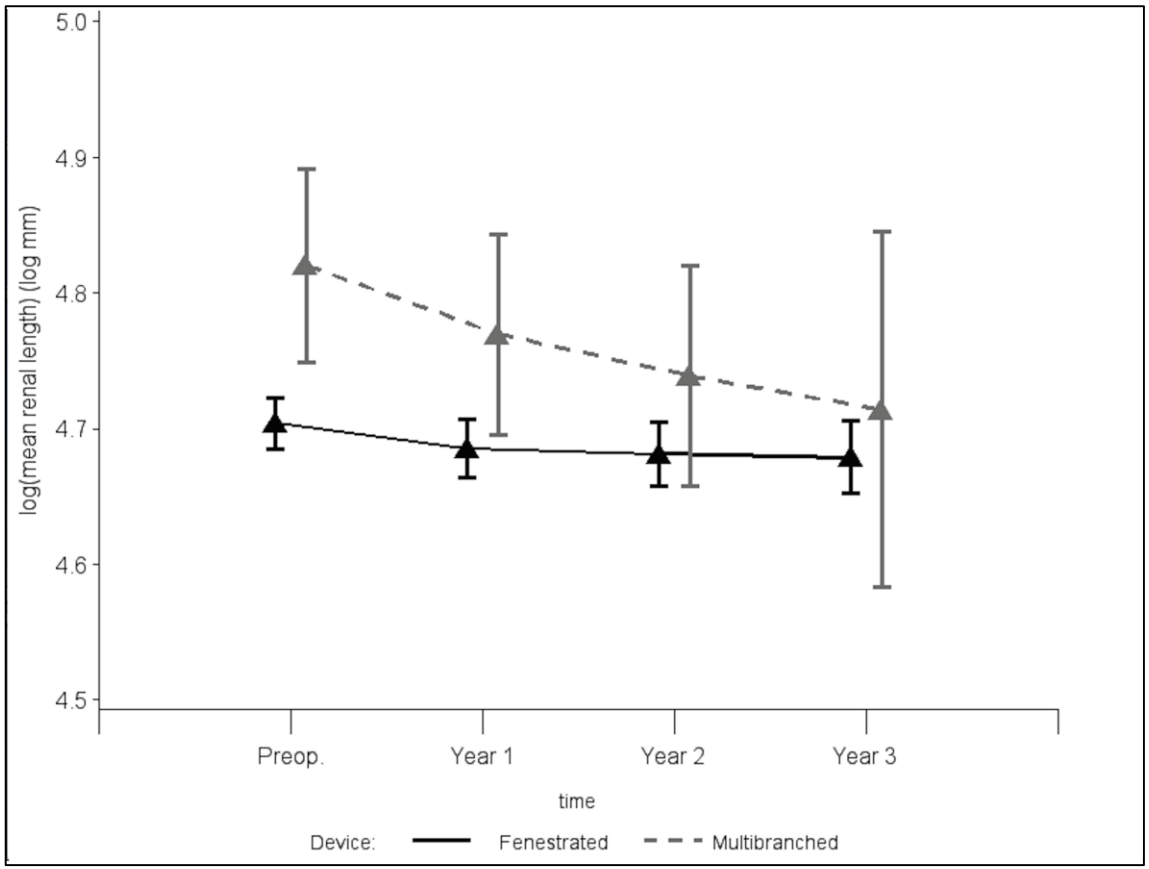
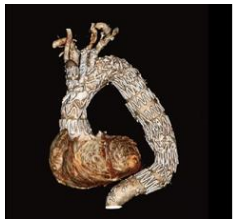
Mean renal length during FU (F vs B)



- Decrease with time (p=0.02)
- Patients with eGFR>20% → no significant decrease



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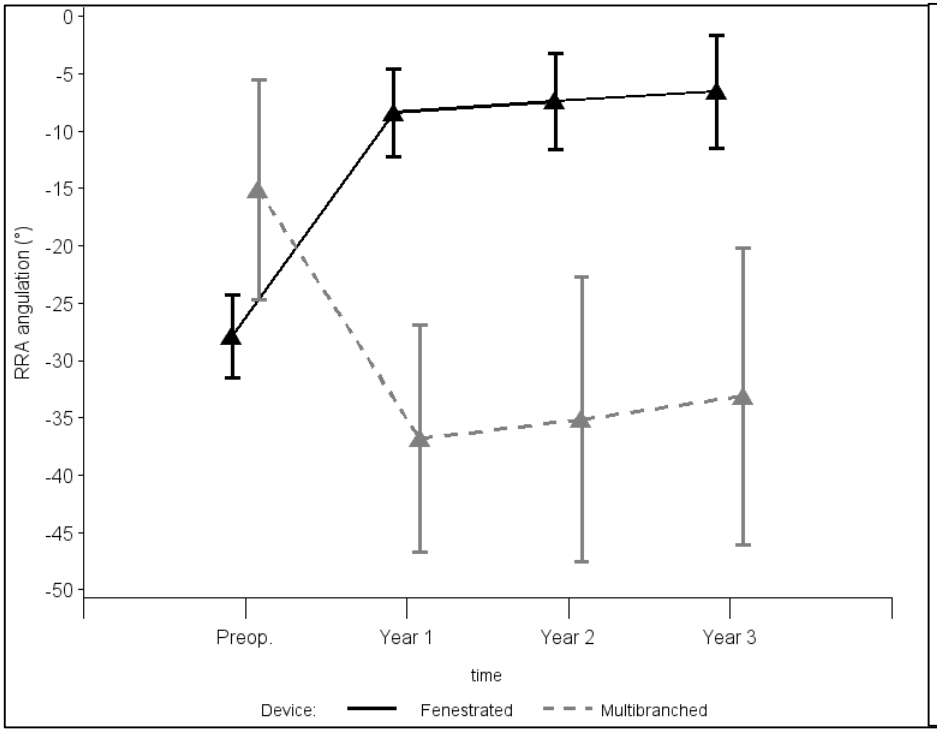
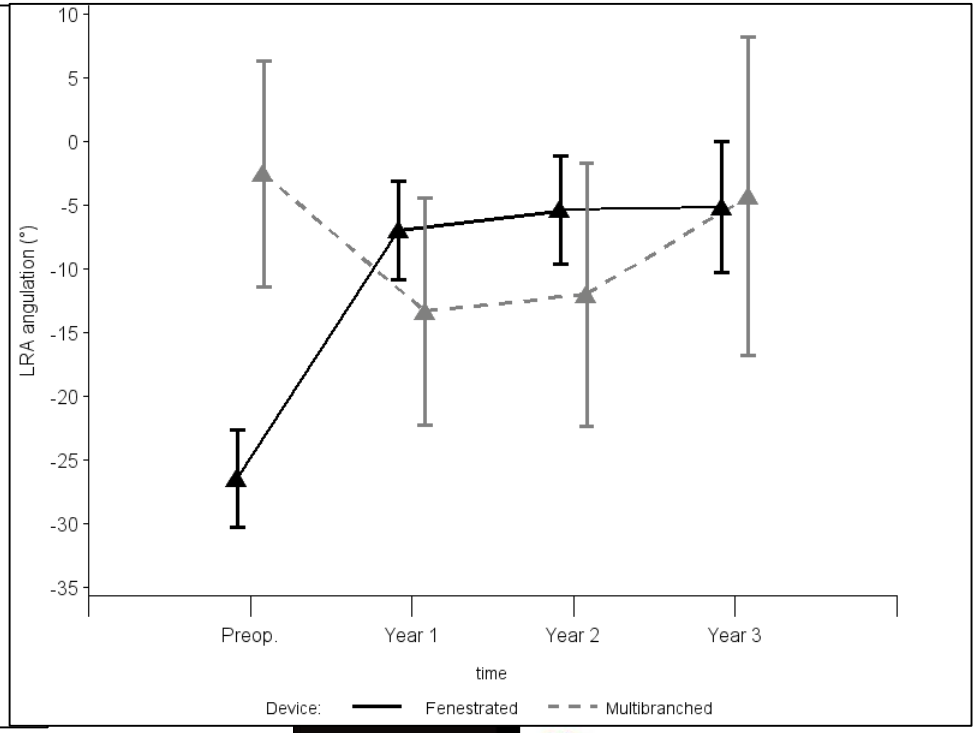
Renal artery angulation (F vs B)

RRA



LRA



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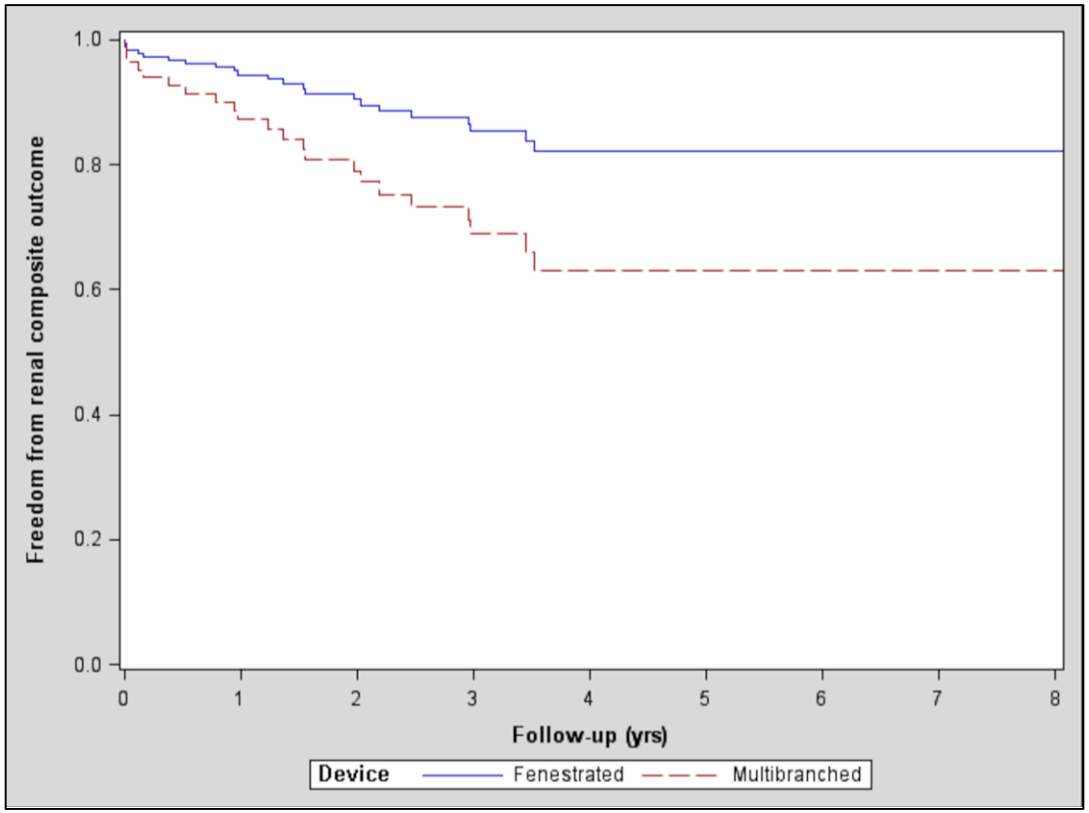
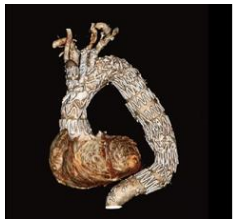
Renal composite outcomes



- 30-day:
  99% [95.8; 99.6]
- 5-year:
  85% [76.5; 89.9]

CI 95%



Eur J Vasc Endovasc Surg (2016) 51, 536–542

Editor's Choice – Effect of Branch Stent Choice on Branch-related Outcomes in Complex Aortic Repair☆

T.M. Mastracci [a,*], T. Carrell [b], J. Constantinou [a], N. Dias [c], T. Martin-Gonzalez [d], A. Katsargyris [e], B. Modarai [b], T. Resch [c], E.L.G. Verhoeven [e], M. Burnell [f], S. Haulon [d]

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[b] Academic Department of Vascular Surgery, Cardiovascular Division, King's College London, BHF Centre of Research Excellence & NIHR Biomedical Research Centre at King's Health Partners, St Thomas' Hospital, London, UK
[c] Vascular Center, Department of Hematology and Vascular Diseases, Skåne University Hospital, Malmö, Sweden
[d] Universite of Lille, Lille, France
[e] Department of Vascular and Endovascular Surgery, Paracelsus Medical University, Nuremberg, Germany
[f] University College London, London, UK

WHAT THIS PAPER ADDS

Endovascular repair of thoracoabdominal aneurysms is becoming mainstream, and as the procedures become more commonplace, it is important to refine the techniques to ensure a durable repair. In this study, the combined experience of five centres with branch-only complex endografts was used to determine if the type of mating stent had any impact on outcome. It was found that anatomic location, rather than type of stent used, was more likely associated with poor branch outcome.

Objectives: The use of branched stent grafts for the treatment of thoracoabdominal aneurysms [TAAA] is increasing, but mating stent graft choice has not been studied. This study combined experience of five high volume centres to assess a preferred mating stent.

Methods: Data from five centres were retrospectively combined. Patients were included if they underwent stent graft for treatment of TAAA that used only branches to mate with visceral and renal vessels. All patients with fenestrations in their device were excluded. Perioperative details, reintervention, occlusion, and death were recorded. Outcome of occlusion or reintervention, as well as a composite outcome of any death, occlusion, or reintervention was planned using a per-patient, and per-branch analysis.

Results: In 235 included patients, there were 940 vessels available for placement of mating stent. The average age of included patients was 70 years (SD 7.9), and 179 of the 235 were male. Medical comorbidities included diabetes in 29/234 (12.4%), current smoker in 81/233 (34.8%), and COPD in 77/234 (32.9%). The primary stent deployed was self-expanding in 556 branches, balloon expandable in 231 branches, and was unknown in 92 branches. After a mean of 20.7 months (SD 25) follow-up, there have been 44 incidents of occlusion or reintervention, of which 40 culprit stents are known. Where the stent placed is known, the event rate in renal branches (35/437, 8%) is higher than that of visceral branches (8/443, 1.8%). There is no difference in occlusion or reintervention between self-expanding and balloon expandable stents (HR 0.95, $p = .91$) but there is a statistically significant difference between renal and visceral artery occlusions (HR 3.51, $p = 0.001$).

Conclusion: There appears to be no difference in occlusion or reintervention rate for branch vessels mated with balloon expandable compared with self-expanding stents. Renal events appear to outnumber visceral events in this population.

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Keywords: Balloon expandable, Branched endograft, Self expanding stents, Thoracoabdominal aneurysm

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Study 3

Mid-term Outcomes of Renal Branches Versus Renal Fenestrations for Thoraco-abdominal Aneurysm Repair☆

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[e] General Hospital Nuremberg, Paracelsus Medical University, Nuremberg, Germany

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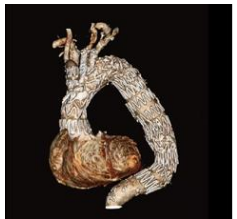
FEVAR vs BEVAR

- Renal occlusion
- Renal related secondary interventions
  (kinking, fracture, stenosis, occlusion, endoleak)
- Branch instability
  (occlusion or renal related secondary intervention, *Mastracci JVS 2013*)
- Renal function (eGFR MDRD equation)



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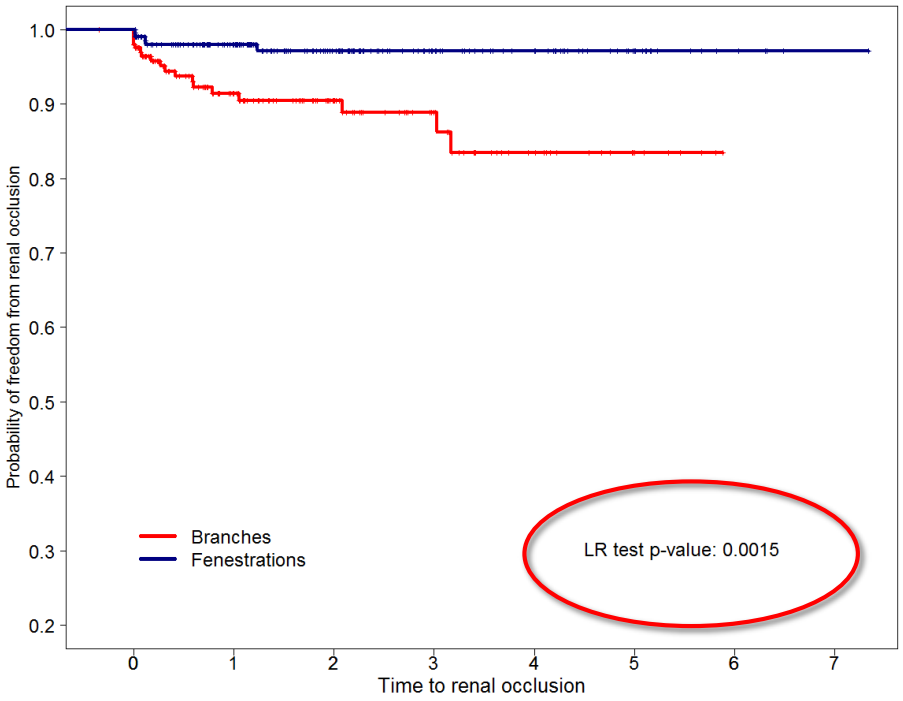
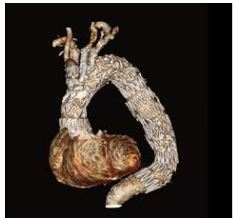
Renal occlusion



- 30-day freedom:
  - BEVAR→ 96%
  - FEVAR → 99%

- 2-year freedom:
  - BEVAR → 90%
  - FEVAR → 97%

Year of Follow-up	0	1	2	3	4	5
Patients at risk Renal Branch	201	97	61	35	18	7
Patients at risk Renal Fen	205	144	87	48	34	16



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T. Martin-Gonzalez [a], T. Mastracci [b], T. Carrell [c], J. Constantinou [b], N. Dias [d], A. Katsagyris [e], B. Modarai [c], T. Resch [d], E. Verhoeven [e], S. Haulon [a,*]

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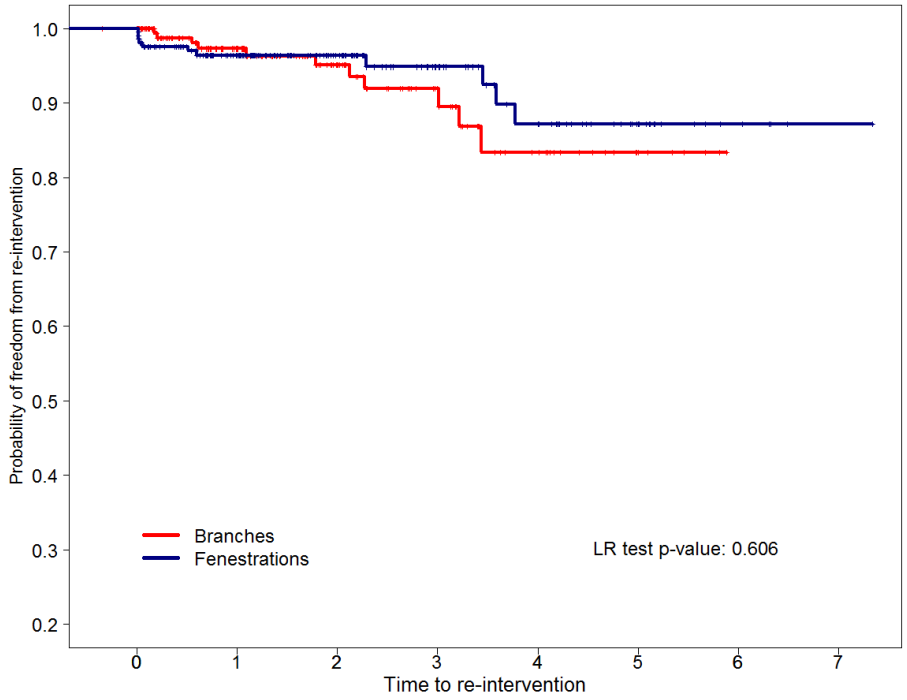
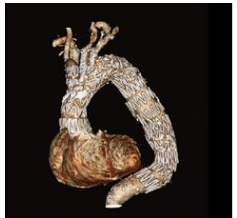
Renal related secondary intervention



- 15 BEVAR group (1 early)
- 11 FEVAR group (5 early)

Year of Follow-up	0	1	2	3	4	5
Patients at risk Renal Branch	201	101	64	38	20	7
Patients at risk Renal Fen	207	143	85	48	33	16



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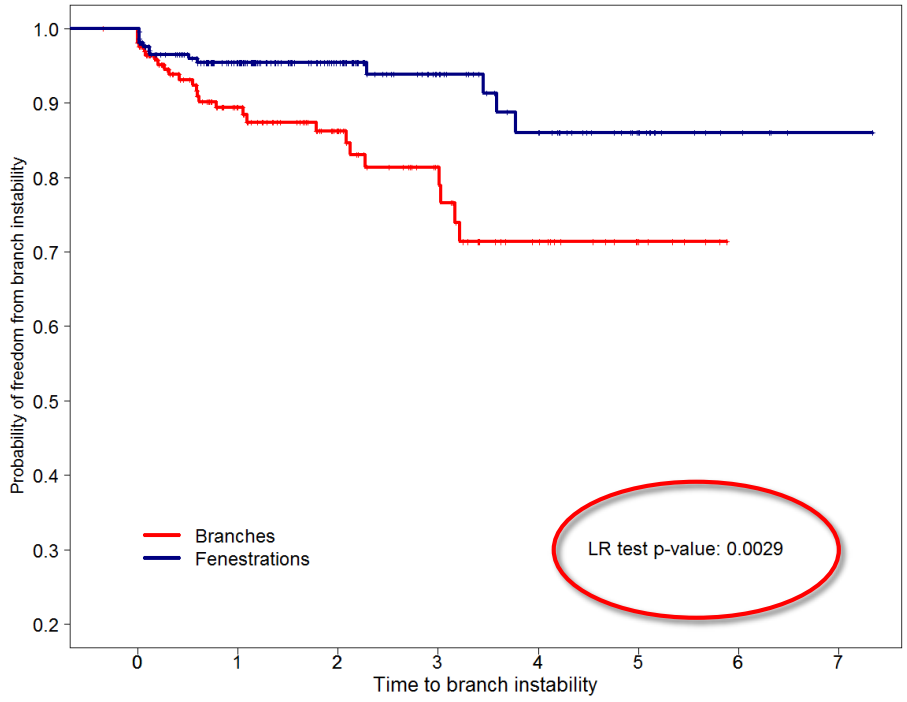
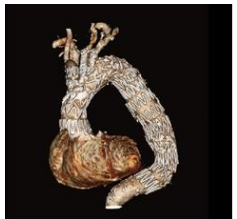
Branch instability (renal occlusion + secondary intervention)



- 30-day freedom :
  - BEVAR → 96%
  - FEVAR → 98%
- 2-year freedom:
  - BEVAR → 86%
  - FEVAR → 95%

Year of Follow-up	0	1	2	3	4	5
Patients at risk Renal Branch	202	95	60	34	18	7
Patients at risk Renal Fen	207	142	84	47	32	16



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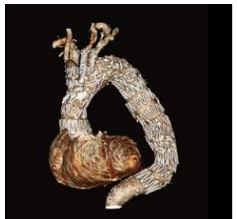
Renal function

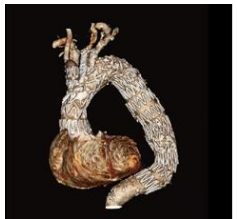
- Median decrease eGFR (preoperatively-last available follow-up):
  - BEVAR 12%
  - FEVAR 9%

(P=NS)



Conclusions

- Similar renal impairment evolution during FU after OR-EVAR
- FEVAR – BEVAR → durable option + low renal morbidity
- Renal volume ≥ eGFR > sCr
- Renal fenestrations seem to be associated with improved mid-term patency rates



Thank you for your attention