Open Repair of Juxtarenal Aortic Aneurysm is Durable with Preservation of Renal Function
A Multicenter study

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Juxtarenal Aortic Aneurysm
Extending up but not involving the renal arteries
Not accessible to standard EVAR 10% in our practice

Objectives
Evaluate the risk of surgical complications and renal insufficiency in a contemporary multicenter series of 315 open juxtarenal AAA repairs in fit patients

Excluded
- Ruptured, primary infected AAA
- Unfit patients: FEV1<1L, LVEF<40%, recent MI

Included
- Obese patients
- Inflammatory AAA

FEVAR/CH-EVAR (n=58)

Methods
- Recruitment from 2005 to 2015
- 315 consecutive open juxtarenal AAA repairs
- 5 French Academic Centres
  - Toulouse
  - Marseille
  - Poitiers
  - Saint-Etienne
  - Clermont-Ferrand

OUTCOMES
Postoperative period
- Death
- Acute kidney insufficiency (AKI): RIFLE criteria

Long-term follow-up
- Freedom from chronic renal decline
- Freedom from any graft related complications
**PREOPERATIVE RENAL STATUS**

- **N=242 (77%)**
  - Chronic Kidney Disease (eGFR >60 mL/min/1.73)
  - CKD CLASS [30-59] 21%
  - CKD CLASS [15-29] 2%
- **N=68 (21%)**
  - CKD CLASS [30-59] 21%
  - CKD CLASS [15-29] 2%
- **N=5 (2%)**
  - 23% Baseline Chronic Kidney Disease

**LEVEL OF AORTIC CLAMPING**

- Aortic clamping time 24 ± 7 min
- No renal bypass
- 11 renal artery stenoses treated conservatively

**TECHNIQUE**

- Left retroperitoneal 68%
- Median laparotomy 32%

**POSTOPERATIVE RESULTS**

**POSTOPERATIVE ACUTE KIDNEY INSUFFICIENCY**

<table>
<thead>
<tr>
<th>OUTCOMES (RIFLE criteria)</th>
<th>VALUES</th>
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</thead>
<tbody>
<tr>
<td>RIFLE 0-1: No risk</td>
<td>263 (83%)</td>
</tr>
<tr>
<td>RIFLE 2: Injury (transient rise in creatinine)</td>
<td>38 (12%)</td>
</tr>
<tr>
<td>RIFLE 3: Failure</td>
<td>6 (2%)</td>
</tr>
<tr>
<td>RIFLE 4: Loss, temporary dialysis</td>
<td>9 (3%)</td>
</tr>
</tbody>
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**PREDICTORS OF ACUTE KIDNEY INSUFFICIENCY**

<table>
<thead>
<tr>
<th>Predictors of AKI</th>
<th>LOGISTIC REGRESSION</th>
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<tbody>
<tr>
<td>CKD with eGFR&lt;60</td>
<td>2.25 [1.13-4.48]</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.15 [1.48-6.71]</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3.38 [1.33-8.57]</td>
</tr>
<tr>
<td>Age &gt; 70 years</td>
<td>1.05 [1.01-1.10]</td>
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The level of aortic clamping and its duration were not associated with an increased risk of AKI.
CHRONIC RENAL DECLINE

**RENAL EVENTS**
- Chronic Renal Decline* 25 (7.9%)
- Permanent Hemodialysis 1 (0.3%)

* eGFR>60 mL/min/1.73m² or eGFR reduction>20% or permanent hemodialysis

**PREDICTORS OF CHRONIC RENAL DECLINE**

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>HR 95% CI</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td>CKD [eGFR&lt;60] a</td>
<td>2.93 [1.19-7.20]</td>
<td>.019</td>
</tr>
<tr>
<td>AKI [RIFLE 2-4] b</td>
<td>15.82 [5.26-40.54]</td>
<td>.001</td>
</tr>
<tr>
<td>Diabetes c</td>
<td>4.56 [1.57-13.17]</td>
<td>.005</td>
</tr>
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FREEDOM FROM CHRONIC RENAL DECLINE

5-year Freedom from CRD was significantly better in patients with a normal preoperative renal function

LONG-TERM COMPLICATIONS

- Renal artery occlusion 2 (0.7%)
- Visceral aorta aneurysm 1
- Thoracic aneurysm 8

FOLLOW-UP
- Median Follow-up: 5 years
- CT scan in 290 patients (93%)

Take-away message
- Low 30-day mortality (0.9%) of OSR in fit patients with juxtarenal AAA
- Durable results at 5-year follow-up

For more details

Eur J Vasc Endovasc Surg. 2019 Sep 14.