Management of AAA and coexistent diseases.

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Risk factors of AAA

- Advanced age
- Coronary artery disease
- Atherosclerosis
- High cholesterol levels
- Hypertension
- Smoking
- Genetic factors
Synchronous diseases

- Cholecystolithiasis
- Malignancy (CRC, stomach Ca, renal Ca etc.)
- Diverticulosis
- Hernia

*Incidence increases in ageing population*

Pedrazzani C et al. Hepatogastroenterology 2006; 53: 973-975
Synchronous malignancies

• AAA + colorectal carcinoma........0.5-2%

• AAA + stomach carcinoma............3.8 %

• AAA + hepatocellular carcinoma...0.4 %

• AAA + renal carcinoma................1.3 %

Dual pathology
( cancer of GIT)

• Significant surgical challenge
• Great controversies in treatment approach

• Simultaneous or staged approach?

Shalhoub J. et al, Eur J Vasc Endovasc Surg, 2009; 37, 544-556
Simultaneous approach

**PROPONENTS**

- Excellent results
- No delay of treatment of either pathology
- Minimising risk of rupture, progression of malignancy
- Short hospital stay

**OPONENTS**

- Risks of graft infection
- Long operating procedure
- High patients op. stress
- Higher complication rate


# Staged procedures

## Malignancy first
- **Operation:**
- Collagen lysis
- Nutritional depletion
- Inflammatory response
- **Risk of aneurysmal rupture**

## AAA first
- Cancer surgery delay
- Adjuvant CHT delay
- Tumor progression – obstruction, perforation, metastases


Symptomatology

• Symptomatic or ruptured AAA FIRST
• Symptomatic GIT Ca (ileus, perforation) FIRST

• STAGED x COMBINED PROCEDURES ???
EVAR

- In patients with suitable AAA anatomy
- Decreases perioperative morbidity, mortality
- Reduces need for general anesthesia
- Reduced hospital stay
- Excellent short – term results
- Reduces risk of graft infection

Lopes A et al. HPB (Oxford) 2001; 3: 213-217
EVAR

- Reduces time interval between EVAR and colorectal surgery
- Reduces systemic trauma (tumor growth?)
- Reduces time between surgery and CHT
- Suitable in hostile abdomen

EVAR — simultaneous approach

- Risk of graft infection – mortality rate: 65%
- Thrombophilia in malignancy, lithotomy position – limb graft thrombosis
- Graft displacement during concomitant surgery

Adjuvant CHT, biological th

- Inhibition of SMC proliferation, collagen and elastin production
- Decreasing of healing process

- **Risk of AAA rupture ???** (Ø 6 cm)

Patients, methods

• Age: 72.2 ± 7.7 yrs
• Ø AAA: 8.3 cm (5.0 – 13.1 cm)
• Asymp + symp AAA – 448 pts (78.2%)
• RAAA – 125 (21.8%)
• Open surgery – 443 (77.6%)
• EVAR – 130 (22.4%)
• **Combined procedures – 52 (9.1%)**
Open surgery, EVAR, simultaneous procedures
## Combined procedures (N=52)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>No</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nephrectomy</td>
<td>16</td>
<td>Carcinoma, afunction</td>
</tr>
<tr>
<td>Bowel resection</td>
<td>11</td>
<td>Tumor</td>
</tr>
<tr>
<td>Splenectomy</td>
<td>9</td>
<td>Injury, lienal artery aneurysm</td>
</tr>
<tr>
<td>Cholecystectomy</td>
<td>9</td>
<td>Cholecystitis</td>
</tr>
<tr>
<td>Others</td>
<td>7</td>
<td>Ac. appendicitis,bowel obstruction (biliary ileus), liver, stomach Ca, ac.adnexitis, hernia</td>
</tr>
</tbody>
</table>
Simultaneous procedure (our approach)

- Broad – spectrum ATB – extended prophylaxis (72 hrs postop)
- AAA resection (> 5cm) – first
- Graft replacement (Silver graft ?)
- Peritoneum closed over the prosthesis
- Second procedure – coexistent disease

OR

- Intraabdominal disease – first
- EVAR – simultaneously or few days later
Simultaneous procedures
Simultaneous procedures
Simultaneous procedures
Simultaneous procedures
Staged procedures
AAA + stomach Ca
# Results – hospital stay

<table>
<thead>
<tr>
<th></th>
<th>Ø (days)</th>
<th>SD ±</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 509</td>
<td>12.6</td>
<td>9.1</td>
<td></td>
</tr>
<tr>
<td>Asymptomatic + Symptomatic AAA</td>
<td>11.6</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>RAAA</td>
<td>16.6</td>
<td>15.2</td>
<td>0.0001</td>
</tr>
<tr>
<td>Open surgery</td>
<td>11.4</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td>EVAR</td>
<td>4.8</td>
<td>5.5</td>
<td>0.0001</td>
</tr>
<tr>
<td>Staged</td>
<td>12.3</td>
<td>9.3</td>
<td></td>
</tr>
<tr>
<td>Simultaneous</td>
<td>14.9</td>
<td>7.1</td>
<td>NS</td>
</tr>
</tbody>
</table>
# Results - morbidity

<table>
<thead>
<tr>
<th></th>
<th>Morbidity %</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymp AAA</td>
<td>18.7</td>
<td></td>
</tr>
<tr>
<td>RAAA</td>
<td>43.4</td>
<td>0.01</td>
</tr>
<tr>
<td>Staged</td>
<td>24.1</td>
<td></td>
</tr>
<tr>
<td>Simultaneous</td>
<td>28.9</td>
<td>NS</td>
</tr>
</tbody>
</table>
Types of complications

- Bronchopneumonia, limb ischemia, wound complication, GIT bleeding, AMI, pulmonary embolism, deep venous thrombosis, bowel paresis, cholecystitis, ischemic colitis, urinary infection, etc.

NO GRAFT INFECTION
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Mortality %</th>
<th>Cox regres</th>
<th>p &lt;</th>
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</thead>
<tbody>
<tr>
<td>Asymp + symp AAA</td>
<td>5.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAAA</td>
<td>37.8</td>
<td>4.3x</td>
<td>0.0001</td>
</tr>
<tr>
<td>Open surgery</td>
<td>5.1</td>
<td>2.4x</td>
<td>0.05</td>
</tr>
<tr>
<td>EVAR</td>
<td>1.6</td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>Staged</td>
<td>8.9*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneous</td>
<td>19.5*</td>
<td>1.6x</td>
<td>0.05</td>
</tr>
</tbody>
</table>

* Including RAAA
Long-term results

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>staged</td>
<td>85.9</td>
<td>78.4</td>
</tr>
<tr>
<td>simultaneous</td>
<td>78.3</td>
<td>63.2</td>
</tr>
</tbody>
</table>

\[ p < 0.04 \]

Conclusion

- **Simultaneous procedures** have comparable length of hospital stay and morbidity, but higher 30-days mortality rate and worse long-term results in comparison with **staged procedures**
Recommendation

• **Tailored procedure** for each patient morphology of AAA, comorbidities, tumor type and localization

• **Symptomatic** and most *life-threatening* lesion – managed first

• **Simultaneous procedure** – easy surgery for coexistent disease

• In **staged procedure** – the second pathology should be solved as soon as possible

• **EVAR** should be offered as a method of choice for high-risk patients with GIT malignancy
Thank you for your attention