Role of covered stents in prevention of arterial rupture and distal embolization during iliac artery recanalization

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Disclosure

No conflicts of interest
Use of covered stents in complex occlusive iliac disease is still under debate
A comparison of covered vs bare expandable stents for the treatment of aortoiliac occlusive disease

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and Gold Coast, Queensland, Australia


Covered stents for aortoiliac reconstruction of chronic occlusive lesions.
Grimme FA 1, Goverde PA, Van Oostayen JA, Zeebregts CJ, Reijnen MM.

Outcomes of covered versus bare-metal balloon-expandable stents for aortoiliac occlusive disease

Misty D. Humphries, MD, a Ehrin Armstrong, MD, b John Laird, MD, a Jessica Paz, BS, a and
William Pevec, MD, a Sacramento, Calif; and Denver, Colo
Systematic use of covered stents in complex iliac lesions?

- The current results of bare stents are satisfactory.
- Using covered stents, costs would rise considerably.
- Many cases would require more than a single stent to spare the hypogastric artery.
Rupture during PTA
Are there elective conditions in which covered stents may be suggested?
Male 60 y
Left iliac artery obstruction
100 m claudication

HIGH PROBABILITY OF SUBINTIMAL PASSAGE OF MATERIALS

2008

9x100 mm Luminexx, Bard
2008

Male 60 y. o..
Left CIA obstruction
100 m left claudication

DELAYED (8 HOURS) ILIAC RUPTURE
- subintimal (inadvertent) passage of materials is not uncommon, especially if the negotiation of occlusion is difficult
- subintimal stenting may cause an immediate or late arterial rupture, mainly in atrophic arteries
- if the patient feels pain during preliminary balloon inflation, adventitial overdistension should be suspected
M.M., male, 59 y.o.
Right EIA occlusion
Right buttock claudication 50m
Indication II

Male 73 y. o.
Left iliac obstruction (2 weeks)
50 m left claudication

Residual thrombus after two nitinol bare stents
10x100 and 8x60 mm
Female 78 y. o..
Right CIA obstruction
50 m right claudication

Options:
- Pharmacological thrombolysis
- Mechanical thrombolysis
- Surgical thrombectomy
  + STENTING

COSTS ARE SIMILAR
Female 78 y. o..
Right CIA obstruction
50 m right claudication
 Reasons for considering a covered stent in a recent iliac occlusion

- in a recent occlusion embolic, risk during stenting (without preliminary thrombus debulking) is high
- if the procedure is scheduled in outbasis, thrombolysis is problematic
- pharmacological or mechanical thrombolysis may be risky if wire and catheters have passed subintimally
Jan 2009 - May 2014

1758 consecutive iliac procedures for occlusive disease

1195 stenoses (68%)  technical success 1195/1195 (100%)

563 occlusions (32%)  technical success 560/563 (99.5%)

44/1758 (2.5%) procedures with covered stents

INDICATIONS:

<table>
<thead>
<tr>
<th>Indication</th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Iliac rupture (%)</td>
<td>7</td>
<td>15.9%</td>
</tr>
<tr>
<td>Residual large dissection (%)</td>
<td>3</td>
<td>6.8%</td>
</tr>
<tr>
<td>Recent iliac thrombosis (%)</td>
<td>18</td>
<td>40.9%</td>
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<tr>
<td>Subintimal recanalization in hypotrophic/atrophic artery</td>
<td>16</td>
<td>36.4%</td>
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emergency election
Jan 2009 - May 2014
44/1758 (2.5%) procedures with covered stents for iliac occlusive disease

<table>
<thead>
<tr>
<th>Immediate complications No. (%)</th>
<th>3 (6.8%)</th>
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<tr>
<td>1 stent thrombosis</td>
<td>treated with thrombectomy</td>
</tr>
<tr>
<td>2 distal embolization</td>
<td>1 in IIA treated with stenting</td>
</tr>
<tr>
<td></td>
<td>1 in CFA treated with thrombectomy</td>
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<tr>
<th>Peri-operative complications No. (%)</th>
<th>1 (2.3%)</th>
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<td>1 death at 24 h (hypovolemic shock post rupture)</td>
<td></td>
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<th>Late complications No. (%)</th>
<th>2 (4.5%)</th>
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<td>2 thrombosis at 6 mos.</td>
<td>1 thrombectomy</td>
</tr>
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<td>1 aortofemoral bypass</td>
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| Overall mortality rate No. (%) | 1 (2.3%) |

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<tr>
<th>Freedom from all complications</th>
<th>86.4%</th>
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<tr>
<td>Primary patency up to 60 mos.</td>
<td>93.1%</td>
</tr>
<tr>
<td>Secondary patency up to 60 mos.</td>
<td>97.7%</td>
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Conclusions

- In iliac aneurysms covered stents may be suggested
- In emergency (rupture) covered stents are mandatory

- In election, two clinical conditions suggest the use of covered stent in complex iliac procedure:
  1) suspected subintimal passage of materials to prevent immediate or late rupture
  2) recent thrombosis: to prevent distal embolization
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