Endovascular treatment for puncture site complication; inguinal hemorrhage and incorrect puncture for internal jugular vein

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Disclosure

Speaker name: Akihiko Miyta

I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

✓ I do not have any potential conflict of interest
Several kinds of complications related to puncture of catheter such as central venous catheter and vascular access catheter are reported.

1) inguinal pseudo aneurysms, retroperitoneal hemorrhages
2) incorrect insertion of central venous catheter or vascular access catheter to cervical arteries
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The mainstreams of the treatment for such kinds of complication are careful observation and complete pressure hemostasis.
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1) inguinal pseudo aneurysms, retroperitoneal hemorrhages
2) incorrect insertion of central venous catheter or vascular access catheter to cervical arteries

The mainstreams of the treatment for such kinds of complication are careful observation and complete pressure hemostasis.

However compression alone sometimes does not work well and surgical repairs are needed.
Inguinal complications

✓ For inguinal complications like pseudo aneurysm or retroperitoneal hemorrhage...we usually try

① Echo guided compression
② DGTI (duplex guided thrombin injection)
Inguinal complications

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✓ But these are often not suitable because of patient’s anatomical characteristics.

✓ Antithrombotic therapy sometimes has to be interrupted for some period.
Inguinal complications

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  ① Echo guided compression
  ② DGTI (duplex guided thrombin injection)

- But these are often not suitable because of patient’s anatomical characteristics.

- Antithrombotic therapy sometimes has to be interrupted for some period.

- The other strategy is an endovascular hemostasis, using coil placement or covered stents.
### Inguinal complications

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Type of inserted sheath</th>
<th>Vessel</th>
<th>Type of complication</th>
<th>Approach</th>
<th>Coils/covered stent (pushable) (detachable)</th>
<th>Procedure time (min)</th>
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<tbody>
<tr>
<td>67</td>
<td>F</td>
<td>7.5Fr. IABP sheath</td>
<td>Rt.DFA</td>
<td>Pseudo aneurysm</td>
<td>Cross over</td>
<td>IDC-18 2mm<em>20mm</em>1 Hilal 2mm<em>20mm</em>3</td>
<td>87</td>
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<td>82</td>
<td>M</td>
<td>13Fr. Dialysis catheter</td>
<td>Rt.CFA</td>
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<td>6Fr. sheath for EVT (antegrade)</td>
<td>Rt.CFA</td>
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<td>Cross over</td>
<td>Fluency 10mm*40mm</td>
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<td>7.5Fr. IABP sheath</td>
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<td>Cross over</td>
<td>Failure (wire not crossed)</td>
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<td>Pseudo aneurysm</td>
<td>Cross over</td>
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※7 successive inguinal pseudo aneurysm or retroperitoneal hemorrhage cases, treated with coil embolization or covered stent.
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※7 successive inguinal pseudo aneurysm or retroperitoneal hemorrhage cases, treated with coil embolization or covered stent.
Case 1 Retroperitoneal hemorrhage
Case 1: Retroperitoneal hemorrhage

Fluency 10mm*40mm
Case 2

Pseudo aneurysm
Case 2

Pseudo aneurysm
Case 2

Pseudo aneurysm

Hilal 2mm*20mm*6
Cashmere 3mm*40mm*1
Cervical complications

✓ One of the cervical complications of the highest risk is incorrect insertion of central venous catheter or vascular access catheter to cervical arteries.
Cervical complications

- One of the cervical complications of the highest risk is incorrect insertion of central venous catheter or vascular access catheter to cervical arteries.

- Compression hemostasis or thrombin injections often do not work well, which immediately leads to fatal condition.

- We experienced 3 successive cases, in which endovascular technique brought a successful result.
## Cervical complication

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<td>Incorrect insertion to Rt. common carotid artery via Rt. Internal jugular vein</td>
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<td>Fluency 10mm*36mm</td>
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<td>7Fr. Central venous catheter</td>
<td>Incorrect insertion to Rt. Subclavian artery. Pseudo aneurysm and arteriovenous fistula after removal</td>
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<td>Amplatz vascular plug φ6mm Amplatz vascular plug φ4mm Viabahn 9mm*5cm</td>
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※3 successive cervical complication cases treated with endovascular technique.
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※3 successive cervical complication cases treated with endovascular technique.
Case 3
Case 3

Pseudo aneurysm and fistula
Case 3: Pseudo aneurysm and fistula

Amplatz Vascular Plug 6mm for Rt. Vertebral artery
Case 3  Pseudo aneurysm and fistula

Amplatz Vascular Plug 4mm for Rt. Internal thoracic artery
Case3: Pseudo aneurysm and fistula

Viabahn 9.0mm* 5.0cm
Case 3  Pseudo aneurysm and fistula
Case 4

Incorrect insertion of vascular access catheter

Internal jugular vein → common carotid artery
Case 4

Incorrect insertion of vascular access catheter

Internal jugular vein → common carotid artery
Case 4

13Fr. Vasucular access catheter

Rt. Common carotid artery

Lt. Common femoral artery
Case 4
Case 4

**Fluency 10.0mm* 36.0mm**
Case 4

Fluency 10.0mm* 36.0mm
Take home message

 ✓ In complication cases related puncture, compression hemostasis or thrombin injection sometimes does not work well, and endovascular treatment could be a solution for these kinds of complications.

 ✓ Especially in cases of cervical complication, simple removal may sometimes lead to a fatal bleeding.

 ✓ Well prepare for removal, before you simply remove it.