Combined open surgery and endovascular stenting for a long-standing iatrogenic femoral arterial-venous fistula complicated with pulmonary hypertension

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Disclosure

Speaker name: Wen Hsien Hsu

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
Introduction

• Most of the AVF is traumatic in origin or surgically created venous access for hemodialysis.

• The diagnosis of AVF can be made by careful history taking and detailed physical examination and further proved by imaging study.

• The case we are presenting is very challenging due to extremely high pulmonary artery pressure (PAP 120 mm Hg) which is unresponsive to medical management and patient was on the waiting list of lung transplantation.
A 33-year old female

Chief complaint
Pain and swelling of right lower leg and shortness of breath.

Present illness
Since 10 years old she started noticing progressive swelling of right lower limb associated with soreness. She became poor tolerance to standing or walking, for that she underwent bloodletting by the therapist of alternative medicine on numerous occasions within 10 years period. For 6 months, her body weight has increased rapidly associated with dyspnea.

Past history
Usual childhood illness
Right inguinal hernia repair at age of 9
Physical Examination

- TPR: 36.4 °C, 86/min, 18/min, BP 121/79 mmHg
- Head-ENT, neck: puffy, no obvious venous engorgement
- Heart- HR 82/min
- Lungs- crepitation in lung base
- Abdomen- obese, liver enlarged, bruits heard over Rt lower quadrant and the inguinal area. Thrill felt over the groin
- Extremity- Swollen legs with diffuse pigmented spots, no obvious varicose vein, a soft lump in Rt upper thigh consistent with a hemangioma grossly.
Lower extremity signs
### Lab

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>BUN (mg/dl)</td>
<td>16</td>
</tr>
<tr>
<td>Cr (mg/dl)</td>
<td>0.94</td>
</tr>
<tr>
<td>K (mmol/l)</td>
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<tr>
<td>Na (mmol/l)</td>
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</tr>
<tr>
<td>Hb (g/dl)</td>
<td>14.6</td>
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<tr>
<td>Hct (%)</td>
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<tr>
<td>RBC (x10^6/ul)</td>
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<tr>
<td>WBC (x10^3/ul)</td>
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</tr>
<tr>
<td>Glu (mg/dl)</td>
<td>101</td>
</tr>
<tr>
<td>Pro-BNP (pg/mL)</td>
<td>1530 /1181</td>
</tr>
</tbody>
</table>

### Other pertinent lab data

- **D-Dimer 3.24**, venous blood - pao2 50.2 mmHg, GOT 75U/L, Uric acid 9.5 mg/ml
- Echocardiogram showed sinus regular rhythm, **cardiac output- 7.7 liters/min**, Pulmonary arterial pressure- **120 mmHg** (by cardiac catheterization)
Significant imaging study

- Chest X-ray:
  Cardiomegaly, bilateral hilar enlargement, subsegmental atelectasis at left lower lung field

- Chest CT scan:
  Right heart enlargement, engorged pulmonary trunk and pulmonary artery indicating pulmonary hypertension
  Right hepatic lobe hemangioma

- Ventilation + perfusion scan – multiple segmental defects suspicious of pulmonary emboli
Angiographic study

AVF
IVDSA+MDCT
Treatment Plan

- General anesthesia
- Cardiologist standing by
- TEE monitored by cardiologist
- Left femoral artery approach crossing over to Rt side to place intra-arterial balloon occluding the AVF to observe hemodynamic change.
- Placement of covered stent in the right distal iliac artery and femoral artery to seal off the AVF.
- Open surgery to ablate numerous small AVF tracks.
- To ICU for postoperative care.
Open ligation of multiple AVF tracks
Pulmonary arterial pressure down to 80 mm Hg at 2 months post-op follow up
Conclusions

1. Inguinal hernia repair incurring AVF is extremely rare.
2. Early diagnosis could be made by detailed history-taking and careful physical examination.
3. The complicated pulmonary hypertension once recognized, then the treatment should be carefully planned and the patient should be well prepared before proceeding with surgical intervention.
4. Intraluminal treatment by deploying a covered stent to seal off the main fistula from contralateral side approach is feasible.
5. Intraoperative temporary occlusion of the fistula for monitoring the hemodynamic change is a crucial step.
THANK YOU
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