An Unexpected Peripheral Venous Complication Associated Hemodynamic Collapse In TAVI Procedure

BACKGROUND

- With the increase in the life span of the world population, there is an increase in TAVI procedures and complications
- Complications at the sites of peripheral access are common but complications at the site of peripheral access for rapid pacing are rare

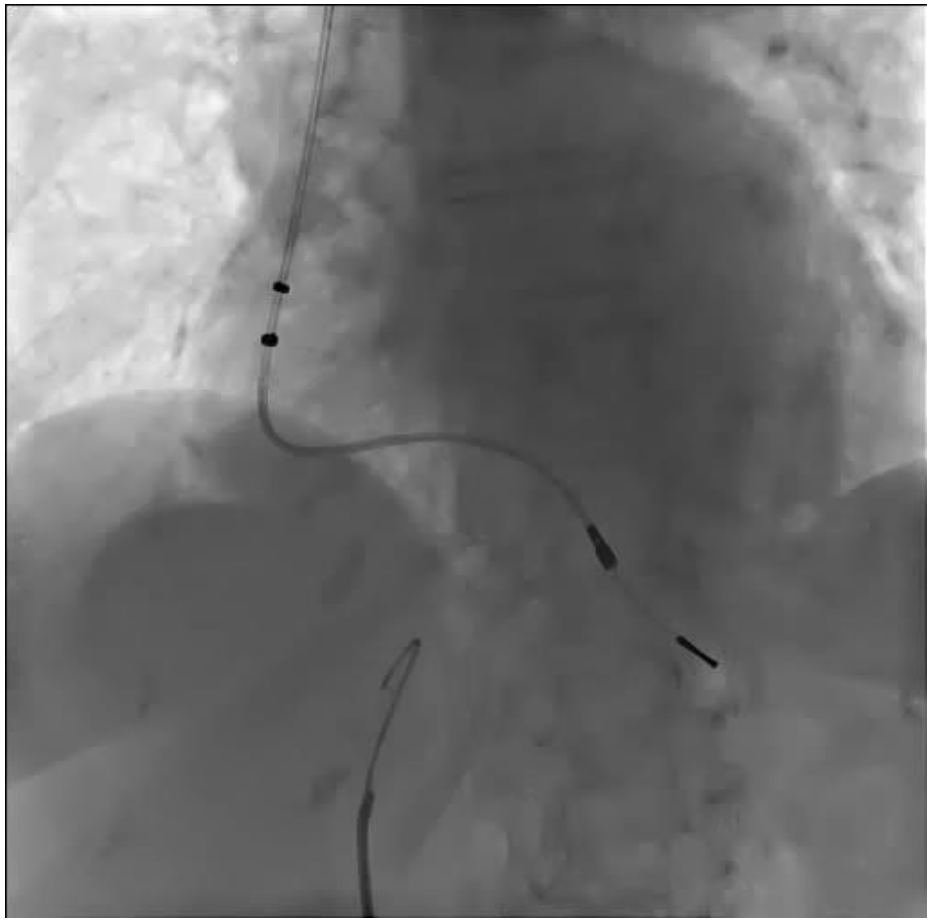
CASE

- A 86 year–old woman
- Dyspnea corresponding NYHA class III-IV and presyncope
- Hypertension and permanent pacemaker (VDD)
- History of recurrent transient pacemaker implantation and venous embolism in the right upper extremity
- Referred form another cardiac center for TAVI procedure due to severe aortic valve stenosis

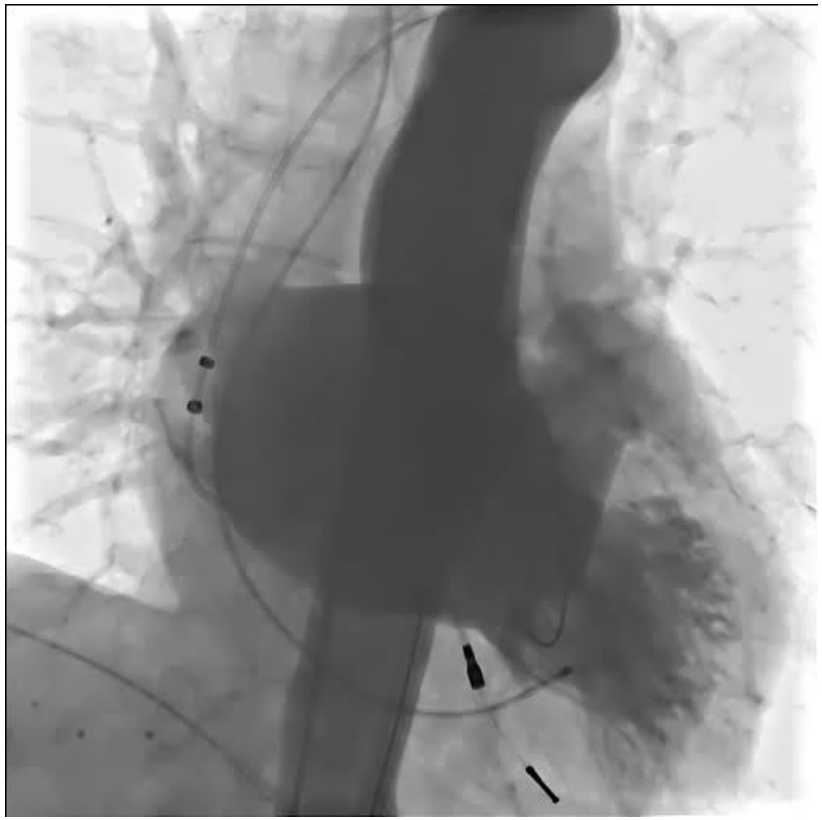
- Coronary angiography
  - there was no significant coronary artery disease
- Echocardiography
  - severe aortic stenosis with an aortic valve area of 0.6 cm^2, a mean pressure gradient of 58 mmHg
  - LVEF 64%
  - moderate-severe mitral regurgitation
  - severe tricuspid regurgitation

- In the TAVI procedure, we tried to use femoral vein access to implantation of a transient pacemaker for rapid pacing

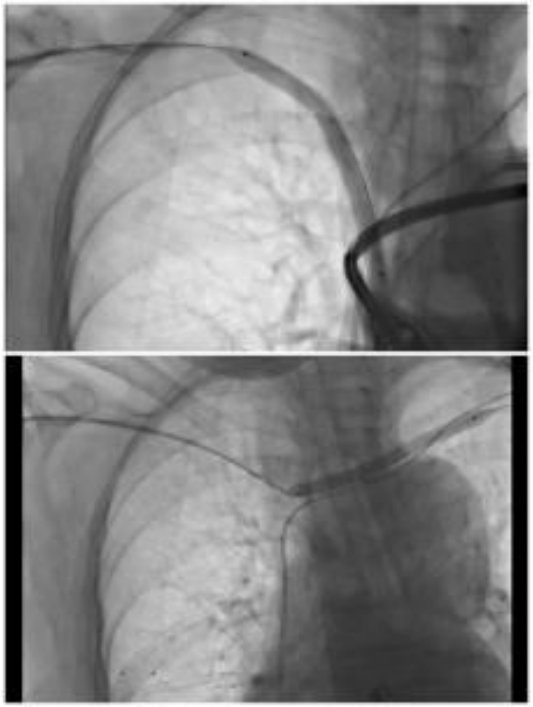
- Due to vena cava inferior obstruction we failed, then we decided to use the right subclavian vein



- Crossing the valve from arcus aorta a hemodynamic collapse occurred suddenly
- At that time, we rapidly implanted the valve with cardiopulmonary resuscitation
- An abnormal late radiopacity in mediastinum were seen at aortography

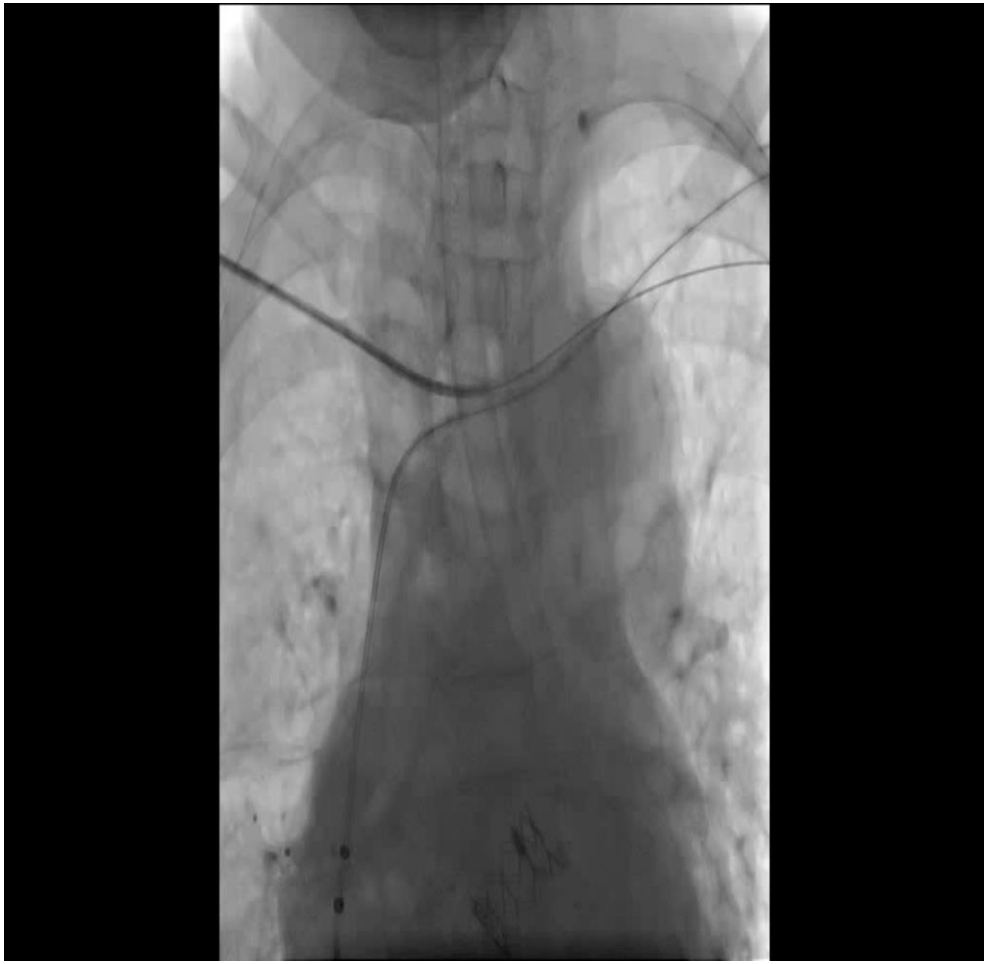


- Venous angiogram showed an arteriovenous fistula



We performed recurrent peripheral balloon dilatation at the segment of fistula for five minutes at least

- Then venous angiogram performed again and no outflow observed from subclavian veins
- After five days, hemodynamically stable patient discharged from hospital
- At post-TAVI echocardiography;
  - the prosthetic aortic valve was a normal function
  - mild-moderate mitral regurgitation, moderate tricuspid regurgitation and minimal aortic regurgitation
  - LVEF was normal (>60%)



- Subclavian vein catheterizations are generally safe
- Complications:
  - Pneumothorax, hemothorax, thrombosis and embolism, rupture and perforation of adjacent arteries and anatomical structures, infective endarteritis
- Iatrogenic arteriovenous fistula is usually seen in the lower extremity after the femoral artery or venous puncture for percutaneous procedures
- Arteriovenous fistulas are also a rare complication of subclavian vein catheterization (approximately 0.58 %)
- The most important possible clinical effects of arteriovenous fistulas are high-flow heart failure and its secondary clinical effects

DISCUSSION

- Some of the arteriovenous fistulas may close spontaneously
- Partially large and hemodynamically significant fistulas must be closed
- Closure can be performed surgically or by injection of sclerotherapy agents, alcohol or cyanoacrylate gel
- Endovascular stent grafts and coil embolization is the preferred method because of high success and low morbidity
- In our case, an emergency intervention was required due to hemodynamic collapse and hemodynamic stability was achieved in the closure and follow-up of the fistula with successive balloon dilatations applied to the fistula area
- It should be kept in mind that such complications may develop during these procedures, which we frequently perform in our daily practice
- Evaluation of the venous structures with imaging methods such as arterial structures before the TAVI procedure will decrease the complication rates