Mechanical thrombectomy in acute thrombosis of dialysis fistulas: a multi-center study

Clément Marcelin¹ Y Le Bras¹, MD, F. Petitpierre¹, MD, N. Grenier¹, MD PHD, J V D Berg MD PHD³, B Huasen², MD

Interventional Radiology :Hôpital Pellegrin, Bordeaux, France.
Endovascular unit: Royal Preston Hospital, Preston, United Kingdom.
Interventional Radiology: Centro Vascolare Ticino, Lugano, Switzerland.
• Percutaneous intervention is universally included in the management of thrombosed dialysis fistula.

• Fistula salvage is a long procedure.

• Cause: stenosis ++

Arterio-venous stenosis
Thrombosis of dialysis fistulas

CLINICAL

ULTRASOUND DOPPLER

NO THRILL & No dialysis possible.
PENUMBRA SYSTEM

• Original Penumbra System was developed for thrombectomy on stroke (6, 7), and further developed with the Indigo® System for peripheral indications such as acute limb ischemia (8, 9), pulmonary artery, and renovisceral occlusive event (10).

6- Papanagiotou et al
7- Son et al
8- Oklu et al
9- Yamada et al
10- Bisdas et al
STUDY

To prospectively analyze the technical and clinical outcome of percutaneous thrombectomy aspiration using the Indigo® System in acute thrombosed dialysis fistulas.
MATERIAL & METHODS

Patients with acute thrombosis of their dialysis fistula (native AVF and prosthetic grafts AVG) were prospectively enrolled in Bordeaux University Hospital, Preston University Hospital and Lugano’s Centro Vascolare Ticino Hospital. From June 2016 to April 2017, 35 patients with an average age of 61.8 years (range 33-81) presenting with thrombotic events in dialysis fistulas.
PROCEDURE

• Systemic heparinization (30UI/kg of heparin) is initiated prior to the procedure.

• Both antegrade and retrograde vascular access to the venous segment pf the AVF is performed using an 8-French sheath under ultrasound (US) guidance.

• Aspiration with Indigo® Penumbra device was firstly used on the antegrade sheath (CAT 8).

• Then angioplasty of venous stenosis was performed with a balloon.

• Finally, aspiration on the retrograde sheath until the anastomose was performed.
2 SHEATHS: 8 french
POPULATION

Mean age: 61.8yo (33-81)
19 male and 16 female
19 Graft fistula and 16 Autologous fistula
22 fore arm, and 13 upper arm
42% of history of thrombosis , 74% of history previous angioplasty for AVG/AVF stenosis, and 20% of history of previous stenting.
RESULTS

• Average of time procedure was 38.1 minutes (20-120).
• Average of blood loss during the procedure was 122.5ml (50-300).
• Technical efficacy was 97.1% (34/35).
• Clinical success was 91% (32/35).
• Six-month primary patency, primary assisted patency and secondary patency were respectively 71%, 80% and 88.5%.
• Balloon angioplasty (94% 33/35), and stent graft deployment (5.7% 2/35).
• Arrow-Trerotola® (2.8% 1/35) and Fogarty® (5.7% 2/35).
EXAMPLE 1
Man of 71 years old with thrombosed of right brachio cephalic AVG
We attempted to recanalize the AVG with the Indigo CAT8 device from the introducer to the cephalic vein
Clot being extracted through Tubing
EXAMPLE 2

- 62 yo male presented acute thrombosis of right brachiocephalic AVF
DISCUSSION

Various of systems for thrombosed of vascular access exists:

• Systemic thrombolysis.
• Mechanical thrombectomy such Trerotola (Arrow ®).
• Angiojet system (Boston®).
• Manual thrombo-aspiration.
ADVANTAGES OF INDIGO

• EFFECTIVE

• FAST: 38.1 minutes (15-140).
  92 min to 116 min (PTD, Lai et al).
  78+/-31min (Angiojet® device, Maleux et al).
COMPLICATION

• There was one major complication during the procedure, as a perforation of the vein without clot removal, treated with surgery.
• We didn’t reported embolization from thrombosis fragmentation into the peripheral arterial system or into the pulmonary circulation.
• No hemolytic complication are expected with the Indigo system.

12- Turmel-Rodrigues et al
CONCLUSION

• Percutaneous aspiration of thrombosed dialysis fistulas with Indigo® device is a fast and effective procedure.
THANK YOU
BIBLIOGRAPHY


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