

# Targeted Adjustable Pharmaceutical Administration System (TAPAS) Catheter Assisted Thrombolysis in Cirrhotic Patient Contraindicated For Thrombolysis: First Case report

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## Introduction

For patient with deep vein thrombosis (DVT) who is contraindicated for anticoagulation therapy, we can just place inferior vena cava filter or just do nothing. Here we report a successful case using TAPAS catheter to deliver thrombolytic agent to treat DVT in a patient who is a case of liver cirrhosis, Child C with active GI bleeding

## Case Report

A 82 y/o woman with a history of HCV, DM, IHD, liver cirrhosis, HBV related, Child C (hypoalbuminemia, ascites, hepatic hydrothorax, hepatic encephalopathy, coagulopathy, splenomegaly with thrombocytopenia, EV), chronic renal insufficiency, and peptic ulcer was admitted due to right leg edema for several days. Lab showed D-dimer 2800 Plt 85000 INR 1.5-2.1, Cr 1.8 ammonia 182. Echo showed DVT over right proximal femoral vein (Figure 1).

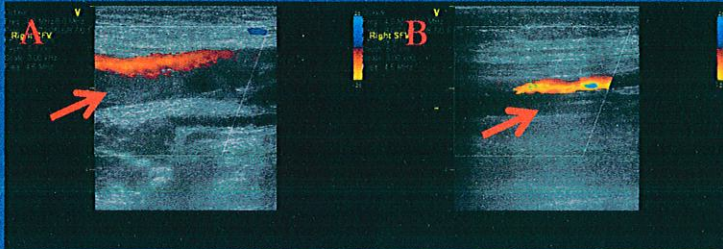


Figure 1 Vascular echo. (A) DVT with thrombus found in right common femoral vein (CFV), and (B) in right superficial femoral vein (SFV) (arrow).

Heparin pump was given initially but later was held due to active GI bleeding event. We decided to perform PTA for this patient. A 8 Fr sheath was inserted to left common femoral vein and a retrievable G2X IVC filter was placed over IVC (Figure 2)

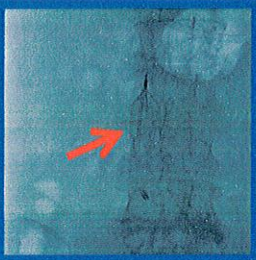


Figure 2 A retrievable G2X IVC filter was implanted below renal vein and above iliac vein bifurcation

The TAPAS catheter system consists of two low pressure compliant occlusion balloons. When inflated, the proximal and distal occlusions balloons isolate an area that defines the treatment zone. The distance between the balloons can be adjusted from 1.5 mm up to 300 mm, and match the desired length of the treatment zone. The drug can be aspirated following treatment. The TAPAS system is designed to allow targeted local drug delivery while minimizing systemic exposure (Figure 3).

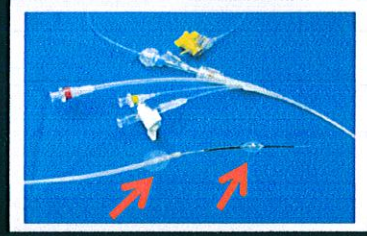


Figure 3 Targeted adjustable pharmaceutical administration system (TAPAS) catheter. Proximal and distal balloon was inflated (arrow)

Angiography disclosed thrombus over right external iliac vein, right CFV and right SFV (Figure 4).

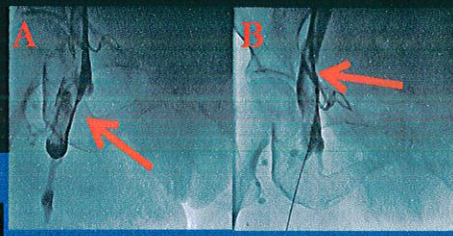


Figure 4 Angiography showed thrombus in (A) right CFV and proximal RSV and (B) right external iliac vein

In this procedure, we set TAPAS over right common iliac vein and right femoral vein. Heparin 5000 units and Urokinase 480000 units was applied in the isolated target zone. Drugs were aspirated following treatment. Balloon dilatation and thrombus aspiration was also performed (Figure 5)

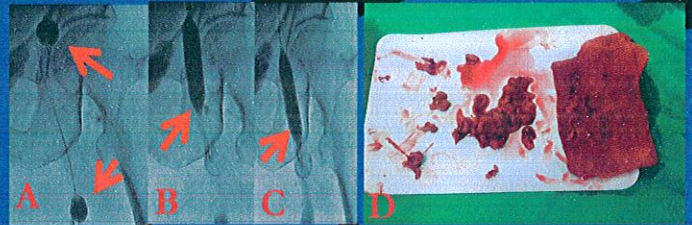


Figure 5 PTA procedure. (A) TAPAS catheter with proximal and distal balloon inflated. (B and C) Balloon dilatation for thrombus fragmentation. (D) Thrombus aspirated.

Good venous flow was noted after procedure without bleeding events (Figure 7). Right leg edema resolved in one day.

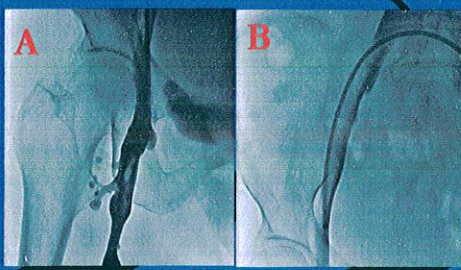


Figure 7 Angiography disclosed resolution of thrombus over right CFV and SFV (A) and right iliac vein (B).

## Conclusions

For patients with a contra-indication for thrombolysis, a localized dose of Urokinase could be applied safely using the TAPAS catheter without bleeding complications. As we know, it is the first case report in the world.