

MANUAL THROMBUS ASPIRATION FOR PULMONARY EMBOLISM

AUTHOR



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INTRODUCTION

Pulmonary embolism is a common complication in hospitalized patients, with considerable morbidity and mortality. A quick and effective treatment is paramount in cases of massive emboli with hemodynamic compromise.

CASE REPORT

A 65 years old male hospitalized with pneumonia (SARS-CoV-2 negative) for seven days, was referred to our center for pulmonary embolism with hemodynamic compromise.



Fig.1 CT scan showing thrombus (arrow) at right pulmonary artery bifurcation.

A CT scan showed multiple thrombi bilaterally in the peripheral pulmonary artery branches and one large thrombus on the bifurcation of the right pulmonary artery (Fig. 1).

The patient had been submitted to intravenous fibrinolysis, without clinical improvement. He was under mechanical ventilation and inotropic support.

In the catheterization room, vascular access was obtained through the right femoral vein. Pulmonary angiography confirmed the CT result; the thrombus at the bifurcation of the right pulmonary artery was causing complete occlusion of the superior trunk and significant flow compromise to the interlobar artery (Fig.2).

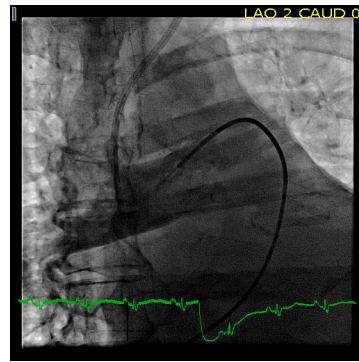


Fig. 2 Right pulmonary artery angiography with large thrombus at the bifurcation (arrow)

A multipurpose (MP) 6 Fr diagnostic catheter was used to assess the right pulmonary artery. At first, a 0.035 guidewire, 260 cm long, was passed to the inferior branch (interlobar artery). The MP catheter was exchanged for the Nautilus® 10 Fr Thrombus Aspiration Catheter. Aspiration performed at this location was not successful in removing any thrombus or improving blood flow. After some careful manipulation, with the multipurpose diagnostic catheter, we were able to direct the guidewire, across the thrombus, through to the upper branch (superior trunk). Again, the diagnostic catheter was exchanged for the Aspiration Catheter. Two aspirations were performed, controlled by the flow regulator. This time, several fragmented thrombus pieces were retrieved (Fig. 3).



Fig. 3 Samples of fragmented thrombus retrieved

An improvement in the patient hemodynamics was observed: systolic pulmonary artery pressure went down from 83 mmHg, at the beginning, to 68 mmHg at the end of the procedure. The arterial oxygen saturation was 93%.

Fig. 2 Right pulmonary artery angiography with large thrombus at the bifurcation (arrow).

Finally, we retracted the aspiration catheter a few centimeters back and performed a manual injection of contrast. This angiography showed the disappearance of the large thrombus, a widely patent superior trunk and very good flow to the interlobar artery (Fig. 4).



Fig. 4 Final angio.

A quick echo, performed after the patient left the catheterization room, showed no right ventricular overload nor dysfunction.

CONCLUSION AND FINAL REMARKS

- Percutaneous mechanical thrombectomy devices have been used more frequently in recent years to treat massive or sub massive pulmonary embolism, when there is a contra-indication for systemic fibrinolysis or, as bail-out procedure, when fibrinolysis fails.
- This is our first experience with the Nautilus® Thrombus Aspiration Catheter. It has friendly easy-of-use features quick set-up, good navigability, large bore and large syringe providing powerful operator-controlled aspiration that allow a rapid and safety intervention. These characteristics overcome some pitfalls of other thrombectomy devices.
- In our opinion, it can be a valuable tool in treating these severely ill patients, but more studies are needed to provide further evidence for its efficacy and safety in a larger patient population.

