

Sharp recanalization of symptomatic central vein occlusion using a re-entry device : A case report

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Introduction:

Sharp recanalization of the central vein is an advanced endovascular technique used to traverse chronic central venous occlusions when conventional wire and catheter have failed. This procedure involves the use of different types of needles, a stiff guidewire, or a specialized device to mechanically puncture through the occluded segment under fluoroscopic guidance, often targeting a snare or balloon placed from a separate access site to minimize the risk of life-threatening bleeding.

Conclusion:

Sharp recanalization of the occluded central vein is an important intervention for patients with SVC syndrome, offering high success rates, but might be associated with major complications like hemothorax and hemopericardium.

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Case description:

A 47-year-old female with a history of sick sinus syndrome treated with pacemaker implantation in 2010 presented with superior vena cava (SVC) syndrome since 2016. The patient reported increasing intracranial and retrobulbar tension and intolerance to a horizontal position. Initial management at a tertiary center included an unsuccessful endovascular recanalization. This was followed by a surgical intervention involving SVC venoplasty, lead extraction, and the implantation of epicardial leads. Despite these measures, the symptoms of SVC syndrome persisted. In 2025, due to a significant worsening of signs and symptoms, the patient was referred to our institution for re-evaluation. Diagnostic angiography confirmed a chronic occlusion of the right brachiocephalic vein and the cranial part of the superior vena cava. We decided to use a re-entry catheter (Outback Elite, Cordis). The procedure was performed under general anesthesia using a dual-access approach. A 6F sheath was placed in the right internal jugular vein (superior access), and a 6x40 mm balloon catheter was advanced via the right femoral vein (inferior access) to serve as a target. Using a re-entry catheter from the superior approach, a controlled puncture was performed into the balloon. Following successful wire capture and exchange, predilatation with an 8 mm balloon was performed. Subsequently, a 10x60 mm self-expanding stent was deployed, dilated with a 9 mm balloon. Final angiographic imaging demonstrated immediate restoration of flow through the superior vena cava into the right atrium. The patient's recovery was uncomplicated. At the 8-month follow-up, the patient remains asymptomatic.

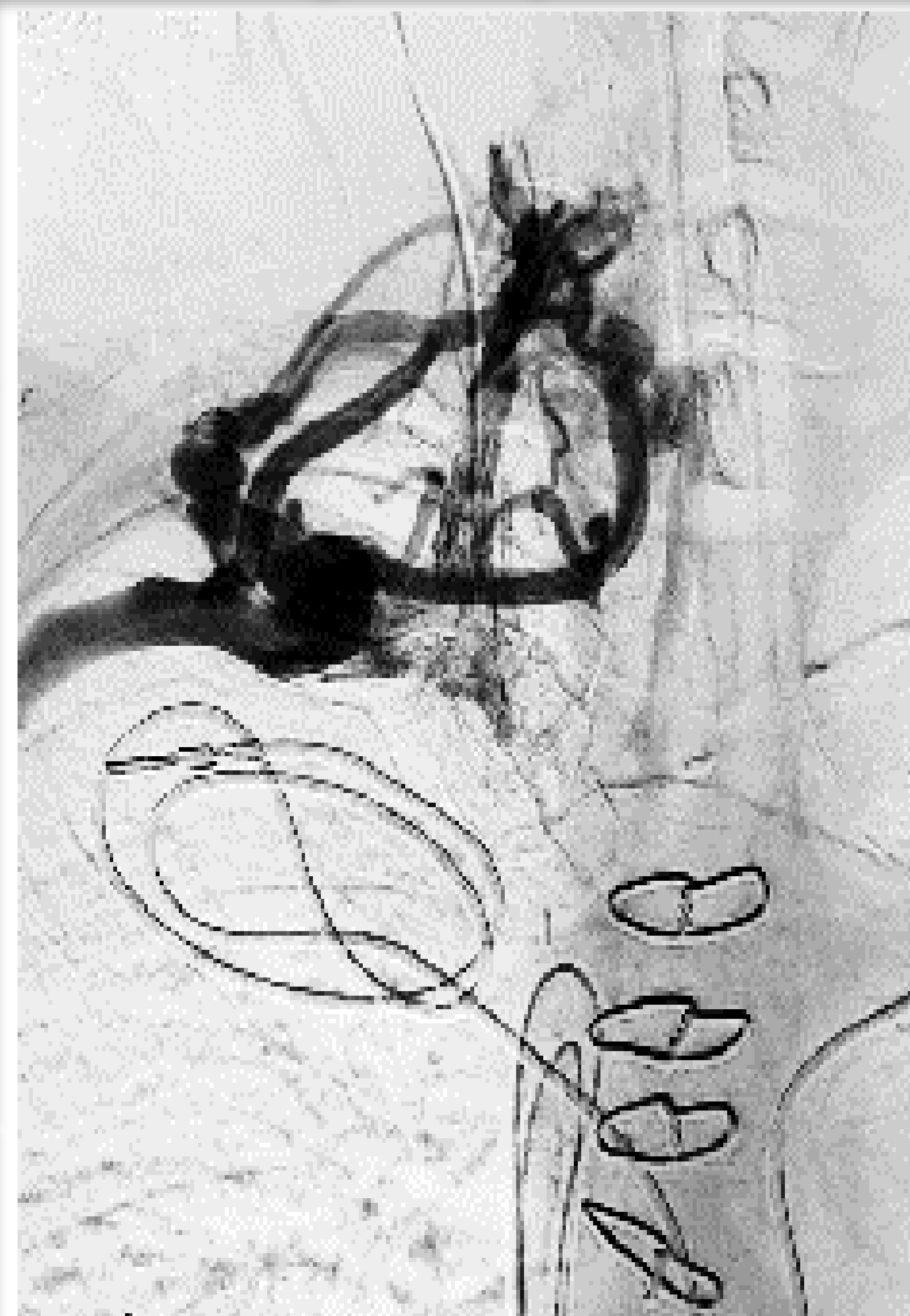


Fig. 1 Phlebography through the right jugular access

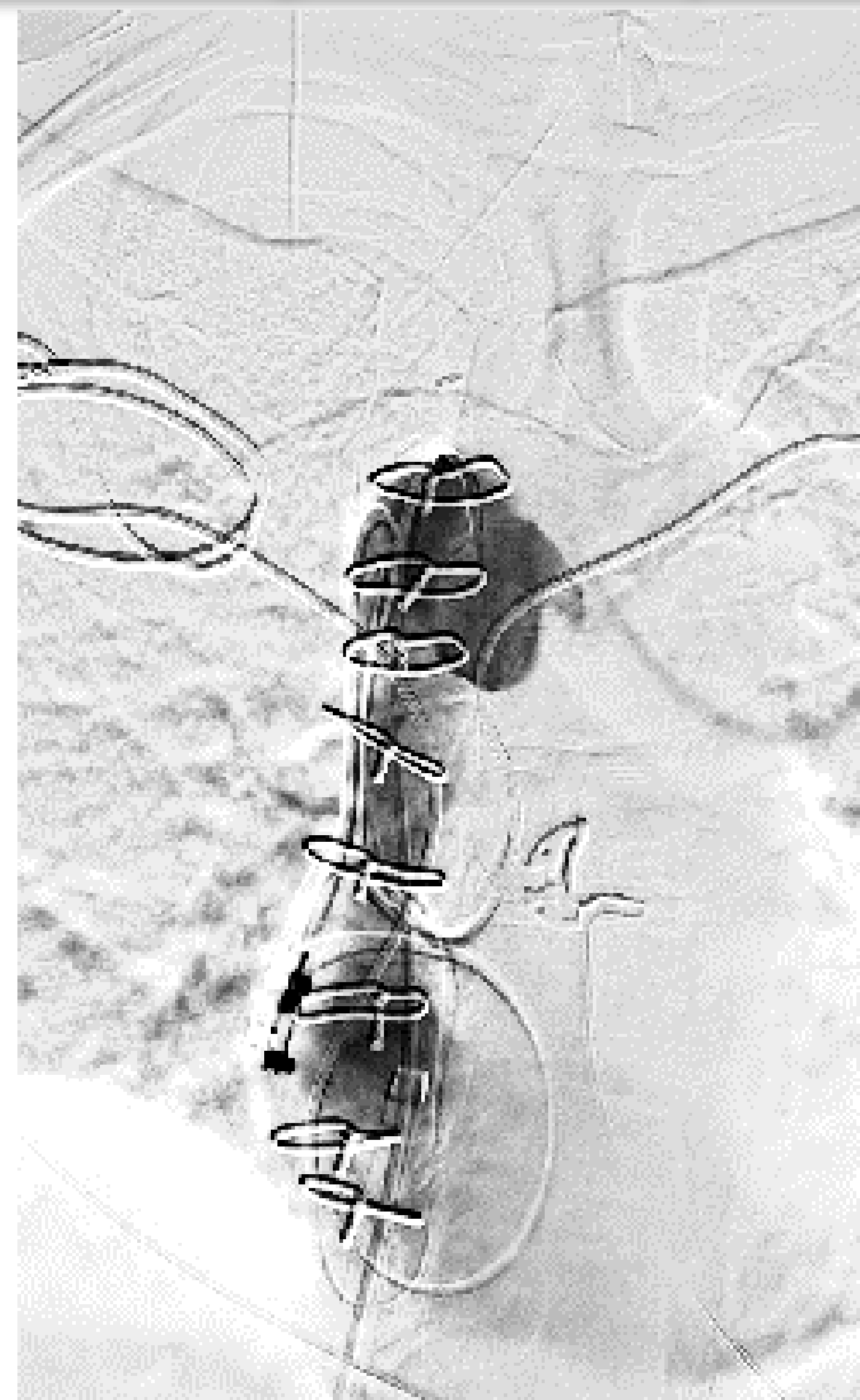


Fig. 2. Superior cavography through the catheter inserted via femoral access.

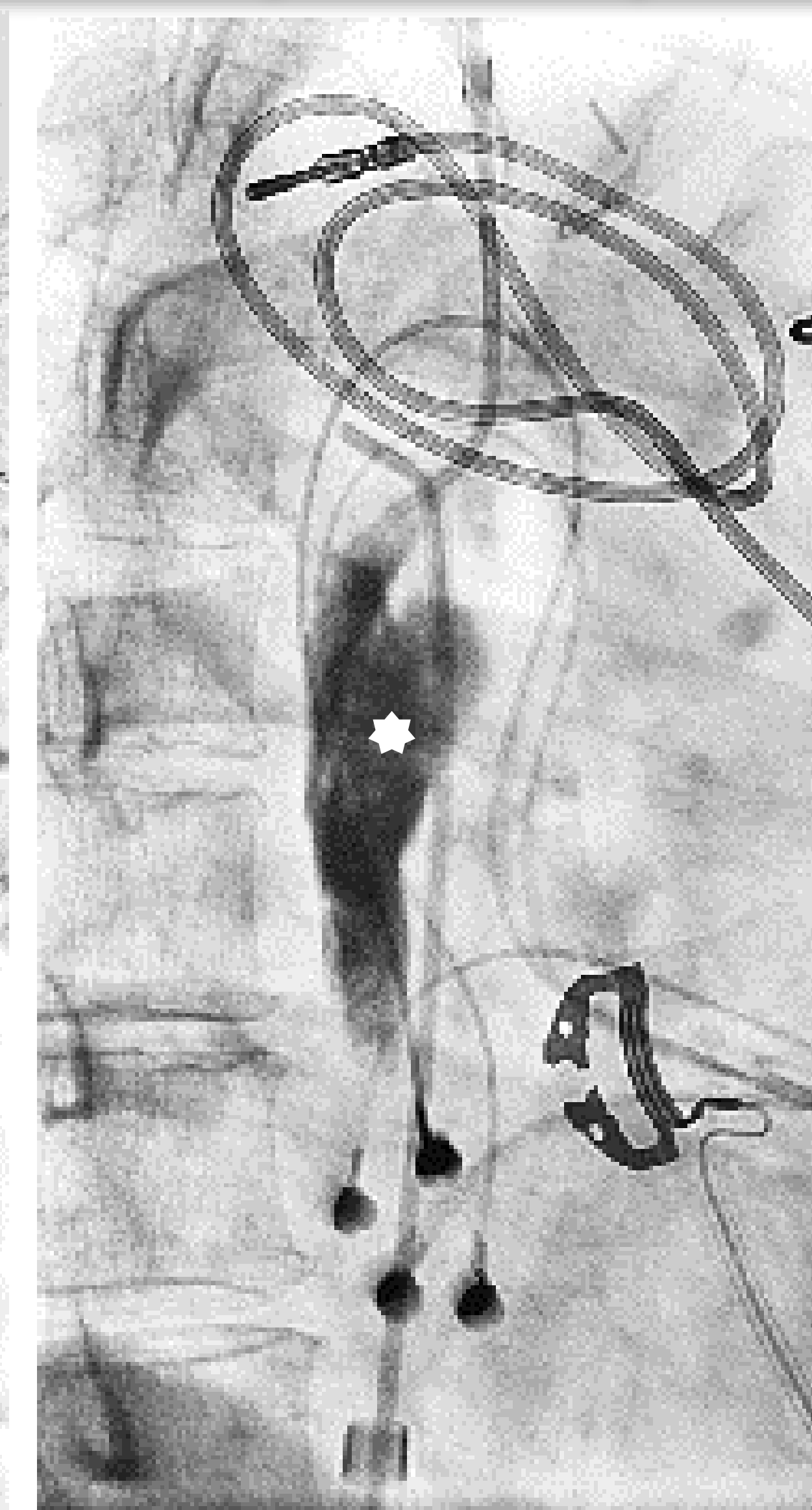


Fig. 3. Unsuccessful standard recanalization with extravasations (asterix).

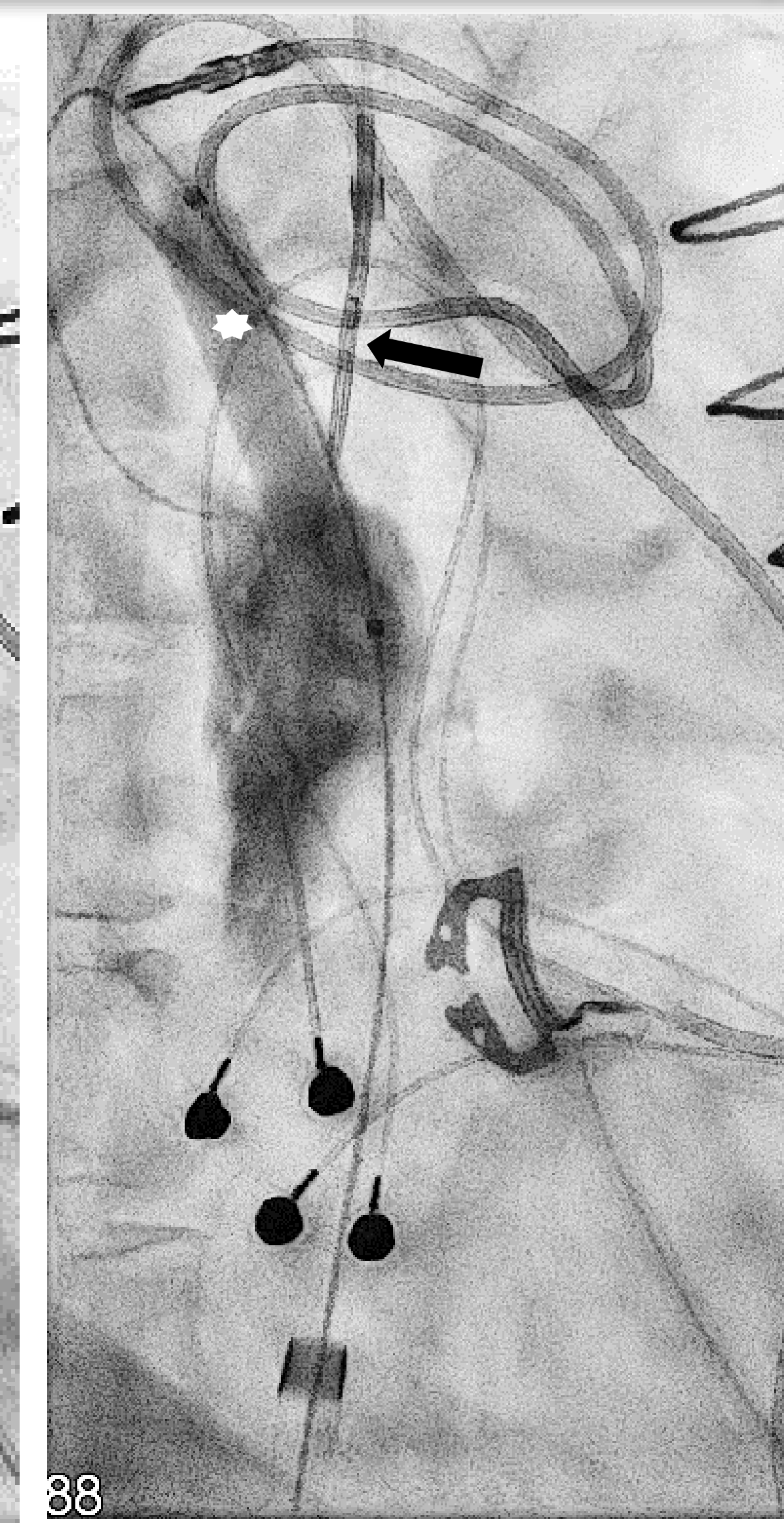


Fig. 4. Balloon catheter (asterix) introduced from femoral and re-entry catheter (black arrow) introduced through jugular access.



Fig. 5. Phlebography via catheter inserted from femoral sheath through occluded the right brachiocephalic vein and cranial part of SVC.

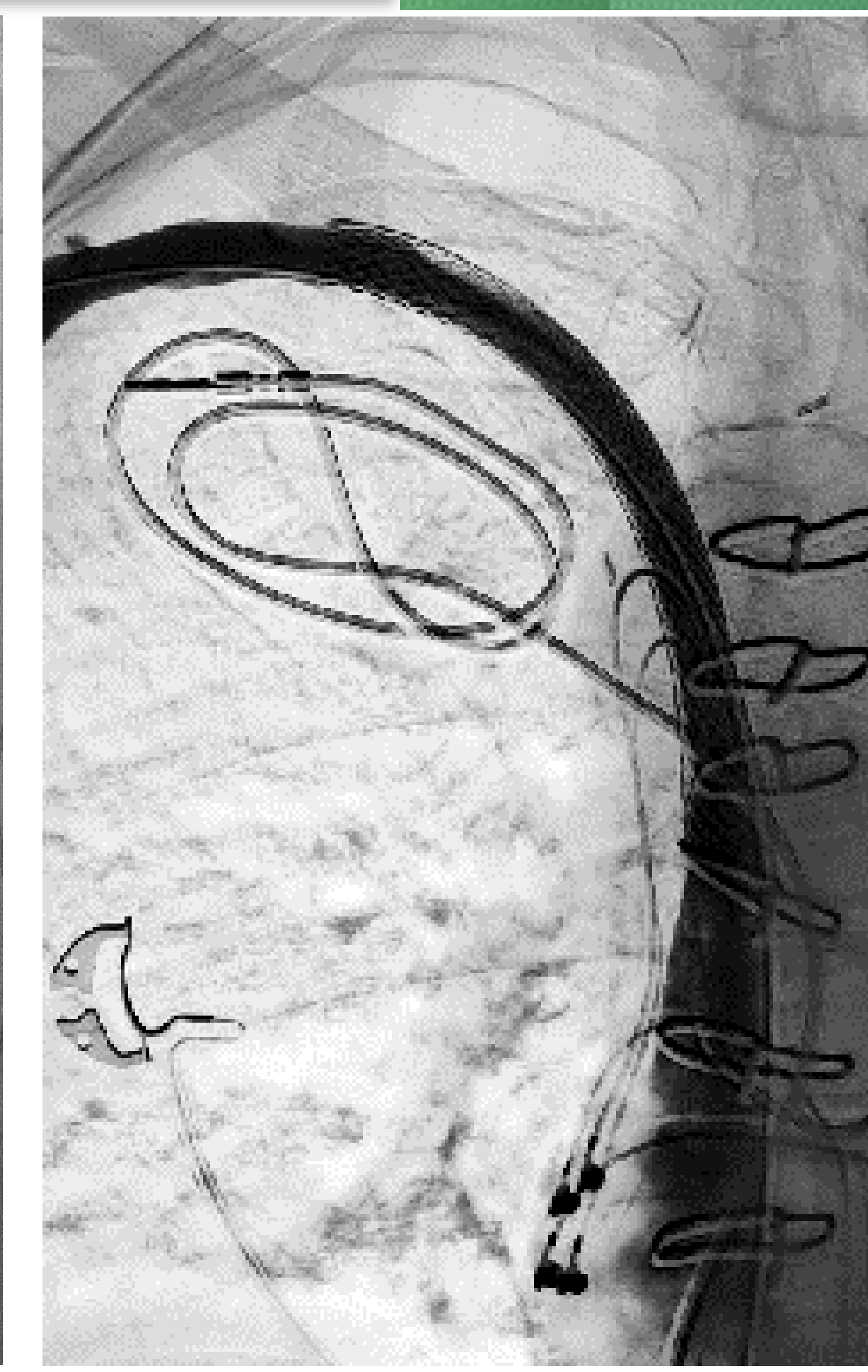


Fig. 6. Final phlebography after PTA and stent implantation.