

[0043] FIG. 4C is a schematic longitudinal cross-sectional diagram illustrating an example aspiration catheter system that includes an alignment element including one or more alignment structures.

[0044] FIG. 5 is a flow diagram of an example method of using an aspiration catheter system that includes an outer catheter and an inner catheter configured to maintain suction and continuous flow of fluid on an engaged thrombus.

DETAILED DESCRIPTION

[0045] The disclosure describes aspiration catheter systems, including some examples configured to maintain suction and continuous flow of fluid on an engaged thrombus, as well as aspiration systems including the aspiration catheter system and methods of using the aspiration systems.

[0046] Thrombosis occurs when a thrombus (e.g., a blood clot or other embolus) forms and obstructs vasculature of a patient. To treat a patient with thrombosis, a clinician may position an aspiration catheter in a blood vessel of the patient near the thrombus, apply suction to the aspiration catheter, and engage the thrombus with a tip of the aspiration catheter. Once the tip of the aspiration catheter has engaged the thrombus, the clinician may remove the aspiration catheter with the thrombus attached to the tip or suction off pieces of the thrombus through the aspiration catheter until the thrombus is removed from the blood vessel of the patient. The aspiration of the thrombus may be part of an aspiration procedure, such as, but not limited to, a medical procedure using A Direct Aspiration first Pass Technique (ADAPT) for acute stroke thrombectomy, or any other aspiration of thrombus or other material from the neurovasculature or other blood vessels.

[0047] During suctioning of the thrombus, the clinician may deliver aspiration fluid to the site of the thrombus and suction fluid through a lumen of the aspiration catheter into a canister located external to the patient. Prior to engagement of the thrombus by the aspiration catheter, this flow and suction of fluid near the thrombus may create turbulence at a surface of the thrombus and remove loose pieces of the thrombus from the surface. However, once the clinician has engaged the thrombus, the thrombus may block the distal opening of the aspiration catheter (e.g., at a tip of the aspiration catheter) and cause a reduction or cessation of flow through the lumen of the aspiration catheter. As a result, the flow of fluid at the surface of the thrombus may be reduced or ceased, and pieces of the thrombus may not be removed as effectively.