Imaging stent–thrombus interaction in mechanical thrombectomy

Figure MicroCT, scanning electron and light microscopy of thrombus caught in a stentriever

MicroCT (A, B) illustrates thrombus (green) caught in the stentriever. Scanning electron microscopy illustrates complexity and variability in thrombus surface consisting of fibrin, erythrocytes, and platelets (C, D). Furthermore, thrombus stabilization by fibrin is shown (E–G). Histology (I–K) shows thrombus consisting of fibrin and platelet-rich areas with interspersed leukocytes, coalescing around the wire. E = erythrocytes; F = fibrin; P = platelets; S = stent wire. Arrows in I, K = leukocytes. Star in I = leukocyte adhering to a wire.

A 52-year-old man had a right M1 occlusion, treated with mechanical intra-arterial therapy. After 5 minutes of intra-arterial embedding, the stentriever containing thrombus was retrieved, rinsed, and fixed for microscopy. MicroCT scanning electron and light microscopy was performed on the stentriever to assess stent–thrombus interaction (figure). Twenty-three sites of interaction between thrombus and stentriever were analyzed. Interaction was not mechanical at 12 of these sites. We observed fibrin cross-bridges connecting thrombus to stent wires. Fibrin also created smooth covers overlying erythrocyte-rich areas. Light microscopy further showed thrombus interspersed with leukocytes, consisting of fibrin- and platelet-rich areas coalescing around the stent wire.

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