Coronary Rupture During Stent Implantation

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A 69-year-old patient with unstable angina presented to cardiac catheterization with a tight lesion in the mid right coronary artery (Figure 1A) and moderate lesions in the left main and left anterior descending coronary arteries. During coronary angioplasty, a stent was electively implanted in the right coronary artery, with good initial results. However, during subsequent aggressive, high-pressure dilations performed to “optimize” stent expansion (using both angiographic and intravascular ultrasound criteria), a vessel rupture was noticed. The angiographic image revealed a faint but progressive smoke-like extravasation of contrast within the stented segment (Figure 1B, curved arrow). Protamine administration, prolonged balloon inflations, and further proximal stent implantation (partially overlapping the previous stent) were unsuccessful in closing the site of blood leakage into the pericardial space (Figure 1C). Intravascular ultrasound visualized, from “within the artery,” the stent wall apposed to the vessel wall and the site of vessel rupture encompassed by 2 struts of the stent (Figure 2A, arrow). Hand injection of saline opacified the vessel lumen and also accurately located the site of contrast exit outside the vessel (Figure 2B). Eventually, cardiac tamponade ensued, and a pericardial tap was necessary to regain hemodynamic stability. At surgery, a red clot was demonstrated overlying the mid right coronary artery. When this thrombus was aspirated, a 2×2-mm hole in the vessel wall permitted partial visualization of 1 metallic filament of the stent. Coronary artery bypass grafting of the right and left coronary arteries was performed successfully, and the patient had an uneventful postoperative course.

Figure 1.

Figure 2.