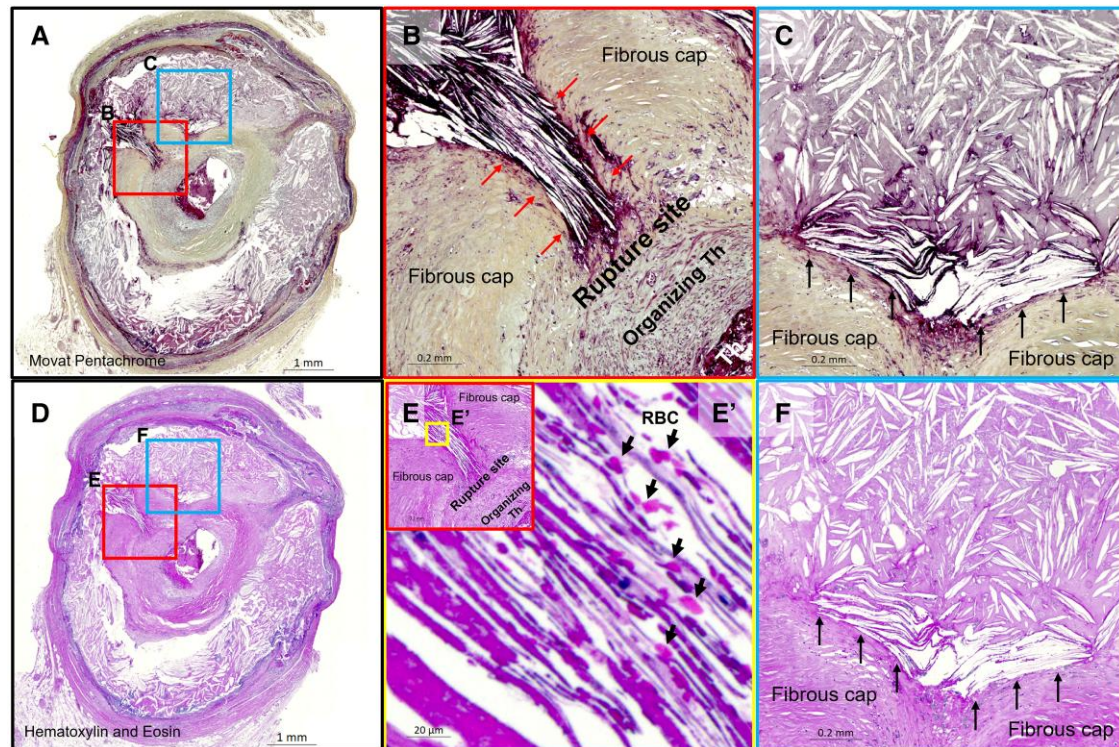


# The pathological images of cholesterol crystals piercing into fibrous cap in a patient with acute coronary syndrome

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Received 8 March 2023; first decision 6 April 2023; accepted 12 April 2023; online publish-ahead-of-print 19 April 2023



A 49-year-old male, with no previous medical history, complained of shortness of breath with chest pain. Shortly thereafter, he had a witnessed cardiac arrest when the emergency medical service arrived. He was transported to a nearby hospital but could not be resuscitated.

The post-mortem examination showed plaque rupture with occlusive thrombus in mid-right coronary artery (panels A and D, A–C: Movat pentachrome stains, D–F: haematoxylin and eosin stains). High-power cross-sectional images of the culprit lesion revealed

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Handling Editor: Gaurav Gulsin

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numerous of cholesterol crystals (CCs) piercing into the fibrous cap, associated with plaque rupture and organizing thrombus (panel B). The CCs at the plaque rupture site showed perpendicular directions to the fibrous cap (panel B, arrows) while CCs at other sites of the fibrous cap showed parallel and other orientations (panels C and F, black arrows). Intraplaque haemorrhage (red blood cells: RBCs in E') was most prominent where CCs appeared to be piercing into the fibrous cap (panels E and E'), compared to other sites containing necrotic core (panels C and F). It has been postulated that CCs may play a more direct role in plaque disruption by tearing or perforating the fibrous cap. However, actual pathologic data supporting this hypothesis are scarce. Here, we report unusual pathological visualization of CCs piercing into the fibrous cap in a patient dying with acute coronary syndrome.

**Consent:** In this report, because this is an autopsy case study and patient information was entirely anonymized and de-identified, written informed consent was not obtained from the patient.

**Conflict of interest:** R.V. and A.V.F. have received institutional research support from NIH (HL141425); NIH RECOVER, Federal Award # OT2HL161847-01; NIH RECOVER, Federal Award # OT2HL161847-01, Subaward No.: PATHO-PH1-SUB \_04\_22; Leducq Foundation Grant; 480 Biomedical; 4C Medical; 4Tech; Abbott; Accumedical; Amgen; Biosensors; Boston Scientific; Cagent Vascular; Cardiac Implants; CeloNova; Claret Medical; Concept

Medical; Cook; CSI; DuNing, Inc.; Edwards Lifesciences; Emboline; Endotronix; Envision Scientific; Lutonix/Bard; Gateway; Lifetech; Limflo; MedAlliance; Medtronic; Mercator; Merrill; Microport Medical; Microvention; Mitraalign; Mitra Assist; NAMSA; Nanova; Neovasc; NIPRO; Novogate; Occulotech; OrbusNeich Medical; Phenox; Profusa; Protembis; Qool; Recor; Senseonics; Shockwave; Sinomed; Spectranetics; Surmodics; Symic; Vesper; W.L. Gore; and Xeltis. A.V.F. has received honoraria from Abbott Vascular; Biosensors; Boston Scientific; CeloNova; Cook Medical; CSI; Lutonix Bard; Sinomed; and Terumo Corporation; and is a consultant to Amgen; Abbott Vascular; Boston Scientific; CeloNova; Cook Medical; Lutonix Bard; and Sinomed. R.V. has received honoraria from Abbott Vascular; Biosensors; Boston Scientific; CeloNova; Cook Medical; Cordis; CSI; Lutonix Bard; Medtronic; OrbusNeich Medical; SINO Medical Technology; ReCor; Terumo Corporation; W. L. Gore; and Spectranetics; and is a consultant for Abbott Vascular; Boston Scientific; CeloNova; Cook Medical; Cordis; CSI; Edwards Lifesciences; Lutonix Bard; Medtronic; OrbusNeich Medical; ReCor; Sinomedical Technology; Spectranetics; Surmodics; Terumo Corporation; W. L. Gore; and Xeltis. T. K. receives research grants from The Ito Foundation.

**Funding:** No companies provided financial support for this study.

**Data availability:** The data underlying this article will be shared on reasonable request to the corresponding author.