Nucleation vs. syntaxial overgrowth VI: an example in a fractured limestone

Two photomicrographs below (both in cross-polarized light) show a limestone that has been fractured, and the fracture (F) filled with calcite. Note that the fracture-filling calcite consists of just three crystals. One is in optical continuity with, and presumably grew as a syntaxial overgrowth on, the large echinoderm grain $E_1$. Another is in optical continuity with, and presumably is a syntaxial overgrowth on, echinoderm grain $E_2$. Thus, long after the echinoderm grains had been deposited, their calcite lattices served as the substrate on which fracture-filling calcite precipitated, with (as usual) no nucleation of a new crystal. Note also the syntaxial calcite cement (C) that also formed as an overgrowth on $E_1$'s single crystal of calcite (an echinoderm characteristic). By contrast, the ooids in the image, which all consist of much smaller crystals, have hardly any cement around them and instead were pressed together and compacted.

E = grains of echinoderm skeletal calcite
F = fracture-filling calcite
C = cementing calcite that has formed as a syntaxial overgrowth on echinoderm grain $E_1$. 