MeV gamma rays provide unique information on high-energy phenomena in the universe, but the imaging capability of conventional Compton telescopes is fundamentally limited by Doppler broadening, resulting in angular resolutions of the order of degrees. To achieve arcminute-scale imaging in the MeV band, we propose a new instrument concept, the Soft Gamma-ray Imager (SGI), which combines a narrow-field-of-view Si/CdTe semiconductor Compton telescope with a high-aspect-ratio coded aperture mask. As a proof-of-concept of this approach, we installed a 5-mm-thick tungsten coded mask on miniSGD, a compact Si/CdTe semiconductor Compton telescope derived from the Hitomi/SGD technology. For 511 keV gamma rays from a Na-22 source, coded-mask imaging using Compton-reconstructed events achieved an angular resolution of 19 arcminutes FWHM. To extend the imaging technique beyond 1 MeV, we also applied electron-tracking Compton reconstruction using penetrating recoil-electron events. These results demonstrate the feasibility of arcminute-scale MeV gamma-ray imaging through the combination of Compton reconstruction and coded-aperture imaging.