The Fermi surface of some underdoped cuprates is composed of disconnected segments ("Fermi arcs") centered at the nodal points. We study [1] the presence of Fermi arcs in the context of phenomenological models [2] that describe the competition between antiferromagnetism and d-wave superconductivity in the cuprates. The state above the critical temperature $T_c$ is made of superconducting clusters, with a non-zero amplitude of the superconducting order parameter but random phase factors. This state disappears above a higher temperature scale $T^*$. Our main result is that the angle-resolved photoemission spectrum of this clustered state contains Fermi surface arcs in the region between $T_c$ and $T^*$, very similar to those observed experimentally [3]. Low energy states created at the interface between clusters are responsible for the arcs. Moreover, the LDOS of this state is in good agreement with recent STM experiments [4].