**Background:** Our knowledge of perforator flap perfusion has improved with the use of imaging techniques. Whereas two-dimensional contrast radiography was previously the standard, there was a paradigm shift with the use of the computed tomography allowing a better understanding of the flap perfusion\(^1\). We describe the use of micro computed tomography that provides a microscopic view of the flap and dermal plexus perfusion with an enhanced definition.

**Methodology:** Four micro-computed tomographies were performed using 2 fresh adult cadavers acquired through the department of anatomy at Mayo Clinic, Rochester MN. The first 2 micro-CT scanners showed the overall perfusion of a hemi-abdomen and anterolateral region of the thigh while injecting the deep inferior epigastric artery and the descending branch of LCFA. On the second specimen, the perfusion of a DIEP flap and ALT flap were compared, by injecting the perforator with the largest diameter. To proceed, the pedicle was divided, canulated, flushed with heparin saline and injected with a solution of Microfil (Flow Tech Inc., Carver, MA). The specimen was then stored in a 4°C refrigerated room for 48 hours. The hemi-abdominal region, the anterolateral region or the perforator flap (DIEP or ALT) was then harvested and stored in formalin. Subsequently, a piece of the flap was cut and prepared in order to fit in the micro-computed tomography device. The scanning was performed with a microcomputed tomography (micro-CT) scanner, which generates three-dimensional (3-D) images consisting of up to a billion cubic voxels, each 5–25 µm on a side, and which has isotropic spatial resolution\(^2\). Based on the fact that each voxel in a 3D micro-CT image has its own gray-scale value related to the x-ray attenuation of the tissue in specific location, multiple analysis were performed thereafter.

**Results:** The branching pattern of a specific perforator for both types of harvest (whole region or perforator flap) was assessed. Both the direct and indirect linking vessels were visible. The structure of the subdermal plexus was described. Abominal and thigh perfusion were compared.

**Conclusion:** The micro computed tomography has never been described in plastic surgery and adds a new tool in our armamentarium of imaging techniques. This information provides us with a better knowledge of flaps microvascular architecture and subdermal plexus, leading to a safer flap design.