

PREOPERATIVELY MAPPING PERFORATOR FLAP ARTERY FOR AUTOLOGOUS BREAST RECONSTRUCTION

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Purpose: To review MR imaging technique, image post-processing and interpretation of preoperative imaging of the rectus, gluteal, gracilis and lateral thoracic perforator arteries for autologous breast reconstruction.

Outline of Content: Recent studies have shown high sensitivity and specificity of Magnetic Resonance Angiography in providing detailed vascular mapping and flap volumes from various donor sites for autologous breast reconstruction. Here we present detailed presentation on MRI protocol for imaging donor site for harvesting free flap transfer. Patient preparation, selection and positioning of coils, sequence selection, imaging parameter optimization, contrast agent selection, bolus timing, image post-processing and interpretation will all be reviewed and discussed. Examples of the spectrum of findings in clinical cases will be provided.

Summary: Given the variability of the vascular anatomy and arborisation patterns of perforating vessels in each individual, accurate preoperative imaging is essential in surgical planning for election of the most favourable perforator arteries for free flap harvesting. The precise preoperative localization of vessels helps to reduce dissection times, shorten anaesthesia time, and decrease the likelihood of surgical complications. With advances in Magnetic Resonance Angiography and using 3D image reconstruction, it provide an accurate and objective method of mapping perforator arteries which increases surgeon's confidence and give them freedom of electing perforator of choice and a backup plan preoperatively.

Figure 2. Axial images through abdomen demonstrate the course of perforator through rectus and subcutaneous tissue. Figure 3. Volume rendered image of gluteal region demonstrate the surface marking of perforators with respect to top of gluteal crease as a anatomic landmark, which helps surgeon to mark the perforators preoperatively .

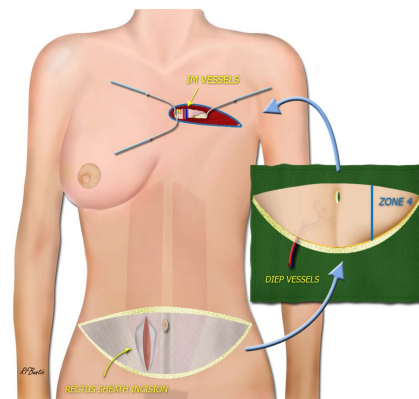
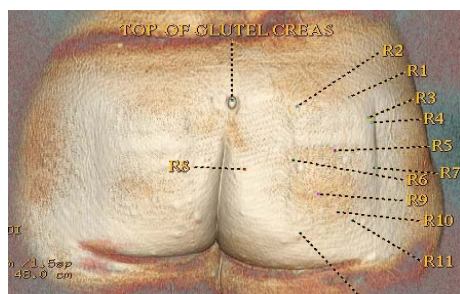
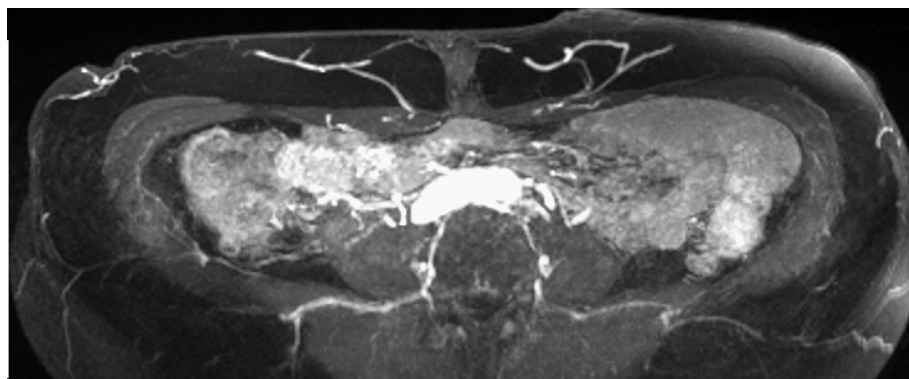


Figure 1. One method of autologous breast reconstruction utilizes abdominal fata and skin harvested together with a perforating artery and vein. The perforator vessels are dissected through rectus abdominis to the deep inferior epigastric artery/vein where the caliber is sufficient to microanastomose to the internal mammary artery to maintain graft viability even in the setting of radiation therapy damage.

References:

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