

# Medial Femoral Condyle Flap

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## INDICATIONS

The medial femoral condyle (MFC) flap is supplied by the descending genicular artery (DGA) system.<sup>1</sup> (See video, Supplemental Digital Content 1, which displays a dissection of MFC flap. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A245>.) (See video, Supplemental Digital Content 2, which displays arterial supply to MFC. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A246>.) Flap variations can incorporate cortical bone, cancellous bone, periosteum, muscle, tendon, cartilage, and/or skin. The MFC flap has a theoretical maximum harvest length of 13 cm of bone based on cadaver studies.<sup>2</sup> Indications for the MFC corticocancellous or corticoperiosteal flap include nonunions with or without segmental bone loss, respectively. The medial femoral trochlea (MFT) flap is also supplied by the DGA system and includes cartilage from the proximal trochlea that articulates with the patella. Indications for the MFT flap include proximal pole scaphoid nonunions that cannot be reconstructed via conventional techniques and advanced Kienbock disease in young patients.<sup>3,4</sup>

## INSTRUMENT LIST

Standard plastic surgery and microsurgical instruments are used. Bone harvest requires the use of a sagittal saw and curved osteotomes.

## OPERATIVE PREPARATION

The patient is positioned supine with the knee flexed and hip externally rotated. For upper extremity reconstruction, the use of the ipsilateral leg is preferred, so that the contralateral upper and lower extremity can be used for weight bearing. The leg is prepped to the groin, and a sterile tourniquet is placed on the proximal thigh.

## STEPS

The thigh is exsanguinated, and tourniquet control is used during dissection. A curvilinear incision is made from the adductor hiatus to the midpoint of the medial patella/MFC (See video, Supplemental Digital Content 3, which displays preoperative planning and exposure of MFC. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A247>.) (See video, Supplemental Digital Content 4, which displays harvest of MFC osteochondral (trochlea) free flap. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A248>.) The dissection proceeds in the subfascial plane of vastus medialis, which is retracted anteriorly to expose the femur. In the majority of patients, the DGA originates from the superficial femoral artery at the adductor hiatus, courses lateral to the adductor tendon, and becomes invested into periosteum of the distal femur. The superomedial genicular artery may occasionally be the sole supply to the MFC. In these cases, the DGA will be notably absent and the periosteal vessels will be the terminal branches of the superomedial genicular artery.

If a skin paddle is required, care is taken to preserve the proximal saphenous artery branch or a distal cutaneous perforator.<sup>5</sup> Longitudinal and transverse branches of the DGA are preserved for harvest of either the MFC or MFT, respectively.

The MFC/MFT flap can be harvested using a sagittal saw and/or osteotomes. Specific techniques to shape the MFT for proximal scaphoid or lunate reconstruction have been previously published.<sup>3,4</sup> For cortical bone flaps, use caution if harvesting over 7 cm of femur length (based on a cadaveric study demonstrating diminished torsional loading compared with harvesting 3 cm of femur length).<sup>6</sup> After bone harvest, the cancellous donor defect is packed with bone wax. The wound is closed in layers, and a closed suction drain is placed in the subcutaneous space.

## DONOR-SITE DRESSING

The leg incision is covered with sterile gauze and an adhesive dressing for 5 days. No leg splint or immobilization is required.

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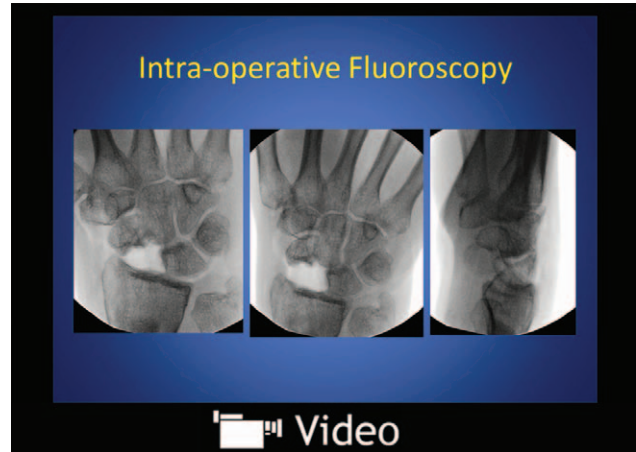
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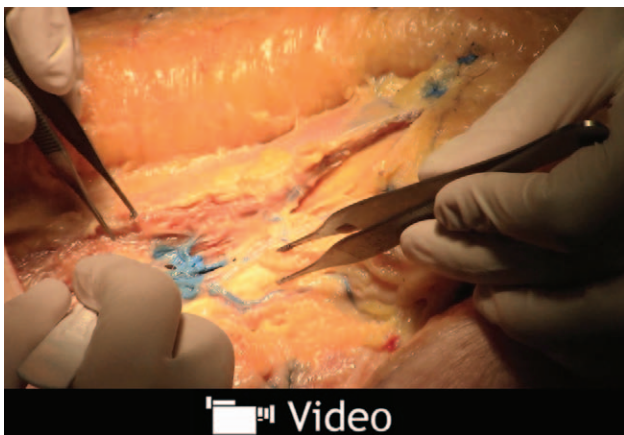
**Video Graphic 1.**

See video, Supplemental Digital Content 1, which displays a dissection of medial femoral condyle flap. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A245>.



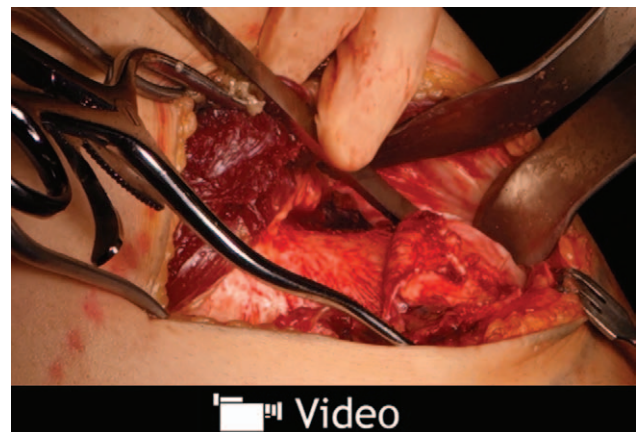
**Video Graphic 3.**

See video, Supplemental Digital Content 3, which displays pre-operative planning and exposure of medial femoral condyle. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A247>.



**Video Graphic 2.**

See video, Supplemental Digital Content 2, which displays arterial supply to medial femoral condyle. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A246>.



**Video Graphic 4.**

See video, Supplemental Digital Content 4, which displays harvest of medial femoral condyle osteochondral (trochlea) free flap. This video is available in the “related videos” section of the full-text article on PRSGlobalOpen.com or available at <http://links.lww.com/PRSGO/A248>.

### POSTOPERATIVE DONOR-SITE CARE

The patient is allowed to ambulate immediately as tolerated. The leg is elevated, and ice is applied when resting. Physical therapy and imaging are not routinely required for the donor site.

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