



LETTER TO EDITOR

Subvastus approach for resection of subvastus osteochondroma in the distal femur

**KEYWORDS**

Surgical approach;
Osteochondroma;
Femur;
Quadriceps muscle

To the editor,

Osteochondromas are common benign bone tumors that protrude from normal underlying bone, and commonly occur in the distal femur.¹ In resection of an osteochondroma in the distal femur, a trans-muscle approach is used, splitting the muscle. However, to reveal the base of the osteochondroma for the resection requires splitting the muscle longer than the length of the base of the tumor. The subvastus approach is used for total knee arthroplasty as a less invasive approach.²

In the current case, the subvastus approach was used for the resection of an osteochondroma in the distal femur. A skin incision was made in line with the distal attachment of the vastus medialis or the vastus lateralis to the femur. The vastus medialis or vastus lateralis was detached at the attachment to the femur. While retracting the vastus femoris muscle, the overlying tissues of the joint capsule, synovial tissue and periosteum were retracted. The osteochondroma was cut at its base, and resected under fluoroscopy. Using a curved chisel makes it easier to trace the original cortical line of the anatomical concave shape of the

metaphysis than use of a flat chisel.³ Complete resection was confirmed directly or through fluoroscopy (Fig. 1).

The average age of the 6 patients was 22 ± 5.8 years (15–30). The mean size of the osteochondromas on plain radiographs was 2.5 ± 0.96 cm (1.0–3.4 cm). The lesions were located on the medial side in 5 patients, and on the lateral side in one patient. The mean proximal cut point was 8.0 ± 0.76 cm (7.6–9.0 cm) from the joint line. No adverse events associated with the resection were observed.

This approach has several merits in comparison to a trans-muscle approach. First, the skin incision was located distally. The distal skin incision allows a larger intra-operative field and makes it easy to use an air-tourniquet at the thigh. Second, regardless of the size of the lesion, the operative procedure is almost the same. Therefore, normalization of the approach can be expected with experience. Third, avoiding muscle splitting reduces the chance of bleeding from the muscle, which is sometimes difficult to stop. Avoiding muscle splitting may also result in decreased postoperative pain, as seen in total knee arthroplasty. Fourth, the subvastus approach with vastus femoris retraction reduces the potential to cut the joint capsule, though the clinical significance of cutting the capsule is unknown. Finally, cutting using a chisel allows the surgeon to work toward the anterior and center of the femur, reducing the chance for damage to the femoral vessels even for medial side lesions as far as 9 cm from the joint line. On the other hand, in the trans-muscle approach, the

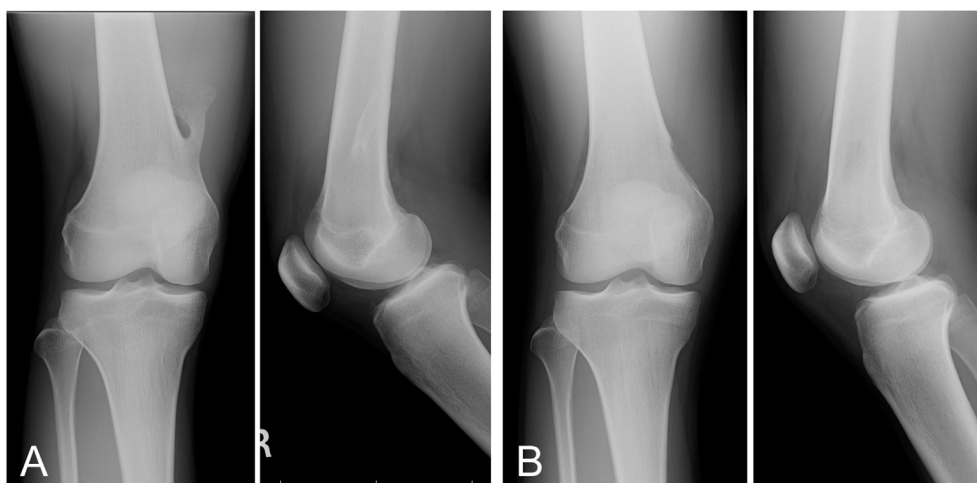


Figure 1 A 19-year-old male with a subvastus osteochondroma in the distal femur. Plain radiographs show a lesion protruding from the distal femur (A). A resection is performed (B) (Left: antero-posterior view; Right: lateral view).

direction of cutting by chisels may be toward the femoral vessels for medial lesions.

The subvastus approach could be a less invasive approach for subvastus osteochondroma resection without splitting the vastus femoris muscle. Regardless of the size, the procedure is safe, even for medial side lesions, which are close to the femoral vessel.

Conflicts of interest

All authors declare there is no conflict of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.asjsur.2019.04.004>.

References

1. Murphey MD, Choi JJ, Kransdorf MJ, et al. Imaging of osteochondroma: variants and complications with radiologic-pathologic correlation. *Radiographics*. 2000;20(5):1407–1434.
2. Hofmann AA, Plaster RL, Murdock LE. Subvastus (Southern) approach for primary total knee arthroplasty. *Clin Orthop Relat Res*. 1991;269:70–77.
3. Sakamoto A. Usage of a curved chisel when resecting osteochondroma in the long bone. *Clin Orthop Surg*. 2013;5(1): 87–88.

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7 April 2019