

A New Technique for Establishing and Maintaining an Anteromedial Knee Portal

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ABSTRACT

Precise placement of the anteromedial portal is critical to the safety and efficacy of knee arthroscopy. Our described technique establishes and maintains a properly placed portal with minimal capsular violation using a needle arthrotomy and the outer shaver barrel as a cannula. This technique has the dual benefit of optimizing instrument access to the knee without large portal arthrotomies and reducing postoperative pain and swelling by minimizing fluid extravasation.

Technique and instrumentation in knee arthroscopy have evolved over the past 2 decades to make arthroscopic surgery an invaluable tool in addressing intra-articular pathology with low morbidity and few complications. In spite of refined techniques, however, complications occur. Damage to soft tissue, chondral surfaces, and the menisci may result from imprecise or overly aggressive establishment of portals. Although rare, compartment syndrome sometimes occurs after knee arthroscopy

owing to fluid extravasation into surrounding tissue.^{1,2} Poorly positioned portals may require creation of larger arthrotomies or additional entry sites, thus exacerbating the problem. High-pressure egress of fluid from the knee distorts local anatomy and limits maneuverability of arthroscopic instruments, furthering the risk for complication.

equating pain relief.⁵ Persistent pain and swelling after arthroscopic partial meniscectomy can delay rehabilitation and return to work by up to 2 weeks.^{6,7} Poor rehabilitation efforts secondary to pain may increase the potential for postoperative complications, including knee stiffness and prolonged muscle atrophy, which in turn require additional rehabilita-

“...use of a cannulating device in knee arthroscopy has the dual benefit of minimizing the potential for intra-articular damage and decreasing postoperative pain by limiting soft-tissue damage.”

As surgical methods have evolved, so have approaches to pain management in patients undergoing knee arthroscopy.³ Pain has long been thought to be a minor problem in routine arthroscopic procedures. In knee arthroscopy, however, small incisions and low morbidity do not ensure a pain-free postoperative course.⁴ In fact, customarily prescribed oral opioid analgesics often provide inad-

quate measures with economic consequences for the patient and the health care system. Not insignificant is the patient's basing perceptions of the success of the arthroscopic procedure on postoperative pain levels. Improved morale in the short term may have a more profound and lasting effect on the long-term outcome of knee arthroscopy than is fully appreciated. Although multimodal

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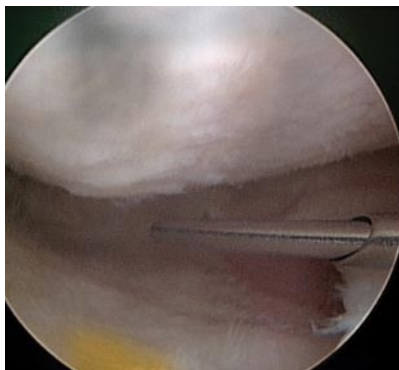


Figure 1. Flexible wire entering knee through spinal needle.

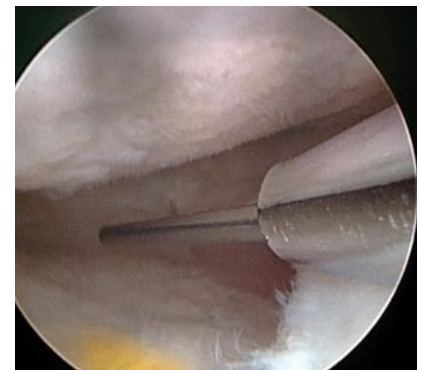


Figure 2. Cannulated switching stick passing over flexible wire.

and preemptive analgesic techniques appear promising, optimizing surgical technique is an essential element in controlling postoperative pain.³

SURGICAL TECHNIQUE

We recently developed a new method of establishing and maintaining a standard anteromedial portal for routine knee arthroscopy—a method that allows for minimal violation of the joint capsule.

portion of an arthroscopic shaver is disengaged from its outer barrel. The outer barrel is then placed over the guide wire, and the guide wire is removed (Figure 3). The inner shaver is then reassembled with the barrel, and arthroscopic débridement commences. A similar technique of cannulation using the outer barrel of an arthroscopic shaver was described by Shen and Meislin for use in hip arthroscopy.⁸

allow passage of other arthroscopic instruments. This limitation means that the technique can be applied only in procedures in which the shaver is the only débridement instrument. Alternatively, a larger bore outflow cannula can be passed over the guide wire, through which arthroscopic scissors or punches can be passed (Figure 4). Nevertheless, given the frequency of procedures that primarily require débridement, we believe

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After an anterolateral portal is created and the arthroscope is introduced, a 17-gauge spinal needle is placed through the skin anteromedially and into the medial compartment of the knee under direct vision. Advancing a small-bore hypodermic needle after infiltration of local anesthetic helps determine proper orientation before inserting the spinal needle. A skin incision but no formal arthrotomy is made. The stylet from the spinal needle is removed, and a flexible wire is passed through the needle and into the joint (Figure 1). After proper positioning of the needle and guide wire has been confirmed, the needle is removed, and a cannulated switching stick is placed over the guide wire to provide gentle dilatation of the needle arthrotomy (Figure 2). Next, the switching stick is removed, and the inner shaving

DISCUSSION

We believe that use of a cannulating device in knee arthroscopy has the dual benefit of minimizing the potential for intra-articular damage and decreasing postoperative pain by limiting soft-tissue damage in and around the knee. Use of a spinal needle and a cannulated switching stick ensures optimal positioning of an anteromedial portal and adequate access to the knee before the introduction of any arthroscopic instruments. The small size of the arthrotomy coupled with the elimination of multiple instrument passes limits fluid extravasation, which can complicate a straightforward procedure and lead to increased postoperative pain and swelling. The technique is limited insofar as the outer barrel of the arthroscopic shaver serves as an ad hoc cannula and is not designed to

that our technique is useful. In the brief period in which we have been using it in arthroscopic procedures, we have noted a dramatic reduction in postoperative pain reported by patients with no other alteration in our technique.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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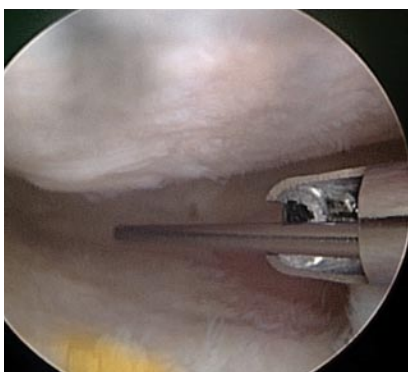


Figure 3. Outer barrel of shaver passing over flexible wire.

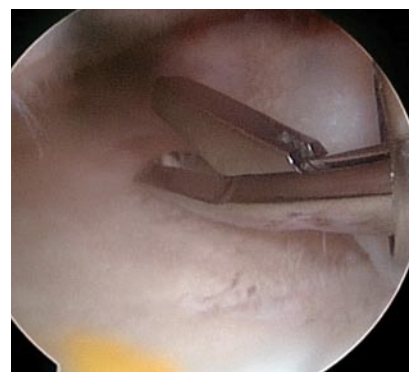


Figure 4. Arthroscopic punch passing through larger bore cannula.