

# Treatment Performed into Knee Arthroscopy

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## Abstract

Shoulder arthroscopy is currently used in the evaluation and treatment of shoulder instability, rotator cuff pathology, sub-acromial impingement, acromioclavicular joint disorders, atypical shoulder pain with inconclusive imaging studies, adhesive capsulitis (frozen shoulder), osteoarthritis, and synovitis of the shoulder. Limitations of smaller joint arthroscopy have been overcome by the development of smaller equipment and cameras, the understanding of safe portals of entry, and the innovation of joint distraction to allow for the introduction of arthroscopic equipment.

**Keywords:** Ankle impingement; Acromial impingement; Arthroscopic evaluation; Common diagnoses; Certain disorders; Sports medicine

## Introduction

The ankle can be a difficult joint to evaluate completely because of its restrictive bony and ligamentous architecture. Due to the joint's restrictive anatomy, early ankle arthroscopy was limited to addressing anterior pathology. Smaller cameras and operator-friendly distractor devices are now available that allow for complete arthroscopic evaluation of the ankle joint from a perspective unobtainable with open exposures of the ankle [1]. Current therapeutic indications for ankle arthroscopy include evaluation and treatment of anterior ankle impingement due to synovitis and/or degenerative osteophytes of the distal tibia and talar neck. Traumatic osteochondral injuries and associated loose bodies are amenable to debridement and removal through arthroscopy. Arthroscopic tibiotalar fusions can be performed in selected patients with degenerative arthritis and minimal deformity. Synovitis of rheumatoid arthritis and other inflammatory arthritis can also be addressed with ankle arthroscopy. The wrist is another joint that relies on distraction techniques for optimal arthroscopic evaluation, and wrist arthroscopy is felt to be the gold standard for diagnosis of intra-articular wrist pathology. Indications for therapeutic wrist arthroscopy include triangular fibrocartilage complex tears, adjuncts to reduction and fixation of intra-articular fractures and ligament disruptions, loose body removal, debridement of chondral defects, synovectomy, degenerative arthritis, and septic arthritis. The elbow is surrounded by multiple nerves and vascular structures [2]. The arthroscopic understanding of anatomy and the establishment of safe entry portals along with development of smaller instruments have allowed elbow arthroscopy to become an alternative to open procedures for the evaluation and treatment of certain disorders. Therapeutic indications include removal of osteochondral loose bodies, synovectomy, temporizing arthritis debridement, radial head excision for radial head fractures, and septic arthritis. As with the other joints, elbow arthroscopy is an excellent diagnostic tool, providing a magnified view of the joint that cannot be achieved by standard open exposures. Endoscopic techniques have also been developed and used for other orthopaedic-related disorders such as carpal tunnel syndrome and plantar fasciitis. Although most of these techniques have not shown a clear therapeutic advantage over open techniques, they do offer further options for the treatment of these disorders. Two hundred eleven arthroscopic procedures were performed at Ochsner in 1999. The knee was the most common joint treated and meniscal tears and degenerative joint disease were the most common diagnoses addressed by arthroscopy [3]. The majority of arthroscopies were performed by joint reconstruction specialists who treat a relatively older population of patients with arthritis problems. In the summer of 2000, the addition of

an orthopedic sports medicine specialist to the Ochsner orthopedic staff is expected to bring an increase in the number of arthroscopic procedures for more activity-related injuries. Arthroscopy, one of the greatest advances in orthopaedic surgery in the 20th century, offers a minimally invasive alternative to standard open surgical techniques, which often require extended incisions for adequate joint exposure. Decreased comorbidity, shorter rehabilitation, and the resulting socio-economic benefits are proven advantages. Arthroscopic surgery has improved the understanding of joint pathology and expanded therapeutic options for previously unknown or less understood joint disorders and continues to develop into a tool vital to future advances in orthopedic surgery. Prior to the widespread clinical use of arthroscopy and its specialized instrumentation, joint surgery required extended incisions and arthrotomies for exposure and treatment of joint pathology. Arthroscopy offers several advantages over such extended open arthrotomies. Compared with minimally invasive arthroscopic procedures, the extended exposure of joints prolongs recovery and increases pain and risk of complications, such as infection and arthrofibrosis [4]. Minimally invasive surgeries, in general, result in less pain and postoperative swelling than open techniques. As a result, arthroscopically treated patients tend to heal faster and begin rehabilitation earlier and, subsequently, return to normal activity and work sooner. As techniques and indications for treatment have expanded, injuries, particularly those in athletes that at one time would have been career ending, can now be addressed with arthroscopy allowing patients to return to full function. Examples include anterior cruciate knee ligament injuries in running athletes and intra-articular shoulder pathology in throwing athletes. Some arthroscopists even have the facilities to perform procedures in an office setting, further reducing costs [5]. Arthroscopy can be performed under many options of anesthesia ranging from local to general. Choice of anesthesia varies depending on the nature of the procedure and preferences of the patient and physician. As with any invasive procedure, complications can occur with arthroscopy, now the most commonly performed

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orthopedic procedure. A 1983 national survey of 118,590 procedures reported 930 complications—an incidence of 0.8%. In this survey, equipment failure accounted for 17% of complications reported while vascular injuries accounted for 1%. Arthroscopy is a technical procedure requiring a wide range of equipment (camera and monitor, surgical equipment, pump, tourniquet, etc.) that can malfunction or break during a procedure. The surgeon should be familiar with the equipment and use it only for its intended purposes. Anesthesia problems can also occur, but this is not unique to arthroscopic surgery. When arthroscopic surgery is performed in an office setting, the surgeon must be prepared for any potential anesthesia problems that might arise. Other complications include hemarthrosis, thrombophlebitis, arterial injury, nerve injury, compartment syndrome, and infection and metabolic complications in patients with metabolic diseases (diabetes, gout) or those using steroids [6]. While arthroscopy has resulted in an overall decrease in morbidity compared with open techniques, it is still an invasive procedure and inherently involves risks. These problems can be addressed with extended open techniques, the comorbidity associated with open procedures often prevents such patients from returning to their pre-injury functional status. For professional athletes, these types of injuries more often led to the end of their paying careers. The knee was the model joint for the development of arthroscopy, and the evolution of the arthroscope from diagnostic tool to therapeutic tool is common to its application to other joints [7]. The arthroscope was initially used to clearly identify specific intra-articular pathology, thereby assisting treatment management. If treatment required surgery to address pathology such as meniscal tears, open arthrotomies were necessary. As equipment and techniques improved, arthroscopy became a surgical tool in its own right, reducing the comorbidity of joint surgery [8]. The menisci of the knee, the semi-lunar shock absorbing cartilage between the femur and tibia, were the focus of most early knee arthroscopists. Prior to arthroscopy, total meniscectomy was advocated for meniscal tears, and it was felt that a new meniscus would regenerate similar to the original. Subsequently, the use of arthroscopy has shown that partial meniscectomies for amenable tears provide better short- and long-term functional results and less arthritic changes than total meniscectomies. Currently, meniscal surgery of the knee is the most commonly performed arthroscopic procedure. Peripheral tears of the menisci may be amenable to repair and today can be performed completely arthroscopically by experienced orthopedic surgeons. With the popularity of athletics, the advent of arthroscopy has brought the treatment of the anterior cruciate ligament (ACL) of the knee to the forefront of modern orthopedics. At one time, an ACL injury could be career ending for a professional athlete [9]. Today both the ACL and the posterior cruciate ligament can be reconstructed through an arthroscope. Such procedures now allow all athletes, from professionals to weekend warriors, to return to pre-injury levels of activity with appropriate rehabilitation. The indications for knee arthroscopy are numerous and continue to expand. Arthroscopy has proven to be a beneficial, temporizing, and therapeutic procedure for the treatment of osteoarthritis. Knee arthroscopy for osteoarthritis offers an alternative pain relief option for patients who are not ready or are unwilling to undergo a major surgical procedure such as knee replacement surgery. Arthroscopic synovectomy of the knees in patients with rheumatoid arthritis and other hypertrophic synovial-producing syndromes has significantly reduced complications and improved outcomes compared with open synovectomies of the knee. Osteochondral injuries and osteochondritis desiccans lesions of the knee can be repaired and drilled to stimulate fibro-cartilaginous healing, and dissociated loose bodies can easily be removed by arthroscopy. Knee arthroscopy can also be used as an adjunct in

assessing the intra-articular reduction of tibial plateau fractures and intra-articular distal femur fractures. Knee arthroscopy offers an effective means of draining septic knee effusions, as well as traumatic hemarthroses, while at the same time offering an excellent diagnostic examination of the intra-articular structures of the knee. More recently, exciting advances such as osteochondral and meniscal transplants have continued, and as these techniques develop will continue to use arthroscopy as a primary portal of entry. The shoulder is the second most common joint evaluated and treated by arthroscopy. As with the knee, early arthroscopy of the shoulder focused on diagnosing and understanding intra-articular joint pathology. Only in the last 2 decades has shoulder arthroscopy been recognized as both a diagnostic and therapeutic technique with a low incidence of complications. Both the glenohumeral joint and the subacromial space can be evaluated and treated using in the throwing athletes, shoulder arthroscopy has greatly improved understanding of normal shoulder function and specific anatomic pathology. A review of 100 procedures in athletes noted a high percentage of concomitant pathology in patients with preoperative diagnoses such as instability and impingement of the rotator cuff.

## Conclusion

Parents reported chronic pain in their children with NMD and more than half of the youth self-reported chronic pain. This finding is consistent with previous studies of adults and youths with various disabling conditions, including spinal cord injury, cerebral palsy, amputation, and neurological injuries. Previous studies in adults with NMD show that a significant percentage has substantial problems with pain, severe enough that it negatively affects both functional capacity and QoL.

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## Conflict of Interest

None

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