

Arthroscopy in Rheumatology: Time for a New Look?



Since the introduction of endoscopic inspection of joints in the 1960s, a few rheumatologists have sought to apply the technique to our patients. Surgical applications under arthroscopic guidance swept away simple arthroscopy in the 1970s¹. Attempts to acquire full arthroscopic skills in the 1980s led rheumatologists at several institutions to enter operating rooms (OR) and apply arthroscopic techniques to a variety of clinical situations encountered in rheumatology, particularly arthroscopic debridement for knee osteoarthritis (OA) and major synovectomy for refractory knee synovitis in rheumatoid arthritis (RA)².

Advances in instrumentation that permitted arthroscopy to be performed in a procedure room or office setting fueled a surge of interest in the early 1990s, with highly popular instructional courses sponsored by the American College of Rheumatology (ACR) and private concerns. Arthroscopy study group meetings became a regular part of every national ACR yearly meeting.

The nationwide burden of knee arthritis coupled with many possible costly arthroscopic interventions focused research on outcomes from these procedures. It turned out that arthroscopic debridement adds no benefit over placebo in knee OA³, and joint washout — offered to all undergoing knee arthroscopy even without surgery — also adds nothing to placebo in knee OA⁴. Biologics for RA greatly reduced the number of knees that might be considered for synovectomy — a difficult procedure to support if few other arthroscopic procedures are being done. At a number of European centers, diagnostic arthroscopy continued to be performed, largely to obtain tissue for research, but it also continued with some clinical applications⁵. In the United States, arthroscopy by rheumatologists has largely been forgotten and has reverted back to the orthopedist alone.

Yet technology marches on, and just as your cell phone camera has supplanted your single-lens reflex camera, the view from a tiny scope inserted under a 1.4-mm needle puncture is reintroducing us to the wonders of arthroscopic inspection, with optics far superior to those of the 1990s era “office arthroscopes.” The new mini-scope was developed mainly for the orthopedist to assess intraarticular pathology in lieu of magnetic resonance imaging (a model judged in a cost-benefit analysis to save \$115 million–\$177 million/yr

from more accurate diagnosis of medial meniscal lesions)⁶. The mini-scope in the hands of a rheumatologist in his/her office reveals the same panoply of cartilage and synovial pathologies wondered at by the first rheumatologist to pick up the tool half a century ago.

But what to do now? Development of arthroscopy in the 1980s became focused on OR interventions, bypassing what might be learned from simple inspection, leaving diagnostic arthroscopy an underdeveloped field. Obtaining synovium now is possible under ultrasound guidance⁷, although intraarticular variability⁸ is not accounted for by ultrasound, and the occasional characteristic macroscopic features are missed⁹. Finding internal derangements and providing lavage no longer justify arthroscopy in OA, but identifying very prevalent crystal disease could have future treatment implications¹⁰. Further, cartilage pathology is underestimated by physical examination and radiography¹¹, with arthroscopy providing a true measure of joint damage in a knee where clinical features may seem out of proportion to objective findings. Finally, looking at the painful knee with little to show but bland synovial fluid and a normal radiograph should reveal something more to explain the clinical situation. Advances from the bench should provide guidance to situations in which arthroscopic inspection and guidance could influence diagnosis and treatment decisions.

Arthroscopy is hardly a “new” technology. Past forays by rheumatologists with this technique have been disappointing, in part because so much effort was spent overcoming obstacles to performance, such as equipment cost, OR access, credentialing, malpractice coverage, and justification for performance (to peers and rivals alike). The mini-scope does not come without obstacles, mainly of cost (covered in a facility fee) and time, but past hindrances certainly dwarf these. The disposable scope projects its image onto a tablet, yielding start-up costs orders of magnitude less than for conventional arthroscopy equipment. Although we already have some good ideas about how it may be used (as an aid to diagnosis when gross features, histology, or microbiology could be influential; to judge presence of synovitis when not expected; to possibly stratify for therapy, for example in RA; as well as other research purposes¹²), wider application by creative minds surely will find some new ways forward.

Issues regarding training and orthopedic opposition remain to be addressed, but should be bolstered by enthusiasm for this new application of an old technique whose potential in rheumatology has yet to be fulfilled.

ROBERT W. IKE, MD,

Associate Professor,
Department of Internal Medicine,
Rheumatology Division,
University of Michigan,
Ann Arbor, Michigan;

KENNETH C. KALUNIAN, MD,

Professor,
Department of Medicine,
Division of Rheumatology, Allergy and
Immunology,
University of California at San Diego,
San Diego, California, USA.

Address correspondence to Dr. R.W. Ike, 300 N. Ingalls, SPC 5422,
Ann Arbor, Michigan 48109-5422, USA. E-mail: rike@umich.edu,
rike@med.umich.edu

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