

# Editorial Commentary: In-Office Needle Ankle Arthroscopy May Be Better, Simpler, and Less Expensive



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**Abstract:** Orthopaedic surgeons have always been on the cutting edge of innovation in health care delivery and technology. In turn, the orthopaedic device industry has responded with new products that deliver better quality at competitive prices. Numerous examples of collaboration exist such as in outpatient joint replacement and minimally invasive orthopaedic procedures. In-office needle arthroscopy (IONA) for knees and ankles has been in existence since the 1990s but was hampered by poor image quality and a cumbersome-to-use technology. Now with improved technology for IONA, ankle IONA allows adequate visualization of all pertinent ankle joint structures, allowing reach of 96% of the talus surface and 85% of the tibia plafond, and may show greater accuracy than preoperative magnetic resonance imaging. The majority of cost of an arthroscopy episode of care may reside with the “facility” fee charged for the use of an operating room, personnel, and related equipment. Surgeons and their patients pay higher fees to use hospital or outpatient centers, sometimes with increased inefficiency or more adverse events. IONA may allow orthopaedic surgeons to deliver better services at a reduced cost for ankle arthroscopy.

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Tesco, a British food chain, had previously revolutionized their traditional business model by innovating policies to achieve better quality with cheaper prices. At the time, Tesco’s formula for success was “Better, Simpler and Cheaper”.<sup>1</sup> I do believe that the same spirit of innovation is needed to revolutionize our health care delivery business model.

For many years, orthopedic surgeons had to rely on hospitals and surgery centers to deliver arthroscopy services to their patients. The majority of the cost of arthroscopy care now may reside with the “facility” fee charged for the use of operating room, personnel, and related equipment. That leaves surgeons and their patients obliged to pay higher fees to use hospital or outpatient centers sometimes with increased inefficiency and adverse events.

Back in 1994, Patton et al. reported on a small case series of 4 patients that had in-office ankle arthroscopy

with good outcome and no complications.<sup>2</sup> Small and Del Gallo recommended office ankle arthroscopy in an office-based operating room for patients between the age of 16 and 65 with local anesthesia. They performed most elective ankle procedures, such as synovectomy, spur excision, osteochondritis dissecans debridement, and loose body excision. Their contraindications included local infection, poor vasculature, severe edema, and arthritis.<sup>3</sup>

We enthusiastically read the current article “In-Office Needle Arthroscopy for the Treatment of Anterior Ankle Impingement Yields High Patient Satisfaction With High Rates of Return to Work and Sport”,<sup>4</sup> in which the authors Colasanti, Mercer, Garcia, Kerkhoffs, and Kennedy present the senior author’s experience of treating 31 patients with awake in-office needle arthroscopy (IONA). They described using a 2-mm new needle scope that delivers excellent quality images on an easy-to-use portable tablet. The new system also allows for the use of a fluid management pump and motorized equipment, such as a small shaver and burr. Arthroscopy was done while the patient was awake under local anesthesia, with saline plus epinephrine to distend the joint and no joint distraction that was routinely done to facilitate visualization of the posterior ankle joint structures. Rather, they placed their patients

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in a seated position allowing gravity to distract the joint. With few exceptions, we find their in-office set-up very similar to an operating room. Their clinical results were reported using validated patient-reported outcome measures with a minimum follow-up of 12 months that showed significant positive results and minimal complications.<sup>4</sup>

Related to this technique, a recent cadaveric study by one of the coauthors validated the use of same 2-mm needle scope in 10 cadavers.<sup>5</sup> The study showed their ankle arthroscopy technique, without the same distraction allowed adequate visualization of all pertinent ankle joint structures, and they were able to consistently reach 96% of the talus surface and 85% of the tibia plafond. It is crucial to note that the above techniques were performed by senior surgeons, well versed in ankle arthroscopy and may not be as easy for everyone.

My own experience with IONA over the past 10 years has been positive. Our publication in 2015<sup>6</sup> described our detailed technique using local anesthesia and manual distraction with a 1.4-mm in-office needle scope. In our series of 6 patients, we documented an image quality that was acceptable and suggested the use of anterior-medial and anterior-lateral portals placed more proximally to the standard ones to avoid injury to the talus dome and reach the back of the joint. At the time, there was no instrumentation available to perform additional procedures. Sterile saline was injected through the scope sheath to aid with visualization, and the arthroscopy cart was large and cumbersome. We concluded that the procedure was a reliable diagnostic tool for most patients with syndesmotic injuries and to verify joint reduction or early osteoarthritis following an open reduction internal fixation of the ankle. We also found the device was very helpful in diagnosing small cartilage lesions or when hardware around the joint made it unsuitable for magnetic resonance imaging (MRI). Finally, the absence of a Current Procedural Terminology code for ankle diagnostic scope has made the device obsolete.

Interestingly, similar conclusions were reached by the authors of this study, in which IONA was more accurate than preoperative MRI diagnoses. The same was documented in a recent multicenter comparison between in-office needle knee arthroscopy and knee MRI that yielded better diagnostic accuracy and cheaper cost in favor of IONA.<sup>7</sup> In a systematic review, Zhang et al. stated "IONA holds potential for cost savings and improved diagnostic accuracy relative to MRI, primarily for intra-articular meniscal, ligamentous, and chondral defects of the knee."<sup>8</sup> Nonetheless, they found that the literature lacks evidence for other joints and called for more studies to establish defined protocols, indications, and techniques, which is what this article is addressing for the ankle. We agree with McIntyre that in spite of

the paucity of studies comparing IONA with arthroscopy done in the operating room, IONA appears to be accurate and cost effective.<sup>9</sup> For us, an important question is: What is the potential benefit of this setup as compared to a traditional arthroscopy room? It stands to reason that there should be significant cost saving related to the omission of an operating room and anesthesia personnel fees, but this was not studied by the authors. Interestingly, the current work has shown that there is increased patient satisfaction with the awake arthroscopy experience, as it provides the surgeon the opportunity to explain and narrate his surgery to the patient in real time.

This study acknowledges some limitations, but it does not discuss a specific technical limitation in which the use of a 2-mm shaver and 3-mm burr may not be enough to do an adequate debridement job. This study did document an improvement in pain and function but did not document the adequacy of bone spur excision with postoperative imaging. Specifically, the use of a 2-mm shaver versus a 3.5-mm or larger diameter remains unknown. It is also hard to believe that the 2-mm scope may lead to less cartilage injury, as mentioned in the article's discussion, since the use of 2.0-mm in-office scope versus a 2.7-mm small scope was not studied. Besides, the use of 4-mm scope is rare for an ankle joint.

To summarize, many questions remain unanswered regarding all IONA techniques:

How would IONA efficacy compare to a traditional operating room arthroscopy? How much cost saving can be realized by using IONA? How steep is the learning curve for IONA and the effect of expertise for the operating surgeon on final outcomes? For us, this study reinforces our belief of the potential value of IONA as a better, simpler, and potentially cheaper tool to diagnose and treat patients with various ankle pathologies. Finally, we must note that IONA has allowed experienced ankle arthroscopists to perform advanced ankle procedures in an efficient manner with minimal complications. It remains to be seen whether this can be duplicated by novice surgeons.

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