Perceptions of orthopaedic surgeons regarding arthroscopic surgery for osteoarthritis of the knee - an international survey

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ABSTRACT

Background:

Osteoarthritis is one of the most common diseases of the joints in adults and a major contributor to functional impairment and reduced independence. Current treatment strategies include physical, pharmacological, and various surgical therapies. Knee arthroscopy is one such treatment that is frequently performed despite considerable evidence that suggests it provides no relevant therapeutic benefit.

Methods:

To examine current practice patterns, a survey was conducted among 279 orthopaedic surgeons from 57 countries regarding their use of knee arthroscopy for knee osteoarthritis. Surgeons' preferences were stratified by country of origin, field of specialty, number of years of experience, and status.

Results:

The vast majority of orthopaedic surgeons surveyed would not perform knee arthroscopy for knee osteoarthritis (73%). Among the remaining 27%, this technique was more often preferred by surgeons practicing in Europe and other parts of the world (29.8%) compared with North America (15.6%) ($P = 0.02$), regardless of seniority or field of subspecialty.

Conclusions:

Although controversy exists regarding arthroscopic treatment of knee osteoarthritis, it is still preferred by more than one-quarter of orthopaedic surgeons surveyed worldwide; a significantly greater proportion of those surgeons practice outside North America.

Key Words

osteoarthritis, arthroscopic surgery, knee, survey

INTRODUCTION

Osteoarthritis (OA) is a progressive degenerative disease that manifests as joint pain, loss of function, and deformity. OA is the most common cause of walking-related disability among older adults in the United States, and the prevalence and incidence of OA are increasing rapidly.[1] The direct cost of osteoarthritis is considerable with over $80 billion spent each year in the United States, and almost $50 billion more in indirect costs.[2]

The etiology of knee OA is multifactorial and includes generalized constitutional factors (e.g., aging, sex, obesity, heredity, and reproductive variables), local adverse mechanical factors (e.g., joint trauma, occupational and recreational abuse, alignment, and postmeniscectomy), and geographic factors.[3] Clinically, OA is diagnosed on the basis of a history and physical examination. Radiography is used to confirm clinical suspicion and exclude other conditions. When radiography is used along with physical examination, sensitivity and specificity are 91% and 86%, respectively.[4]

Management of OA of the knee has traditionally focused on treating pain and disability related to this disorder. However, a broader approach that includes prevention and intervention that slows down or limits disease progression in affected joints is now recommended. Initial treatment modalities usually are nonsurgical, and these include exercise, physical therapy, bracing, nonsteroidal antiinflammatory drugs, and intra-articular injections of steroids and viscosupplements.[2,4] The role of surgical treatment in osteoarthritis of the knee continues to evolve. Usually, if symptoms persist after conservative treatment, surgical interventions should be considered, and these include arthroscopic debridement, cartilage repair surgery, osteotomy with axis correction, and unicompartmental or total knee arthroplasty.[3] Arthroscopic debridement and lavage have been used extensively for the treatment of knee OA for nearly 70 years.[5,6] The goal of arthroscopy is to reduce synovitis and eliminate mechanical interference with joint motion.[7,8] However, in recent years there has been increasing controversy regarding the effectiveness of arthroscopy for knee OA.[5–8]

The aim of the current international questionnaire study was to determine orthopaedic surgeons' perception regarding the use of arthroscopy in the management of OA of the knee. We hypothesized that considering the strong evidence and clinical guidelines against performing arthroscopy for knee OA, orthopaedic surgeons will advise against it.

MATERIALS AND METHODS

Anonymous printed questionnaires were given to all orthopaedic surgeons who attended the annual meeting of

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the American Academy of Orthopedic Surgeons (AAOS) held in San Diego, in February 2011 and the annual meeting of the European Federation of National Association of Orthopaedic and Trauma (EFFORT) held in Copenhagen, in June 2011. The aim was to obtain a cross-section of subspecialities to assess orthopaedic surgeons' perceptions as a whole. Orthopaedic surgeons attending these meetings received a printed questionnaire and were asked to answer a *Yes* or *No* question regarding whether they recommend knee arthroscopy for knee OA. Physicians who agreed to participate also were asked to provide information regarding the country of origin, field of subspecialty, number of years of experience, and status (senior surgeon, fellow, or resident). An estimated number of 400 questionnaires were given, with 279 (70%) being returned within the conference period.

Statistical analysis was performed with SPSS package version 17 (SPSS, Chicago, IL).

Statistical significance was calculated using the Chi Square test. $P < 0.05$ was considered statistically significant.

RESULTS

Two hundred seventy-nine surgeons from 57 countries participated in the survey. Nearly half of the participants (53%) were from European countries, 23% from North America, 13% from Asia and the Middle East, 8% from South America and 3% from African countries (Figure 1A). Of the responders, 201 (72%) provided information regarding their status (56% senior surgeons, 22% residents, 22% fellows); and 206 (74%) answered the question regarding their field of subspecialty. Figure 1B represents the distribution of the questionnaire participants' reported subspecialty: 21% were knee or joint surgeons, 18% were 'general' orthopaedic surgeons, 12% were orthopaedics trauma surgeons, 7% were sports surgeons, and 42% were grouped as 'other' and included shoulder, hip, spine, oncology, and pediatric orthopaedic subspecialties. The reported mean experience was 10.9 years (range, 1–45 yr). Of all the orthopaedic surgeons surveyed, a vast majority (73%) answered that they would not recommend arthroscopy for knee OA. Comparison between American and non-American orthopaedic surgeons revealed a significant difference in preference. As demonstrated in Figure 2, 29.8% of non-American orthopaedic surgeons surveyed recommended arthroscopy for knee OA, in comparison to only 15.6% of Americans ($P = 0.02$).

Subsequently, we conducted a subgroup analysis within the non-American group. No significant differences were found in terms of surgical attitude between all regions included in the non-American group ($P > 0.05$). No significant differences were found between surgeons of different subspecialties, seniority, or years of experience ($P > 0.05$).

DISCUSSION

Knee arthroscopy is one of the most common orthopaedic procedures currently performed worldwide. Arthroscopic debridement and lavage have been used extensively in sports medicine for the treatment of meniscal and ligamentous injuries. However, the role of arthroscopy in the treatment of OA remains controversial.[5,9,10] Early studies investigating the potential role of arthroscopy in knee OA have shown promising results. Compared with open procedures, arthroscopy resulted in less pain and postoperative swelling and often reduced the risk of complications such as infection and arthrofibrosis.[11] All of these benefits led to a rapid rise in arthroscopic surgeries, and by the mid-1980s, arthroscopy became the preferred method of treatment. However, during the past decade, the role of arthroscopy in the treatment of OA has been called into question. In 2002, Moseley *et al.*[12] published the first randomized controlled trial that compared arthroscopy with nonoperative therapy for knee OA. They randomized 180 patients into three arms: arthroscopic debridement, arthroscopic lavage, and a sham procedure. Results showed no differences in early pain relief or any long-term clinical outcomes between the three groups. This landmark study established that arthroscopic debridement or lavage is not better than placebo surgery in the management of OA.[12] A following trial by Kirkley *et al.*[7] supported previous results.

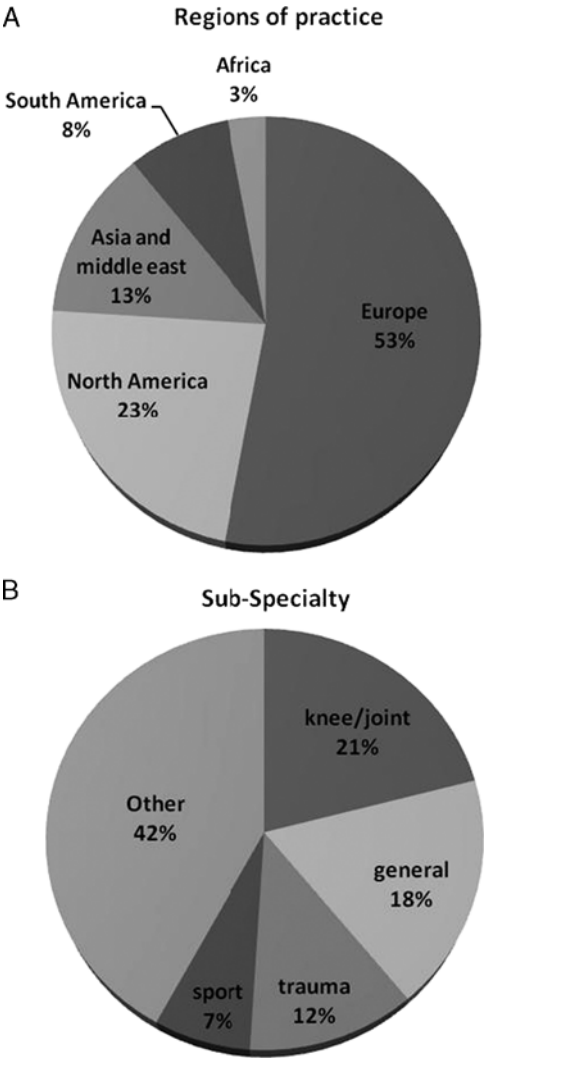

FIGURE 1. Demographics of surgeons included in the study. (A) The geographic distribution of the survey participants. (B) The distribution of the five major orthopaedic subspecialties.

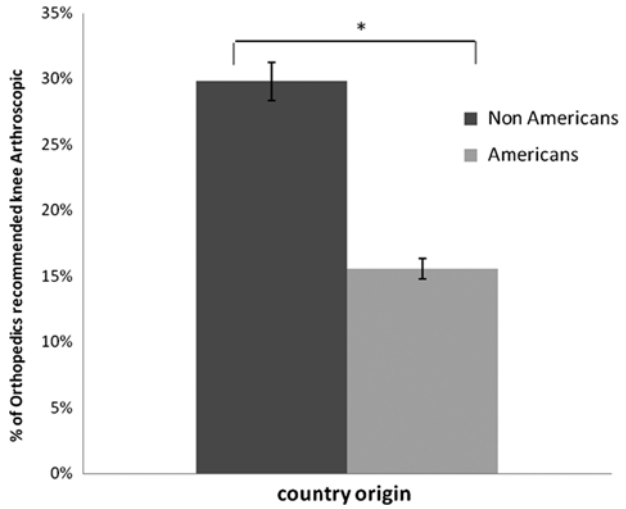

FIGURE 2. Arthroscopy in knee osteoarthritis is significantly more popular outside the United-States ($^{*}P < 0.05$).

In their study, subjects were randomized into two arms: arthroscopic debridement and standardized physical therapy. Despite the differences in their control groups (sham surgery vs. nonoperative treatment), no differences were observed between the two groups in regards to pain relief or functional status.[7] However, Kirkley *et al.*[7] were not the only ones; further trials over the last decade have supported Moseley *et al's*.[12] study and failed to demonstrate any substantial improvement when compared with placebo. Herrlin *et al.*,[13] for example, compared rigorous exercise alone with the same exercise accompanied by arthroscopic partial meniscectomy (APM). Similar to previous results, both groups improved the same over the first 6 months and maintained symptomatic improvements over 60 months. Comparable results also were documented in a considerably larger study entitled, 'The Meniscal Tear in Osteoarthritis Research (MeTeOR) Trial.[14] In the MeTeOR trial, patients were randomized to receive either a physiotherapy or APM with postoperative physiotherapy. The results showed that both arms improved considerably in the first 6 months or 12 months after surgery, supporting the existing evidence that suggests that arthroscopy provides no therapeutic benefit.[14]

After these results, several organizations have updated their guidelines for the management of OA. According to the 2008 National Institute for Clinical Excellence (NICE) guidelines, arthroscopic lavage and debridement should not be offered as part of treatment for OA, unless a patient suffers from knee OA with a clear history of mechanical locking associated with intraarticular loose bodies or meniscal tears,[2,15] emphasizing the importance of proper patient selection. Contrarily, the most recent and previous (2013 and 2009, respectively) guidelines, suggested by the AAOS indicated that arthroscopic debridement or lavage is *not* recommended for patients with primary diagnosis of symptomatic OA of the knee (level of evidence: I and II).[2,16,17] But did these studies and subsequent changes in guidelines influence practice? In the current study, we conducted a survey among 279 surgeons from 57 countries to try and evaluate whether the everyday practice was influenced by previous evidence. Our results demonstrated that up to 27% of orthopaedic surgeons still recommend arthroscopy for the treatment of OA. This treatment modality was found to be significantly more popular outside of the United States. Among the surgeons who chose to recommend arthroscopy for knee OA, only 13.5% were Americans in comparison to 56.7% Europeans and 29.8 of the remaining countries.

To date, only a limited number of studies have examined whether the utilization of these procedures has changed over the years. A relatively recent study by Potts *et al.*[18] has asked this question, specifically among American surgeons. In their study, the authors demonstrated a significant, yet gradual decrease in the number of knee arthroscopy cases for patients with OA in the following years after the Moseley *et al.* study.[12] However, the main limitation of Potts *et al's*.[18] study was that the group of surgeons studied was composed of early career surgeons and was not necessarily representative of orthopaedic surgeons in general. According to Potts *et al.*[18] young surgeons may practice differently based on the findings of Moseley *et al.*[12] as well as orthopaedic texts such as *Campbell's Operative Orthopaedics* that reference the Moseley *et al.*[12] trial as evidence that arthroscopy is not favorable for the treatment of OA.[18,19] Therefore, Potts *et al's*.[18] trial concluded that further study is needed to determine whether this change occurred in the orthopaedic community at large or if practice patterns only changed for surgeons during their board collection periods. Nevertheless, this theory was not supported by our results. No significant differences were found between the 'Yes' and 'No' groups when we preformed subgroup analysis based on subspecialty, seniority or years of experience. However, significant differences were observed between American and non-American surgeons.

Such differences have been previously identified. Recent studies by Kim *et al.*[20] and Holmes *et al.*,[21] have also examined the changes in everyday practice among American surgeons. Interestingly, they both noted a decline in arthroscopic debridement for OA, while overall rates of other knee arthroscopies were actually increasing. In contrast to the American findings, an Australian study conducted by Bohensky *et al.*,[22] did not observe any changes in use of knee arthroscopy between the years 2000 and 2009, for any indication.[22] These dissimilarities could be explained by the differences in the American and European guidelines in regards to this matter; while the AAOS chose to highly recommend against arthroscopy with debridement in symptomatic OA, the NICE preferred to be less decisive and recommended not to refer OA patient to arthroscopy, with reservation regarding a patient's history based on the argument that treatment is beneficial for patients with mechanical symptoms of catching or locking or those with early disease.[10,23,24] The nonexplicit guidelines offered by the Europeans may have been the reason for the relative diversity of opinion among orthopaedic surgeons, in and outside of the U.S., but not solely.

In conclusion, these survey findings suggest that despite current available data, arthroscopy is still preferred by more than one-quarter of orthopaedic surgeons surveyed worldwide as the treatment for knee OA. Moreover, we found that

geography may affect surgeons' preferences, as demonstrated by distinct choices of North American orthopaedic surgeons to avoid knee arthroscopy compared with non-American countries. These results were mainly attributed to the differences between the European and U.S. national guidelines. If so, new guidelines should be considered in a manner that will be more unanimous and will also include the exceptional patient who may benefit from this treatment approach. We believe that this study can be effective in changing orthopaedic surgeon practice in regards to this controversial matter.

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