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Guest Editorial

Arthroscopy for degenerative knee—a difficult habit to break?

Patients with degenerative musculoskeletal disease are the largest group referred for orthopedic consultation. The prevailing understanding regarding the etiology, pathogenesis, diagnosis, and treatment of many degenerative musculoskeletal problems is very similar: pain is usually attributable to a mechanical problem—for example, an impinging acromion in the shoulder or femoroacetabular impingement in the hip, degenerative and herniated intervertebral discs, or a degenerative meniscus tear in the knee. This has led to a relatively straightforward diagnostic and treatment strategy for these complaints: attempts at non-operative treatment are usually followed quite soon after by surgical intervention that usually aims to “restore deranged anatomy” by removing degenerative tissue. Many patients report improvement after such surgery, but similar results have also been obtained with non-operative treatment in randomized, non-placebo controlled trials. Despite the considerable clinical and economic implications, the evidence on the true efficacy of many orthopedic procedures is at best scarce. The efficacy of any given surgery cannot be addressed simply by evaluating the outcome of patients who have undergone the procedure, as the role of the underlying disease process (e.g., the natural course of the disease, regression to mean, and fluctuations in symptoms), the placebo effects, and the possible beneficial effects of the actual surgical procedure cannot be disentangled from each other with such a study design (Krogsboll et al. 2009).

However, one particular trial published some 10 years ago marked an important turning point for the orthopedic community as a whole. Using a sham-surgery controlled design, Moseley and colleagues showed that arthroscopic lavage or debridement provides no benefit over a placebo procedure (skin incisions only) in patients with advanced knee osteoarthritis (Moseley et al. 2002). Quite understandably, such a finding—one that essentially eroded the justification of a very common orthopedic procedure—was met with unprecedented criticism and even hostility. There were, however, a few colleagues who chose a different path: rather than resorting to challenging Moseley’s findings solely with no or low-level evidence, they put the procedure to the only proper test, a randomized controlled trial (RCT). The resulting high-quality RCTs corroborated the general finding that “arthroscopic surgery” is no better than either physiotherapy or sham surgery in patients with various degrees of knee OA and meniscal “tear” (Herrlin et al. 2007, 2013, Kirkley et al. 2008, Katz et al. 2013, Sihvonen et al. 2013, Yim et al. 2013).

Given the massive clinical experience on arthroscopic surgery for degenerative knee disease (at least 2 million such procedures are carried out annually around the world with generally highly satisfactory outcome) and the convincing biological rationale behind the procedure, the reservations among our peers are easily understandable. But are they justified? In assessing this, we note that meniscal tears are found on MRI in every third knee in individuals from the general population aged 50–90 years. In those who have radiographic evidence of osteoarthritis (whether they have knee symptoms or not), the prevalence of a meniscal tear is even higher (> 60%). In other words, the more severe the radiographic osteoarthritis, the higher the prevalence of “degenerative meniscus tear” (Englund et al. 2008). Importantly, most meniscal tears are found in people without any knee pain. Also, having knee pain and a meniscal tear does not necessarily mean the tear is the cause of the pain, as the evidence convincingly shows that there are other sources of knee pain (Englund et al. 2012).

But has all this evidence resulted in a reversal of clinical practice? In this issue of *Acta Orthopaedica*, Thorlund et al. (2014) report nationwide statistics on the annual incidence of meniscal procedures in the years 2000–2011 in Denmark. The national database used for the analysis contains all health-care procedures performed in public and private hospitals and clinics, and thus enables reliable estimation of trends in knee arthroscopy. The age, sex, and diagnosis are also recorded, and accordingly, this database enables the identification/differentiation of patients with traumatic tears (who are generally younger) from middle-aged patients with degenerative tear and/or knee OA (acknowledging the inherent problems due to the lack of universally accepted criteria/coding for “degenerative” or “traumatic” tears, and for knee OA). The data of Thorlund et al. show a paradoxical association between evidence and clinical practice in arthroscopic surgery for patients with symptomatic degenerative knee disease, as a large increase in meniscal procedures was observed in patients aged 35 years or more during the study period. In contrast, the incidence rate of meniscal procedures in patients aged 35 or less was stable over the same time period. Although the paper is probably the most methodologically sound (using nationwide statistics with almost 100% coverage), it is not the first to report similar trends in knee arthroscopy. In 2011, Kim et al. reported a large increase in knee arthroscopies in middle-aged patients (most being meniscectomies) from 1996 to 2006 based on the nationally representative sample of hospital-based and free-

standing ambulatory surgery centers in the USA (Kim et al. 2011). Earlier this year, Lazic et al. (2014) reported a more than 2-fold increase in the incidence of arthroscopic meniscal resections performed from 2000 to 2012 based on hospital records of all patients over 60 years of age admitted to National Health Service (NHS) hospitals in the UK, including outpatient appointments (Lazic et al. 2014). In both of these studies, the large increases in the incidence of meniscectomies were reflected by decreases (between 30% and 80%) in the numbers of arthroscopic procedures for established knee OA (lavage or debridement) (Kim et al. 2011, Lazic et al. 2014).

In essence, from these studies it appears that while the incidence of the procedures for younger patients with meniscal injury has been relatively stable, the incidence of procedures for middle-aged patients with degenerative knee disease (meniscus tear with or without knee OA) has increased substantially. It seems that orthopedic surgeons are unmoved by the pivotal trials (Moseley et al. 2002, Herrlin et al. 2007, Kirkley et al. 2008) and are still scoping the same patients and their knees, yet possibly coding the procedure differently (Kim et al. 2011).

Is it time to abandon ship? We would argue that the amount of *quality* evidence on the benefit of arthroscopic surgery for a degenerative knee is second to none among all orthopedic complaints. And quite extraordinarily, that evidence is also very uniform, pointing in one and the same direction. Despite all this, it is readily apparent that the vast majority of our peers still consider the existing evidence insufficient to cause a major shift in the current practice of treating patients with a degenerative knee disease (Price and Beard 2014, Rossi et al. 2014). If so, we feel that at the very least, the present situation supplies very convincing leverage, and an ethical justification, to start carrying out whatever type of randomized controlled trial one might consider appropriate to prove the efficacy of knee arthroscopy.

We believe that the weight of the evidence is causing the current ship of state to lean over badly and may soon require us to abandon the vessel unless new and more convincing research comes to the rescue. It may be that funding authorities will choose to stop paying for these surgeries unless more buoyant and countervailing evidence can be brought to bear. Encouragingly, some have assessed the dangers and have launched new RCTs on the topic (Hare et al. 2013, Giori, Stensrud), operating under the principle that reliable evidence on the use of very common medical procedures is absolutely vital for keeping our healthcare systems sustainable and productive. Thorlund and colleagues are to be praised for their important contribution in the pursuit of more cost-effective practice in arthroscopic knee surgery, perhaps helping us to navigate safely and sustainably.

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