



Acta Orthopaedica

ISSN: 1745-3674 (Print) 1745-3682 (Online) Journal homepage: <http://www.tandfonline.com/loi/iort20>

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To cite this article: Michael R. Krogsgaard, Martin Lind & Uffe Jørgensen (2014) A positive viewpoint regarding arthroscopy for degenerative knee conditions, Acta Orthopaedica, 85:6, 681-685, DOI: [10.3109/17453674.2014.970071](https://doi.org/10.3109/17453674.2014.970071)

To link to this article: <http://dx.doi.org/10.3109/17453674.2014.970071>



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Published online: 03 Oct 2014.



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A positive viewpoint regarding arthroscopy for degenerative knee conditions

Sir—In the latest issue of *Acta Orthopaedica*, Thorlund et al. (2014) report figures from the Danish National Patient Register (DNPR) showing a 2-fold increase in knee arthroscopy with meniscal surgery from 2000 to 2011, and they conclude that arthroscopy for degenerative conditions in particular has increased in the middle-aged population. In a guest editorial in the same issue, Järvinen et al. (2014; from Finland and Sweden) conclude that since any additional effect of arthroscopic operations in these conditions has not been shown, that arthroscopy is contraindicated, and that political decisions may be the next step to stop arthroscopic operations.

In Thorlund's article, 2 significant confounders are of importance for the results and conclusions. The authors state that in the year 2000, several hospitals did not report to the DNPR and they suggest an under-reporting rate of about 5%, based on a general estimate of all operations. This cannot be extrapolated to knee arthroscopy, which is a small operation that is performed more often in private hospitals and in orthopedic specialist practices (often under local anesthesia) than in public hospitals, in contrast to larger operations. Private hospitals and clinics did not report to the DNPR before the mid-2000s. Therefore, the increase between 2000 and 2011 is substantially overestimated; the authors could have contacted the Danish National Board of Health to make the estimate of missing operations more qualified. Alternatively, the authors could have excluded hospitals and clinics that did not report over the whole period of 11 years.

It is a mistake to regard meniscal changes coded as DM232 as degenerative. The distinction between DS832 and DM232 is only related to the duration of symptoms, and most clinicians would use 3 months as the dividing time. In addition, the salary for diagnosing and non-operatively treating meniscal changes is higher if the code DM23.2 is used, which may make clinicians aware of the time consideration regarding individual patients. Thus, how many of the meniscal operations were actually performed on degenerative meniscal changes and how many were performed on traumatic ruptures is pure speculation.

Although it is not stated clearly in Thorlund's article, we assume that the incidences are based on population numbers for each age category and not for the whole population. On the internet, it is easy to obtain numbers of inhabitants in Denmark for every 3 months—and with 1-year age intervals (<http://www.statistikbanken.dk/02>). If this information had been used, the extrapolation that is used for population numbers in the article could have been avoided.

Is it bad to arthroscopically and debride knees with meniscal or degenerative changes? The “well-conducted” randomized studies have all shown an effect, but have not been able to demonstrate any difference between operative and non-operative treatments. No one has had a control group (with no treatment). Thus, there may not be any difference, or the outcome measures that are used in these studies, which are generally constructed for much more painful conditions, might not be relevant or sensitive enough for people with milder disease to show any difference. But the randomized studies show that arthroscopy has an effect—which is not less than non-operative treatment. Another important issue with the data from these randomized studies is that they contain too few patients to be able to perform relevant subgroup analysis. From clinical experience, we know that male patients with mechanical symptoms have very good outcome compared to female patients without mechanical symptoms.

In the editorial, Järvinen et al. (2014) state – quite strangely – that on top of no difference, there are complications to arthroscopy. In well-conducted randomized studies, these complications are included in the outcome comparisons.

Järvinen et al. missed 2 very important points that should have been considered before they abandoned arthroscopy for the degenerative knee. Firstly, the number of people who engaged in regular sports activity increased by 30% in Denmark between 1998 and 2011; in the middle-aged group, almost 70% had regular physical activity and 42% had sports activity 3–4 hours a week or more (Laub 2013). 20% of adults must stop sports because of health problems. Symptoms from degenerative conditions are load-related, and it could be expected that higher numbers of middle-aged people would have symptoms from their knees in 2011 than in 2000, just because of the substantially increased physical activity in this age group. In addition, this can be expected to increase over the coming years.

The second point has, strangely enough, not been part of this discussion at any time. What if non-operative treatment is not working? There has been an annual increase in public physiotherapy treatment in Denmark of 3–5 % every year from 2000 to 2011 ([Praksisplan for fysioterapi] Reports from the Danish regions 2012–13), particularly in the middle-aged population. The total amount of physiotherapy and other non-operative interventions has most probably increased much more, as many Danes obtained a private health insurance during this period. So there is quite substantial data on a marked increase in non-operative treatments of the degenerative knee during the period in question.

So, banning arthroscopy is not based on scientific evidence but has a much more political sound. For us as clinicians seeing many of these patients, in contrast to several of the authors of the articles that have created this debate, it is evident that most patients have tried relevant non-operative interventions before they are seen by the orthopedic surgeon. There is an increasing demand to stay fit and to be able to engage in physical activity irrespective of age, and the general health benefits of this have been substantially documented. A large proportion of these patients are very fit, and for them it is difficult to argue for further exercise as treatment.

We suggest that, instead of closing one eye and pressing the patients into the same standard protocol, the healthcare staff should evaluate the individual person. A fit 50-year-old plumber who is in danger of loosing his job because of knee pain from mild cartilage changes and meniscal flaps, might be helped most quickly with an arthroscopic debridement. An unfit, overweight person might best be treated with muscle training and weight loss. And a person who has become fit from training and has lost weight etc., should not be kept from the possibility of arthroscopic debridement when non-operative treatment has failed. Clinicians know that the situation of failed non-operative treatment is very common.

Knee arthroscopy is one option among several in treatment of the degenerative knee. Based on the available data outlined above and our long clinical experience, it is our view that in Denmark the use of arthroscopy has not increased more than non-operative treatments (and probably less). We feel that increases in the numbers of treatments (both operative and non-operative) must be expected during the coming years, and these are important modalities to keep the Danish population physically active as they get older. This benefits everyone, and also the public finances.

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Sir—We thank Drs. Krogsgaard, Lind and Jørgensen for their comments and interest in our recent publication (Thorlund et al. 2014). However, several of the issues raised by Krogsgaard et al. are based on an apparent misinterpretation of our paper.

We estimate a 5% underreporting based on numbers by the National Board of Health in 2008 (Lyngge et al. 2011). The DNPR have records of meniscal procedures performed at private hospitals and clinics in 2000 (323 procedures), even though this first became mandatory from 2003. The DNPR has formed the basis for payment of both private and public hospitals via the DRG-system since 2000 (Lyngge et al. 2011). Payment to private hospitals and clinics via the DRG-system increased with the introduction of the “free extended hospital choice” (introduced in 2002 and revised in 2007). It is correct that services performed at private hospitals paid privately or by insurance companies are expected not to be fully registered in the DNPR (Lyngge et al. 2011). However, the number of private health care insurances was low in the early 2000’s and increased dramatically with approximately 1.1 million insurances from 2003 to 2011 (<http://www.forsikringogpension.dk>: Brancheorganisation – Forsikring & Pension 2014). Based on these numbers it is more likely that we underestimated the increase in meniscal procedures. We are unaware of evidence to show systematic preferential underreporting of knee arthroscopy procedures in the DNPR and would appreciate the relevant documentation referred to by Krogsgaard et al.

Krogsgaard et al. dispute our criteria for definition of traumatic or degenerative meniscus tears. Onset, patient age, and symptom duration are considered important for this classification (Poehling et al. 1990, Camanho et al. 2006, Englund and Lohmander 2006, Sihvonen et al. 2013, Thorlund et al. 2013). Based on these criteria we suggest that it is fair to assume that the majority of the increase in number of meniscal procedures performed on middle-aged and older patients involves surgery on degenerative tears. We further believe this assumption is supported by the 2.7 fold increase in the use of code DM232 (old meniscus tear), compared with only a 1.3 fold increase in DS832 (traumatic tear).

Incidence numbers provided in our report are based on population numbers for each age category, based on www.statistikbanken.dk. The estimation of mid-year population numbers is a common epidemiologic method to estimate population numbers and differences compared to the method suggested are negligible. The 3-month data suggested by Krogsgaard et al. are only available from 2007 and onwards.

We agree that participation in sports in the adult population has increased between 1998 and 2011 in Denmark. However, Krogsgaard et al. present the numbers in a misleading way. The percentage of sports active in the adult Danish population increased from 50% to 64% (Figure 23 in (Laub and Pilgaard 2013)). In addition, it is worth noting that the amount of time spent on physical activity each week (4 hours) has not changed since 1998 (Laub and Pilgaard 2013). Furthermore, the stated 70% middle-aged doing sports in 2011 is closer to 64% (Figure

19 in (Laub and Pilgaard 2013)). Krogsgaard et al. fail to mention that the most popular sports are jogging, resistance training and hiking reported by 31%, 24% and 23% of the adult Danish population in 2011, respectively (Figure 25 in Laub and Pilgaard 2013). None of these activities are known as major risk sports for traumatic knee injury. We thus find it unlikely that the observed increase in sports participation is responsible for the 2-3 fold increase in use of meniscal surgery for middle-aged and older individuals (Thorlund et al. 2014).

Krogsgaard et al. provide some interesting but undocumented suggestions about the symptom mechanisms associated with degenerative meniscal tears. Published research shows that symptoms commonly associated with meniscal tears also frequently occur in patients with osteoarthritis, and that conversely, degenerative meniscal tears are common in persons without knee symptoms (Zanetti et al. 2003, Boks et al. 2006, Englund et al. 2007, 2008, Guermazi et al. 2012).

In their letter, Krogsgaard et al. speculate about a possible in-effectiveness of non-operative treatment. However, there is high-level evidence documenting the effect of exercise for reducing pain and improving function in patients with degenerative knee disease (McAlindon et al. 2014). Krogsgaard et al. claim a general increase of 3–5% in the use of physiotherapy in Denmark, however no specific number for patients with meniscal tears is reported. In addition, Krogsgaard et al. state that increased use of private health insurances in Denmark has increased the use of physiotherapy. Indeed, the overall insurance paid physiotherapy (including chiropractors, etc.) increased with roughly 250 million DKK from 2003 to 2011. However, the overall private health insurance paid surgery increased by approximately 750 million DKK in the same period (<http://www.forsikringogpension.dk>: Brancheorganisation – Forsikring & Pension 2014).

An appropriate assessment of the risk of adverse events associated with surgical interventions commonly requires large observational studies, due to the often limited size of surgical trials and the frequent low quality of reporting of treatment side effects in such studies (Golder et al. 2011, Wartolowska et al. 2014).

The practice of evidence based medicine (and orthopedics) involves a careful assessment of the balance of benefits and harms of the intervention by the expert healthcare provider based on the highest level of evidence, in a setting of shared decision making with the well informed patient.

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Sir—We thank our Danish colleagues Krogsgaard, Lind, and Jørgensen for their comments on our recent editorial (1) and on our FIDELITY trial (2) on the efficacy of arthroscopic partial meniscectomy (APM) for patients with degenerative meniscus tear. However, as their letter to the editor included—in our opinion—misunderstandings and untenable inferences, we are grateful to *Acta Orthopaedica* for the opportunity to clarify our views on arthroscopy for degenerative knee disease. We have been advised not to respond to the criticism of the original study by Thorlund et al. (3), as the authors of that paper will apparently address the criticism themselves.

To begin with, we are particularly happy to note the courage of our colleagues in highlighting the fact that well-conducted studies are unable to provide any support for the current practice of performing arthroscopy on patients with degenerative knee disease. This important fact has mostly been ignored in the lively discussion (4-10) that has followed after our study was published (2). Krogsgaard and colleagues suggest that in the FIDELITY trial (2), we should have had a “true” control group (instead of using sham, i.e. the knee lavage or “wash-out” as our control). Tempting as an “untreated” group may be, it is associated with the fundamental problem of performance bias. With the subjective nature of burden associated with degenerative knee disease/meniscus tear (knee pain and perceived disability), there is no way of controlling for the unavoidable bias in outcome assessment in patients who know whether or not they have had surgery.

Krogsgaard and colleagues also suggest that the outcome measures used in the controlled trials may not be relevant or sensitive enough to show a difference. Considering that in each of the six well-conducted trials published so far on the topic (2, 11-15), at least one outcome measure was specifically validated for this condition/patient group, their assertion is—with all due respect—irrational.

Their claim that “the randomised studies show that arthroscopy has an effect, which is not less than non-operative treatment” appears to imply that surgery would be justified in this case. We kindly ask our colleagues to explain how they believe that a surgical operation—with the considerable costs and inherent risks related to surgery—would be ethically (or financially) justified based on evidence like this? In our opinion, no surgical intervention can be justified if no evidence can be produced that it is better than placebo or non-surgical alternatives.

Krogsgaard and colleagues also propose that there could be some subgroups of patients who are more suitable for meniscectomy than others. Such a possibility obviously exists, but is there any evidence to support such an experience-based assertion? There are indeed various theories regarding “patients most likely to benefit from APM”, so-called “mechanical symptoms” being one of the most prevalent ones. In fact, in a recent survey evaluating clinical decision-making for APM among practicing orthopedic surgeons in the USA (16), mechanical symptoms were not even included in the survey

due to the presumption that they would be unanimously considered to be a definite surgical indication. However, there is no compelling evidence to support the assumptions that mechanical symptoms are caused by degenerative meniscal tears or that they can be alleviated by APM. Obviously, more work on this topic is much needed.

Regarding our colleagues’ comment on complications: we would like to reassert that efficacy trials are usually carried out in carefully selected patient populations—and more importantly, by very experienced doctors (here, surgeons). Accordingly, by virtue of the word efficacy, the purpose of these studies is to show whether the intervention under investigation can work under idealized conditions, not to demonstrate any real-life value (effectiveness). Of course, we all know that efficacy trials tend to overestimate (inflate) the benefits and underestimate the harms of the intervention under study (17, 18).

We appreciate our colleagues’ vivid description of the epidemiology of trends in physical activity in Denmark, but wonder if this information is only tangentially related to the proven absence of efficacy of knee arthroscopy? We fully share their concern that we should try to keep middle-aged people as active as possible despite their health concerns – in particular, with the steadily increasing prevalence of knee osteoarthritis. However, such noble desire does not free us from the need to limit surgical interventions in those patient categories where it has been firmly shown to be no more effective than non-surgical treatments or placebo. As for their assertions that we have failed to factor in the role of placebo in conservative treatment, we must stress that we are not trying to suggest that patients with degenerative knee disease automatically need physiotherapy. Rather, we note that the possible role/mode of conservative treatment is an open question, where more work needs to be done (and is actually done (19, 20)). However, if the alternatives are surgery and non-surgical management, and they appear to achieve a similar end-result, then we argue that the latter should be the treatment of choice due its low inherent risks.

Finally, although our Danish colleagues appear to be convinced by their firm beliefs drawn from many years of clinical experience, we respectfully remind them that clinical impressions can be deceiving and that eminence-based medicine continues to be soundly criticized and scrutinized. One systematic review relating medical knowledge and quality of healthcare to years in practice and physician’s age showed that physicians who have been in practice longer may be at risk of providing lower-quality care (21). Based on these data, the authors concluded that “this sub-group of physicians may need quality improvement interventions”. We certainly hope that our Danish colleagues and others working in this field—as well as in other medical fields—can help accelerate the demise of eminence-based medicine, which now seems almost anachronistic in the era of evidence-based medicine.

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