Therapeutic arthroscopy for knee osteoarthritis: time to reconsider?

Two recent RCTs have clarified the benefits

In Australia, about 12% of the population, and 34% of people over 50 years of age, suffer from osteoarthritis.[1] The most commonly affected joint is the knee.[2] For patients with knee osteoarthritis and symptoms that are refractory to drugs, arthroscopic surgery is often performed. Arthroscopy may be diagnostic or therapeutic, and potentially may delay more extensive surgery such as replacement arthroplasty.[3] It allows for resection of meniscal tears and debridement of the articular surface, as well as joint lavage to remove debris and inflammatory factors (eg, interferon gamma), which are believed to be a major but remediable source of the pain of osteoarthritis. The procedure has a low incidence of morbidity and can be repeated.[4] Although the number of arthroscopic procedures undertaken for knee osteoarthritis in Australia is not available, a considerable proportion of the 56 000 knee arthroscopies performed each year would be for knee osteoarthritis.[2]

The role of arthroscopy for osteoarthritis of the knee [is] now challenged.

Evidence for the effectiveness of lavage and debridement for knee osteoarthritis comes largely from case series and cohort studies. These have shown that about 50% of patients report pain relief after the procedure.[5] Predictors of poor outcomes from arthroscopy include marked malalignment, restricted range of motion, marked radiographic evidence of osteoarthritis, and prior surgery.[6,7] Better outcomes are predicted by preoperative mechanical symptoms, such as those resulting from loose bodies or meniscal tears, or radiographic evidence of only mild articular degeneration.[8-10] However, other studies have not been able to identify *any* predictive factors for outcome.[11]

Two recently reported randomised controlled trials have attempted to clarify the benefits of these forms of treatment. In one, 180 patients with knee osteoarthritis were randomly allocated to tidal needle irrigation or sham irrigation (in which the knee capsule was not punctured by the needle).[12] After 12 months, the study found that patients in both groups had a 17% improvement in pain and physical function scores, with no statistically significant difference between the two groups. It was suggested that most, if not all, of the benefit of irrigation was a placebo effect. In a more recent randomised controlled trial, 180 patients were randomly allocated to three treatment groups — arthroscopic lavage and debridement, arthroscopic lavage alone, or sham surgery.[5] Follow-up at 12 months found little improvement in patients in each of the three groups (as assessed by outcome measures such as the Knee Specific Pain Scale, the Arthritis Impact Measurement Scales and the SF-36 Health Survey), and no statistically significant difference between the groups.

The inclusion of sham procedure groups and the adequate power of these randomised controlled trials allowed them to better address questions about comparative benefits and placebo effects raised in previous smaller randomised trials. However, although selection criteria for both studies were clearly stated, specific clinical indications for arthroscopy were not clearly defined. Such indications can vary considerably between practitioners. A recent study found that agreement between two groups of surgeons (research fellows and attending staff), independently predicting which patients undergoing arthroscopic debridement for knee osteoarthritis would improve, was only slightly better than chance, with neither group predicting the correct outcome more than 59% of the time.[13]

One indication for which arthroscopic treatment of knee osteoarthritis has been widely regarded as successful is the presence of meniscal tears. Unfortunately, neither of the recent randomised trials analysed patients with meniscal tears separately. Such an analysis would have been especially valuable in the light of a report that meniscal tears in patients with osteoarthritis were not associated with any increase in pain or impairment.[14]

Few studies specify treatment failure with alternative or less invasive therapies as a prerequisite to enrolment, although this may have a substantial impact on their overall success. An earlier randomised controlled trial found that, of 200 patients screened during the enrolment period, more than half improved sufficiently with conservative medical management (exercise and medication) such that no further medical or surgical treatment was warranted at the follow-up visit.[8] The authors noted that "none of the studies of arthroscopy for this population in the orthopaedic surgery literature specified previous rehabilitation treatment ... and many patients included in previous studies would have benefited from medical and rehabilitation therapy alone".

With the role of arthroscopy for osteoarthritis of the knee now challenged, but concerns about the enrolment criteria of recent studies persisting, there remains a need for further investigation. Randomised controlled trials of surgical interventions are notoriously difficult,[15] but, compared with other surgery, there are features about arthroscopic surgery for knee osteoarthritis that would facilitate undertaking such trials. Equipoise over the benefits of the procedure is now well established in the medical literature, and the high prevalence of knee osteoarthritis means that, even if only a small percentage of patients are willing to be enrolled in trials, it is likely that sufficient power could still be achieved to test most clinical hypotheses.

In addition to randomised controlled trials, population-based studies are needed. A Canadian evaluation of 14 391 arthroscopic knee debridement procedures for osteoarthritis found that almost 10% of patients required total knee replacement within 1 year after debridement. Rates of arthroplasty were particularly high in those aged 70 or older, and it was suggested that debridement may currently be overutilised in elderly patients.[16]

Given the increasing prevalence of knee osteoarthritis with an ageing population, it is important for clinicians to recommend options such as arthroscopy with good reason. At present, both the benefits of therapeutic arthroscopy and its role among alternative treatments for knee osteoarthritis remain unclear.

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Debunking spider bite myths

Necrotising arachnidism should be a diagnosis of last resort

THE ARTICLE BY Isbister and Gray (*page* 199),[1] documenting 130 confirmed cases of bites by white-tail spiders, will, we hope, become one of the last acts in a prolonged and sad medical fable in Australia, regrettably now exported beyond our shores.[2] In 1982, a paper on possible spider bite necrosis in Australia was presented at the International Society on Toxinology World Congress in Brisbane,[3] and followed by an editorial in the *MJA* in 1983.[4] In 1987, Spring reported a case of severe skin damage following a presumed spider bite;[5] the article and the associated editorial[6] mentioned the white-tail spider. Speculation about the causative spider continued, with two "likely" candidates charged with the crime by the non-medical media,[7] supported by a few in the medical community. These spiders were the wolf spider and the white-tail spider. The former was suspected partly because of evidence from Brazil, subsequently debunked, implicating these spiders in causing skin necrosis. The actual cause in Brazil has since been shown to be recluse spiders (loxoscelism).[8] However, it was the white-tail spider, *Lampona cylindrata*, that was the principal focus of attention. Within a short time, at least a few doctors were diagnosing necrotising arachnidism caused by these spiders, and within about five years the popular association of these spiders with skin necrosis was well established. The lack of strong evidence to support this association seemed to be a triviality to be ignored. Research projects were proposed and funded to examine white-tail spider venom to understand its necrotic potential. Calls were made for governments to fund development of an antivenom. General practitioners regularly and confidently diagnosed skin lesions as "white-tail spider bite".

A few voices called "foul". Where was the evidence to support the veracity of this new venomous scourge of urban Australia? Some confirmed bites by white-tail spiders were published, with no evidence of skin damage.[9] Early research on the venom found no necrotic activity.[10] The spider is native to Australia, yet most people ignored questions about the absence of cases of necrotising arachnidism in the 200 years before Spring's article. Arachnologists questioning the validity of white-tail spider bite necrosis were also dismissed. In both the general and the medical community, the era of "white-tail spider bite necrosis" had arrived.

But the evidence cast ever stronger doubt about the veracity of white-tail spider bite necrosis, despite occasional published "cases". What was needed was a large number of cases of confirmed white-tail spider bite to clearly show the true range of its effects. Isbister and Gray's article defines a clear and consistent pattern of clinical effects, based on a large series, with no evidence of necrosis. As the authors point out, the inappropriate diagnosis of spider bite in cases of skin damage is not isolated to Australia or the white-tail spider, but our episode is particularly disturbing, because there was never any strong evidence to link this spider with necrosis. Publication of Isbister and Gray's article should herald the demise of the spurious diagnosis of white-tail spider bite necrosis. This will, we hope, bring an end to conditions such as basal cell carcinoma being misdiagnosed as spider bite, and to cases of feigned white-tail spider bite necrosis (where the patient inflicts skin damage with chemicals, then claims a spider bite).