SPECIALTY UPDATE: GENERAL ORTHOPAEDICS

The surgical treatment of rheumatoid arthritis

A NEW ERA?

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There has been an increase in the availability of effective biological agents for the treatment of rheumatoid arthritis as well as a shift towards early diagnosis and management of the inflammatory process. This article explores the impact this may have on the place of orthopaedic surgery in the management of patients with rheumatoid arthritis.

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The last three decades have witnessed significant changes in the treatment of Rheumatoid Arthritis (RA), with the current focus on early and intensive control of the inflammatory process with disease modifying drugs.1,2 Previously only a few drugs, which were slow-acting and often with many side effects and a marginal effect on the progress of the disease, were available.3,4 Recently, a greater number of more powerful drugs, which may be prescribed earlier in the course of the disease, and in combination, have become available.2,5 There are also now highly effective biological agents such as the anti-tumour necrosis factor (TNF) drugs like adalimumab, infliximab and etanercept and B-cell depleting agents like rituximab.5,7

The ‘window of opportunity’ is now a well-established concept referring to the possibility of altering the progress of the disease both more effectively and earlier with the intensive use of these drugs. A delay of three months in initiating treatment results in substantially more radiological damage five years later.1,8,9 The results from many studies support the use of intensive combinations of disease modifying drugs in full doses, and if these fail early, the addition of biological agents, aiming for complete remission.2,10-17

The long-term outcome of these treatments, however, is not known. Structural damage in RA is usually measured by changes in scores using radiographs of the hands or feet.5 Routine serial radiographs of larger joints are not usually available.

While the level of inflammation in RA can vary with the passage of time, structural damage is an additive and irreversible process.18 Orthopaedic surgery plays a key role in the management of the destruction of joints by correcting deformities, stabilising joints, decreasing disability and thus improving quality of life.

The complete control of symptoms and prevention of destruction of joints, once considered unavoidable, is now possible. It seems that orthopaedic surgeons are operating less frequently on patients with RA.19-24 If true, the question is whether this provides support for the efficiency of the current forms of drug treatment on the long-term outcomes.

The main indications for surgery are relief of pain and improvement in function.18 Surgery is undertaken when conservative measures have failed.25 Surgery can include diagnostic, prophylactic or therapeutic arthroscopy or synovectomy, or therapeutic resection arthroplasty, arthrodesis or total joint replacement (TJR).18 Orthopaedic procedures, including TJRs have resulted in a substantial improvement in the function and quality of life in patients with RA.18

The requirement for surgical treatment in RA is a surrogate marker of destruction of joints18 and failed medical treatment.26

The outcome of surgery in patients with RA remains poorly studied, mainly due to the large numbers of patients and the length of follow-up that is required to give meaningful answers. Longitudinal observational studies of patients with RA provide an opportunity to study changes in the characteristics of the disease, drug therapies and other forms of treatment over time. They may complement clinical trials that are disadvantaged by their controlled settings, exclusion criteria and shorter follow-up.27 The large numbers of patients and long follow-up needed to assess the outcome of surgery can only effectively be studied in observational cohorts.
When contemplating whether less surgery is being performed in rheumatoid patients, consideration needs also to be given to changes in the age of patients presenting for surgery, changing surgical approaches and prostheses and anaesthetic techniques.

Total hip and knee replacement (THR, TKR) are the most frequently undertaken operations involving large joints in patients with RA. Since the 1980s, there has been a substantial increase in the number of these operations undertaken32 due to the ageing of the population. The most common indication is, however, osteoarthritis. In a retrospective study conducted in Finland29 over an 18 year period between 1986 and 2003, the age-adjusted incidence rate ratios of joint replacements, increased almost tenfold for the knee and twofold for the hip in patients with osteoarthritis, but was virtually unchanged in patients with RA. The declining or unchanged rates of joint surgery in patients with RA seems to have occurred at the same time, with improved medical management witnessed in recent decades, suggesting a correlation.30,31 These results are similar to other studies from the United States,19,22 Norway,24 Sweden21 and most recently from the United Kingdom.32 A recent retrospective study from the United States33 showed no significant difference, related to the overall number of replaced joints, in the number of THRs and TKRs being undertaken in patients with RA in two periods of time, between 1980 and 1994 and between 1995 and 2007.

A retrospective analysis (1994 to 2004) of the Norwegian Patient Register,24 reported a statistically significant reduction in the number of arthrodeses of the wrist and hand (p < 0.001) being undertaken, although there was an increase in the number of arthrodeses of the ankle and foot (p < 0.001). In a recent retrospective review of medical records from Minnesota between 1980 and 2007, Shourt et al33 reported a significant reduction in the number of soft-tissue procedures, including synovectomy, being undertaken in patients with 1 RA.

Greater insight comes from newly published data from two of the largest (n = 2701), and longest (25 years’ follow-up) studies of patients who were recruited initially within two or three years of developing RA in the UK: the Early Rheumatoid Arthritis Study and the Early Rheumatoid Arthritis Network, linked with Hospital Episode Statistics and the National Joint Registry.32 In this study, Nikiphorou et al32 reported 1602 surgical procedures undertaken in 770 patients (29%) over a period of 25 years, during which the number of operations involving the hand, wrist, foot and ankle decreased significantly (p < 0.001) but the rate of TJRs did not significantly change. During this time, more intensive forms of medical management such as dual or triple combinations of disease-modifying drugs at the start of treatment, were used. Although it is possible that the decrease in the numbers of patients undergoing hand and foot surgery could be due to RA presenting to hospital in a milder form in more recent years, it is more likely to be due to the advances in the pharmacological management of the disease. In the case of THR and TKR, secondary osteoarthritis in patients with a primary inflammatory arthropathy could have been the main factor leading to orthopaedic intervention. Differences in what are considered to be ‘RA-related’ conditions requiring joint replacement is a limiting factor when comparing the findings from different studies.

The ability to predict the eventual need for orthopaedic surgery in patients with RA has been shown to be more accurate following treatment for one year than at the time of diagnosis.33 Most early symptoms are reversible with appropriate treatment, and it is postulated that stratifying the forms of treatment required during the first year based on various prognostic factors such as disease activity score and inflammatory indices could improve the chances of avoiding progression of disease and the requirement for surgery up to 25 years later.32 These observations further support the concept that early and intensive pharmacological treatment in the critical first few months of disease, or the ‘window of opportunity’, could be the reason for the observed reduced rates of orthopaedic surgery rather than a milder expression of disease over time.

Most studies are based on longitudinal, observational data and none consider the possible role of a change in the expression of RA to a milder form of disease, changes in patients’ expectations and the assessment of outcome, or the pathophysiological progress of an inflammatory to a degenerative condition.

In conclusion, less surgery is being undertaken for patients with RA, as medical management particularly early in the disease, has improved. However, as most studies are based on longitudinal, observational data, causative links cannot be definitively established.

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