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Hip and knee arthroplasties and their significance in personal injury practice

INTRODUCTION

Complications of hip and knee arthroplasty are frequently a source of litigation. The circumstances surrounding the complication - and whether it results from substandard care - need to be opined upon by a surgeon with considerable experience in that field. The subject was reported by McWilliams et al¹ from a review of the records of the NHS Litigation Authority (NHSLA) in the UK.

However, hip and knee arthroplasty is also a source of interest in some personal injury claims, particularly after tibial plateau and acetabular fractures. Legal advisers are usually interested in four things:

1. What is the likelihood of arthroplasty in the future?
2. When is it likely to be required?
3. What is the likely outcome, i.e. is the outcome similar in nature to arthroplasty for non-traumatic osteoarthritis? What is the likelihood of a revision being required in the patient/claimant's lifetime?
4. If the patient/claimant is still in employment, how much time will they lose from work and how likely are they to get back to work?

All orthopaedic surgeons are aware that the decision to recommend joint arthroplasty for a painful symptomatic hip/knee joint is very much a quality-of-life decision. This applies in both the post-traumatic and non-traumatic situation. A proper risk/benefit analysis needs to be conducted with the patient. The likelihood of post-traumatic arthritis developing after hip or knee injury depends upon the pre-

cise nature of the original injury and the adequacy of the initial surgery, if the fracture was treated operatively. Following analysis of the case, the expert should be in a position to make an educated estimate as to whether and when arthroplasty will be required in the future on the basis of their understanding of the nature of the injury, their assessment of the treatment and radiographs/scans, together with their clinical experience and appropriate material from the orthopaedic literature when available. Despite this, it is surprising how far apart claimant and defence experts can be in personal injury cases.

KNEE ARTHROPLASTY

Wasserstein et al² retrospectively reviewed 8426 patients from Ontario who had undergone operative fixation of tibial plateau fractures over a 13-year period, and matched them to 33 698 controls. They found that ten years on from the injury, those with tibial plateau fractures were five times more likely than the controls to require knee arthroplasty. Ten years after the fracture, 7.3% of the fracture patients had undergone arthroplasty.

Scott et al³ looked at the outcomes after arthroplasty in post-traumatic and primary osteoarthritis patients in another matched cohort study. The numbers were small, with 31 patients in the post-traumatic group. They found that while complication rates (wound complications, stiffness and revision) were higher in the post-traumatic group, overall post-operative Oxford knee score and patient satisfaction ratings were not significantly different between

the two groups. Earlier, Weiss et al⁴ had reached similar conclusions when reviewing 62 patients who underwent total knee arthroplasty (TKA) after tibial plateau fracture. They advised that the vast majority of patients had substantial improvement in function and relief of pain. However, they described a 21% re-operation rate (manipulation, wound revision and component revision).

Massin et al⁵ looked specifically at a group of 40 patients with post-traumatic osteoarthritis and stiff knees with flexion of 90 degrees or less. This was clearly a complex group of patients with both intra- and extra-articular malunions. In some, re-alignment osteotomies were required at the time of surgery. However, they found that the range of flexion increased on average by around 30 degrees after knee arthroplasty. As in the other reports, the risk of complications was increased. Shearer et al⁶ also emphasised that the nature of the underlying injury and any co-existent soft-tissue problems were crucial to the outcome, with patients who had combined tibial and femoral deformities experiencing poor outcomes.

Papadopoulos et al⁷ looked at 47 patients who had undergone TKA for arthritis secondary to distal femoral fractures. There was a mean follow-up of 6.2 years, and they concluded that significant improvement in pain and function was seen in the vast majority of patients. However, there was increased risk of stiffness and problems with wound healing. Additional procedures were required at the time of surgery including osteotomy (12%), lateral release (40%), extensor mechanism re-alignment (16%) and

collateral ligament reconstruction (4%).

Therefore, the literature suggests that arthroplasty is successful in patients after tibial plateau and distal femoral fractures, but not as successful as in patients with non-traumatic osteoarthritis. It is also associated with an increased risk of complications, particularly wound healing problems, stiff knees and requirement for revision surgery. A comparative study confirming this was recently published by Lunebourg et al⁸ with 33 post-traumatic arthritic knees matched with 407 controls. At a mean follow-up of 11 years, the non-traumatic group showed up better on Knee Society Scores for pain and movement. What was particularly interesting was that the survival rate at ten years when the end point was defined as 'any surgery on the operated knee' was 99% in the primary arthritis group compared with 79% in the post-traumatic group.

HIP ARTHROPLASTY

A requirement for total hip arthroplasty (THA) occurs from time to time after acetabular or, less commonly, femoral head fractures. Weber⁹ reviewed 66 primary hip arthroplasties carried out for post-traumatic osteoarthritis in patients who had undergone operative fixation of their acetabular fracture. The average age of the patients at the time of surgery was 52. There was a mixture of cemented, uncemented and hybrid procedures. The outcome from these operations was good with significant improvement in Harris hip scores. However, there were a larger number of revisions for aseptic loosening than would be expected following a primary hip arthroplasty for non-traumatic osteoarthritis. The ten-year survival rate (when aseptic loosening was defined as the end point) was 78%. Patients below the age of 50, those weighing over 80 kg and those with significant deficiencies of bone stock were at higher risk of revision for aseptic loosening.

Pavelka et al¹⁰ reviewed the outcomes in a similar, but younger, group (mean age 42). Within their group of patients, they differentiated between those with well-healed fractures with good secondary congruence where

treatment was along similar lines to patients with degenerative osteoarthritis, and those with significant bone defects or nonunion of one or both columns. The latter group they likened to revision cases and they felt that the results and outcomes in these patients should be compared with revision arthroplasty. The average follow-up was 42 months at which time 80% were graded very good or excellent by the Harris hip score.

Therefore, the evidence is similar in arthroplasty for post-traumatic osteoarthritis of the hip as it is in the knee. That is the results are good, but not as good as those arrived out for primary osteoarthritis (as one might expect) with higher revision rates, particularly in those with large bony defects or nonunion.

RETURN TO WORK AFTER HIP AND KNEE ARTHROPLASTY

Kuijjer et al¹¹ carried out an extensive literature search and found that there was very little published data on the effect of hip and knee arthroplasty on patients' ability to work. Mobasheri et al¹² retrospectively reviewed a consecutive group of THA patients. They found that 49 of 51 who were employed pre-operatively returned to the same job after surgery. The mean time off work was 10.5 weeks. In the 30 patients who were unemployed prior to surgery, only 13 returned to work. It took this group an average of 35 weeks to find employment.

A similar study from Lyall et al¹³ looked at knee arthroplasty. They found that none of the 15 patients who were unemployed pre-operatively returned to work. All but one of the 41 patients employed pre-operatively returned to the same or a similar job. The mean time lost from work was ten weeks.

CONCLUSION

Therefore, on the basis of the published reports and personal experience, it should be possible for the orthopaedic expert to provide guidelines on the likelihood of requirement for joint arthroplasty in the future after hip and knee fractures, and the likely length of time that the claimant will lose from work, absent any com-

plications. However, unless symptoms and disability are severe at the time of the medico-legal assessment, the time when surgery may be required can be difficult to quantify and an educated estimate of a timeframe may be the best that we can offer.

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