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Osteoarthritis of the knee joint encompasses a spectrum of pathology ranging from early chondral damage and degenerative meniscal pathology to more advanced well-established “bone-on-bone” disease. Deciding on the management of elderly patients with osteoarthritis is a relatively straightforward process, given that joint replacement will usually successfully address advanced disease and meet these patients’ expectations. However, younger patients with osteoarthritis have different activity profiles and expectations, and increasingly commonly, physicians are faced with relatively young patients who are affected by painful joints resulting from articular cartilage pathology, ranging from early wear to well-established osteoarthritis. These patients are typically active and wishing to remain active in sports, work, and family life, and are less accepting of the restrictions placed on them by osteoarthritis. In the absence of a cure for osteoarthritis, it is vitally important that the treating physician has a comprehensive knowledge of the options for managing

these patients and allowing them to continue an active lifestyle.

There are many options for management of osteoarthritis in these patients, and in modern society, there are many treatments promoted, through either popular media or direct promotion to patients and clinicians. Given the common nature of the problem, there are obviously strong market forces driving this promotion since any treatment that becomes popular will generate huge ongoing income for the provider. It can be difficult for patients, and even sometimes for clinicians, to sort through the literature and other promotional material to decide which treatments actually have scientific merit from an appropriate evidence base. Clearly, physicians can only provide patients with optimal management if they have an up-to-date knowledge of the available treatment options, the evidence base available for each, and the appropriate timing and indications for each treatment. The purpose of this book has been to create a resource that provides physicians with a practical guide to managing these patients in a comprehensive evidence-based manner.

The chapters of this book have covered the pathogenesis and natural history of osteoarthritis, as well as the nonoperative and operative approaches to the condition. Osteoarthritis is a condition that has been widely studied in recent times, with an improved understanding of its aetiology and progression. As discussed in the first chapter, despite this greater understanding,

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there are still many areas that are yet to be clearly defined, which will therefore be the subject of ongoing study. Osteoarthritis is clearly not simply loss of articular cartilage, but a disease that affects the joint globally, with wide variation in the clinical response between patients. There are definite factors associated with its development, including a history of injury, family history, and obesity, but the specific “recipe” that defines and predicts the risk profile for the development and progression of osteoarthritis for each individual is still something being defined. At this stage, it should, however, be possible for clinicians to counsel patients regarding the aetiology of their osteoarthritis, the severity of their disease, the risk and rate of likely progression, and the modifiable risk factors that they may be able to address. This fundamental understanding of the condition by the clinician, and imparted to the patient, is critical in the successful management of each patient.

Nonsurgical management of osteoarthritis should in most cases be the first option discussed with patients, with surgery usually reserved for those patients for whom nonsurgical management has not been able to satisfactorily manage their condition. Even in patients for whom surgery has been elected, appropriate ongoing nonsurgical management usually remains an important supplement to their treatment. It is often difficult for the physician to advise patients on nonsurgical management, as patients will often feel that they need to have “something done” to address their problem and will perceive a recommendation for nonsurgical management as an indication that nothing actually can be done. This is probably a reflection of the common approach to nonoperative management, often involving suggestions of various options for patients to self-manage, which can lead to confusion for the patient and a subsequent inefficient application of the treatments. The chapter on nonsurgical management of OA has comprehensively reviewed the many options available for treatment, which is a list that will continue to rapidly evolve as more options arise with considerable regularity. Understanding the evidence base and indications for these options is important, but

equally important is the effective application of these options for each patient.

The concept of a coordinated multidisciplinary approach to nonsurgical management is one that has met with success in many centres and should certainly improve the effectiveness of nonsurgical treatment. In such a programme, a central coordinator assesses each patient’s condition, decides which treatment modalities are likely to be most effective, and then coordinates the various treatments for the patients. This ensures the necessary understanding and compliance for each patient, and subsequent follow-up and review with the initial coordinator allow positive feedback for the patient and modification of the programme as necessary. With time, the patient’s understanding increases, and they become more adept at self-management. In this way, the nonsurgical management of OA becomes a more proactive and defined process, which each patient can clearly understand and appreciate the benefits of. In the future, these multidisciplinary clinics should become the norm for nonsurgical management and, with increasing experience, should be able to become better defined, better managed, and ultimately more effective.

Surgical management in OA is usually reserved for patients for whom nonsurgical management has become ineffective or is judged unlikely to be of any significant benefit. There are a spectrum of surgical options that have been used in the management of OA, and with time and experience, it has become possible to more clearly define the effectiveness of each treatment and better refine the indications for each patient. This increased understanding has led to changes in practice in recent times, for example, in the use of arthroscopic debridement in the management of OA. With the advent of arthroscopic surgery, debridement of arthritic knees and associated pathology such as degenerative meniscal tears became routine practice. However, over the last decade, several studies, as well as general clinical experience, have demonstrated that this procedure has little, if any, benefit and, as a result, should rarely be performed. There are certain instances for which arthroscopic surgery in the presence of arthritis may be appropriate, and

these have been outlined clearly in the fourth chapter of this text.

One area for which surgery is appropriate is in preservation of the meniscus. The third chapter of this text has clearly outlined the function of the meniscus and its importance in prevention of osteoarthritis. Therefore, whilst debridement of meniscal tears has been the more common procedure, and should likely decrease in frequency with a more evidence-based approach, expertise in meniscal repair is a particularly important skill for every orthopaedic surgeon to possess. Successfully repairing a meniscus will have a major impact on the prognosis for subsequent development of arthritis, particularly in the younger, active patient. Surgeons should possess the knowledge to identify those meniscal tears which have the potential to heal, the skills necessary to achieve a stable repair, and the ability to advise patients on the appropriate rehabilitation to optimise the success of this surgery.

Focal loss of articular cartilage, either through injury or unexplained causes, remains a difficult challenge for the orthopaedic surgeon. Despite many years of research and clinical trials, and many worthwhile attempts at developing new products, there is still no reliable method to restore normal hyaline cartilage. Given that the first, seemingly promising, results of autologous chondrocyte implantation were reported nearly 30 years ago, it is somewhat disheartening that outcomes of current methods remain suboptimal and arguably not significantly superior to what was achieved 30 years ago. This therefore remains an area of ongoing study, and in planning any interventions intending to restore a cartilage surface, clinicians need to understand the pathology they are treating and its natural history, as well the risks, benefits, and likely outcomes of the treatment. Distinguishing between true focal lesions and early osteoarthritis is clearly critical when predicting natural history and the likely response to treatment. Introduction of any new technology needs to be done in a responsible, careful manner, with appropriate clinical trials prior to release to the general orthopaedic community. Chapter 5 has systematically reviewed the available options for management of this

problem, and this is clearly an area of orthopaedics that will continue to evolve, hopefully ultimately leading to a practical, easy-to-deliver solution for restoring a normal articular cartilage surface to these patients.

Osteotomy around the knee for osteoarthritis is a well-established procedure, predating joint replacement. Since the advent and increased popularity of joint replacement, osteotomy has been less commonly performed but remains a valuable option to consider for younger patients with well-localised, unicompartamental osteoarthritis. It offers the benefits of decreased pain and improved function, whilst not committing to the potential downside of arthroplasty in these patients. Osteotomy has also been shown to result in some cartilage recovery in diseased compartments, thereby having a positive effect on the natural history of osteoarthritis. The best results in osteotomy for osteoarthritis are in patients who have well-localised disease, correspondingly localised symptoms, and a joint that is not compromised by significant stiffness. Intervention prior to the more advanced stages of the disease is therefore preferable and will most likely yield better outcomes, but this needs to be balanced against the inconvenience of the procedure for the patient, particularly when they are not markedly symptomatic. Osteotomy is also an important supplement to procedures that may be used to restore chondral surfaces, in cases where this is associated with malalignment. When used for the appropriate indications, osteotomy is a procedure that can achieve excellent outcomes in the management of osteoarthritis, particularly in the younger patient group, and should be a procedure that all clinicians managing these patients are familiar with. Chapter 6 of this text has comprehensively addressed the various options for clinicians in the area of osteotomy.

Joint replacement comes in many forms, from focal resurfacing techniques to partial or total knee replacement. The common feature to all, however, is that the patient is committed to a prosthetic joint for the remainder of their life, with the accompanying potential limitations. Electing to perform a joint replacement is therefore a decision that should be made after

considering and usually exhausting all other options, particularly in younger patients. What constitutes a “younger” patient is clearly somewhat arbitrary, but anyone under the age of 65 should be considered to have a reasonable chance of outliving their prosthesis and therefore not requiring revision surgery. In addition, there is a significant chance that younger patients, with higher expectations, may not find these expectations met by joint replacement in the same way that older patients with more modest expectations may. Whilst it should therefore always be considered a last resort for these patients, joint replacement does, however, offer a solution for those patients who have developed advanced arthritic change and for whom all alternative options have been trialled and subsequently found to be no longer effective. Performed in the right patient, with appropriate expectations, joint replacement can achieve excellent outcomes that should be sustained over long-term follow-up. Counselling patients about the limitations of joint replacement, and the appropriate level of activity they should expect postoperatively, is obviously critical in the management of these patients. Chapters 7 and 8 of this text have covered the role of joint replacement for these younger, active patients in detail and have provided clear guidelines about the appropriate application of these procedures.

So what does the future hold for the management of these patients? Clearly, there will always be new technologies being developed to try and address the growing problem, as enthusiasm from clinicians to better manage disease and the

desire from industry to develop successful products continue to drive innovation. Chapter 9 of this text has covered some of the newer techniques being developed, but as with most new developments, they remain a work in progress and need to be carefully studied and evaluated as to their effectiveness before general application. Innovation needs to be supported and encouraged but with the appropriate balance of quality control and responsible introduction of new technology. Clearly, the ideal future lies in the prevention of osteoarthritis development in these patients, and there is certainly a great deal of investment currently aimed towards this goal, but it is safe to assume that this is a goal that is unlikely to be successfully achieved within most of our lifetimes.

Successful, effective management of osteoarthritis will therefore remain a major part of clinicians’ practice in the years to come and requires an in-depth knowledge of both nonoperative and operative options for each patient, as outlined in this text. The necessary expertise to apply each treatment option in a coordinated, appropriately timed manner should be the domain of each clinician managing these patients. As the evidence base for these treatments grows, and clinicians base their management on this evidence, the overall management of these patients should improve. Ultimately, the goal should be to use this expertise to inform patients, as well as treat them effectively, with the result of a sustained improvement in the quality of life with minimal compromise from osteoarthritis.