

New treatments for joint disease: what the future may bring

Degenerative joint diseases are exerting an increasingly heavy burden on the ageing global population. Over the last 50 years the approach to managing these conditions has greatly evolved. The days of routine arthrodesis or excision arthroplasty are thankfully now behind us. Joint replacement, which was initially successfully developed by Charnley in the 1950s, has now become a routine procedure, carried out all over the world with great success. However, concerns remain regarding implant longevity, loss of bone surrounding the implants and restrictions placed on patients following surgery. Less invasive methods of managing joint disease are therefore constantly being sought.

Non-surgical management

Non-surgical methods of managing degenerative joint disease have traditionally involved the use of analgesics and anti-inflammatory drugs. Work looking at the role of dietary supplements, glucosamine being perhaps the most well-known, has yielded mixed results. Intra-articular injections are another method which has been used with varying success.

Cartilage replacement

Biological replacement of damaged articular cartilage represents a very attractive proposition. Using a patient's own tissue, cultured in a laboratory and then reimplanted, to fill an articular defect is showing promising results. However, there remain limitations on its capacity to recreate 'normal' tissue, and only certain defects are currently thought suitable. It is not difficult to imagine that this technology could be further developed to provide the holy grail of joint disease by providing cartilage renewal.

Joint replacement surgery

Until such a technology is developed, joint replacement surgery remains the mainstay of treatment for severe degenerative joint conditions. The concerns

mentioned above are being addressed through the development of novel technologies and approaches. The morbidity associated with surgery has been dramatically reduced by the advent of minimally invasive surgery. Reducing not only the size of incisions but also the amount of muscle damaged in approaching joints allows faster recovery. Certain North American and Australian clinics are now almost offering joint replacement as a day-case procedure.

Implant longevity is constantly improving, with certain implants now achieving 99% 10-year survival. Looking beyond the initial 10 postoperative years, implant survival can be further improved with the use of novel materials. Modifications to the polyethylene inserts used in hip and knee replacements, together with the use of novel counterface materials such as oxinium, are showing promising early results in reducing wear and subsequent bone loss around implants.

Total joint replacement is no longer the only operative option in the hip and knee. Hip resurfacing has the advantage of conserving bone stock on the femoral side. In the knee, replacing individual compartments, be it the medial or lateral tibiofemoral or the patellofemoral compartment, is now accepted treatment. Thus operative procedures can be tailored to the individual's pattern of joint disease, sparing 'healthy' tissue from resection. These procedures also have the added benefit of making subsequent revi-

sion surgery, should the need arise, less demanding.

Conclusions

All of these advances rely on both funding and the availability of dedicated and specialized research staff. Funding has traditionally been provided by both government and private sources. With the current crisis in NHS funding it is imperative that good clinical research and development should be protected from cutbacks.

The burden of joint disease is increasing in an exponential way. Novel strategies are being developed to maintain joint stability and function, to recreate normal tissue anatomy, biomechanics and physiology, and to resurface joints in selective minimally invasive ways in order to decrease pain and ensure excellent function. **BJHM**

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KEY POINTS

- Degenerative joint diseases exert a heavy burden on an ageing population.
- Medical therapy is evolving to encompass dietary supplements and novel intra-articular injections.
- Advances in both operative technique and available implants allow the surgeon to tailor interventions to the patient's pattern of disease and decrease recovery time.