The revision of well fixed total hip arthroplasty components can be a challenging surgical procedure, especially if the femoral component is stable and well integrated into the medullary cavity. It can be necessary to create a cortical bone window in the diaphysis to effectively remove all the remaining fragments of polymethylmethacrylate. This was just one of the problems associated with cemented implants that inspired the development of porous coated non-cemented implants.

Non-cemented hip implants initially rely on friction from an interference fit, and then progressive bone ingrowth to achieve permanent stability within the femoral medullary cavity and pelvis. Initially the introduction of non-cemented hips was envisaged to be the answer to all our problems, but it soon became apparent that this was not to be. Implant breakage due to fatigue, or dislocation due to incorrect implant position are some of the indications for removal of well fixed non-cemented total hip implants. Since it is nearly impossible to remove a well fixed non-cemented femoral component by brute force, we often have to resort to opening the femoral canal by some sort of bivalve osteotomy, making revision with a new implant more problematic.

Harboe and colleagues from Norway indicated that the need for revision in non-cemented total hip implants is a growing problem in people who are remaining active much longer in life. Therefore they have embarked upon some innovative research to develop new implant designs that will allow for easier removal (1). Although their implant design would seem to require some refinement before it could be accepted for clinical usage in patients, this study found some positive support for this innovative design principle.

Sir John Charnley is well known as one of the pioneers of total hip arthroplasty surgery in people. However in that era (1940s and 1950s), septic arthritis and severe osteoarthritis of the human knee was managed by knee arthrodesis, because the development and introduction of total knee replacement was to follow much later. Some years ago when I was investigating arthrodesis, I was surprised to discover a textbook and a publication by Charnley documenting the technique and results of compression arthrodesis of the knee using a two-pin external fixator (2, 3). By taking core biopsies from the arthrodesis site four weeks after the initial surgery when the external fixator was being removed, it was found that the opposing cancellous bone surfaces had healed by primary union. This was one of the earlier studies demonstrating primary bone healing at the arthrodesis, after complete articular cartilage removal and adequate stabilization of the arthrodesis.

Since the publication of one of the first experimental studies on carpal arthrodesis in dogs, there have been many investigations seeking to develop better techniques of internal fixation of the carpus to achieve arthrodesis (4). Although there have been other options described, dorsal bone plating of the carpus has remained the most popular technique amongst surgeons performing pan-carpal arthrodesis. This is despite the potential biomechanical limitations of application of the bone plate on the non-tension surface. Guillou and colleagues in their very elegant study published in this issue compared standard bone plates and tapered hybrid plates under conditions of cyclic axial loading, to mimic loading conditions at the stance, walk and trot (5). Although these in vitro tests have limitations, they more closely replicate the clinical situation than acute quasi-static loading to failure.

In addition to several papers reporting original research, there are other reports with new information on osteochondral autograft transfer, as well as some unusual bone and joint diseases that I found to be of great interest (6).
I hope you enjoy reading this issue of the journal, and remind you that we welcome the submission of Letters to the Editor because these are much appreciated by our readers.

Kenneth A. Johnson
Editor-in-Chief
Sydney

References