

Journal Club: 9<sup>th</sup> July 2009  
Organiser: Professor Kevin Mulhall

Mater Misericordiae University Hospital Journal Club, Dublin, Ireland

Guest Speaker & Chairman: Mr. James Scott, Editor JBJS (Br)

## Introduction:

The format for our weekly journal club is different from most units. All scientific articles from a chosen journal are discussed each week. The format is a 'rapid fire' summary and discussion. There are usually seven consultants, four registrars and five SHOs present. We rotate four journals and review the JBJS British edition every month (the others being the JBJS Am, Spine and JPO). All the journal articles are divided among the NCHDs. It is up to the reviewer to critically appraise the article and to provide the others with a brief outline of the article, highlighting its strengths and weakness and the "bottom line". There will often be a brief debate as to the articles merits with various consultants giving their opinion.

This format works in this unit as there are seven consultants with various sub-speciality interests. We feel that by briefly discussing all journal articles it maintains the general education and interest of all NCHDs and consultants even if the article does not pertain to their particular sub speciality. The format does however allow for more detailed analysis of controversial or particularly interesting papers.

For this journal club we only discussed five articles from the JBJS Br to allow time for discussion and to let Mr. Scott talk us through the editorial process and some of the reviewer comments for each article. He also kindly gave us an excellent talk about the review process in the JBJS (Br).

**The principle of low frictional torque in the Charnley total hip replacement**

Wroblewski BM, Siney PD, Fleming PA

J Bone Joint Surg [Br] 2009;91-B:855-8.

Presenter – Ruairi MacNiocaill

This retrospective radiological cohort study set out to introduce the reader to the principle of low frictional torque as proposed by Charnley during the development of his arthroplasty system. The basis of the concept is that theoretically the bone cement interface is protected from mechanical failure by limiting frictional torque at the interface and that this is achieved by having the greatest possible difference between the radius of the head and the outer diameter of the polyethylene cup.

This study followed up 1332 low friction arthroplasties to a mean follow up of 17 years, comparing aseptic loosening rates between those with 40 mm and 43 mm cups. Rates of aseptic loosening were recorded for increasing degrees of wear measured in millimetres of head penetration. The results presented in basic quantitative form showed a lower rate of aseptic loosening for the larger cup across the board including at all degrees of penetration, the authors concluding from this that the validity of Charnley's theory is confirmed by these findings.

This paper starts with a very useful review of the literature relating to this biomechanical concept, laid out in an easily digestible form, it then however departs from tradition and goes on to present the raw numerical findings of the study completely unadorned with the usual statistical treatment customary in the scientific literature. It was this particular feature that stimulated most discussion at our journal club, with the consensus of the group being that the reader is very much asked to accept the validity of this paper's findings on trust rather than due to a reasoned, scientific illustration of the findings using appropriate statistical techniques.

**Acetabular revision using an anti-protrusion (ilio-ischial) cage and trabecular metal acetabular component for severe acetabular bone loss associated with pelvic discontinuity**

Kosashvili Y, Backstein D, Safir O, Lakstein D, Gross AE  
J Bone Joint Surg [Br] 2009;91-B:870-6.

Presenter – Conor Hurson

The introduction familiarises us with the problem of pelvic discontinuity and discusses the use of antiprotrusion cages and their mode of failure. A literature search reveals only 4 similar articles, so the information is relatively new and topical. This study describes the technique and results of the senior author over 6 years in 26 acetabular revisions. Mean age 64.9 years, mean follow up 44.6 months, mean 2.4 previous replacements before reconstruction. They describes the clinical (HHS and mobility) radiological (migration and radiolucent lines) and intra-operative findings.

There is detailed information about the operative technique which would be particularly useful if the reader was thinking of changing their practice.

The study compared pre- and post- operative hip function. There are no controls for comparison. They give figures for percentage contact with host bone and percentage of contact with bleeding bone. They don't explain how this is calculated but do state that the location of bleeding bone could not be reproducibly recorded.

There was significant improvement in mobility and HHS. In 88.5% there was no change in position at last follow up. Details of complications are explained: 2 dislocations, 1 infection, 1 peroneal nerve palsy and loosening in 3 patients requiring revision.

The discussion noted that this was very different from the previous article reviewed (long term follow up of the Charnley THR), as acetabular discontinuity is a relatively rare condition and only really lends itself to observational studies, and even a retrospective study with small numbers and limited follow up such as this is worthy of publication. It furthers knowledge of an uncommon condition and offers a potential improvement in treatment.

**Survivorship and clinical function of cemented and uncemented prostheses in total knee replacement: a meta-analysis**

Gandhi R, Tsvetkov D, Davey JR, Mahomed NN  
J Bone Joint Surg [Br] 2009;91-B:889-95.

Presenter – Michael Leonard

A short presentation of the paper was given. The overall purpose of the paper was to compare survival (freedom from surgical revision of either the tibial or femoral component due to aseptic loosening at a minimum follow-up of two years) of uncemented and cemented total knee replacements. Overall survival outcome was recorded as the odds ratio (odds of failure in the uncemented group over the odds of failure in the cemented group). Odds ratio for aseptic loosening of the uncemented group was 4.2 - demonstrating overall increased survival in cemented prosthesis. There was no difference in knee outcome scores between the two groups.

The first main topic of discussion was the use of meta-analysis, and in particular the statistics' used in these studies. There was support from a proportion of the audience for meta-analysis as a means of pooling the best available evidence. However the validity of using statistical tests' to define an outcome based on a large number of heterogeneous studies was questioned, and the subsequent use of the conclusions drawn from meta-analysis, particularly in medico-legal practice highlighted.

The second topic discussed was whether the researchers should have based their findings on randomised controlled studies (RCT's) only – 5 RCT's and 10 observational studies were used in the meta-analysis. It was explained that the 5 RCT's had been analysed as a subgroup and no significant difference in outcome in either implant survival or function between uncemented and cemented total knee replacements was found.

**Bracing in external rotation for traumatic anterior dislocation of the shoulder**

Finestone A, Milgrom C, Radeva-Petrova DR, Rath E, Barchilon V, Beyth S, Jaber S, Safran O

J Bone Joint Surg [Br] 2009;91-B:918-21.

Presenter – Natasha O'Malley

In summary this paper was a prospective, randomised trial comparing two groups of patients, each undergoing a different treatment for a first time traumatic anterior dislocation of their shoulder. The patient groups were a very homogenous population of well motivated, compliant young males, with clearly defined inclusion and exclusion criteria.

The two different interventions were described and clearly shown in photographs. Post intervention, both groups of patients underwent the same standard physiotherapy rehabilitation program to ensure this would not be a confounder in the study results. Redislocation was the study outcome measure.

Comparison of the groups showed no statistical difference between them. A Power calculation was carried out based on previous work in the field (Itoi et al), and statistics used were appropriate for the study.

In discussion, the strengths of this work were highlighted as it being a simple, well planned, prospective study with local ethical approval in 2 groups of similar patients. Weaknesses discussed were the difficulties transferring the results to daily practice given that most patient populations are much more varied and not as tolerant of bracing and rehabilitation.

The primary weakness in the work was that the randomisation method and quality was not explained in any detail, and clarification of this would make this a stronger work which could certainly change clinical practice.

**Recurrent club-foot deformity following previous soft-tissue release**

Mehrafshan M, Rampal V, Seringe R, Wicart P

J Bone Joint Surg [Br] 2009;91-B:949-54.

Presenter – Paul McKenna

Relapse of CTEV as soft tissue release is common (25%) and there are few large long-term reports available as to the results of further soft tissue releases. The aim of this paper was to present the results of a large series of relapsed CTEV patients after soft tissue release who were primarily treated with a further release. A total of 79 feet in 60 patients who had a further soft tissue release over a 28 year period were retrospectively reviewed. Age at time of revision varied from 15 months to 14.5 years old. All patients underwent a soft tissue release through a posteromedial incision. The same basic operation was applied to each, but the extent of the releases varied depending on the clinical picture. The releases included TA lengthening, posterolateral release (posterior capsule of tibiotalar joint, posterior talofibular calcaneofibular ligaments superior fibular retinaculum), tibialis anterior lengthening, and a medial release (tibialis posterior lengthening, abductor hallucis longus elevation, division of talonavicular capsule, plantar calcaneonavicular ligament and calcaneocuboid capsule. Subtalar adduction and midtarsal adduction were manipulated and secured with a K-wire. A total of 70% of patients underwent all the above releases, the other 30% had a variation of the above. Furthermore, 66% received a distal calcaneal wedge resection.

Outcome assessment was through Ghanem and Seringe scoring system and radiographic evidence. Age at follow-up varied from 8.5 years to 37 years (average 17). A good or excellent outcome was present in 77% of patients with a poor outcome in 5%. A total of 72% were pain free with normal shoe wear. Significant improvement was found in 4 of the 6 radiographic views. Dorsal talonavicular subluxation was found to be the most significant predictor of a poor result. They concluded that their "revision soft-tissue procedures provide satisfactory anatomical correction and functional improvement following previous failed surgery for idiopathic CTEV." When compared with other authors who similarly performed soft tissue releases, the above described method achieves similar success. All the previous studies followed up their results over a short/medium time period.

This paper does represent a large series of patients, some of whom have been followed up over a long time, and who appear to have adequate results, and these results must be complimented. However, because of the heterogeneity of the procedures performed, especially with the fact that 2/3 received a calcaneal wedge osteotomy and a further 8 patients received another osteotomy, it is hard to accept their conclusions that soft-tissue releases alone result in good anatomical correction in a mobile foot. Also, the degree of soft tissue release varied widely, but there was no subgroup analysis of the severity of the CTEV recurrence prior to release, the

release that was required and the overall success of the procedure. They also claim the results are in those patients at the end of growth, but the average age was 17 with a minimum age of 8.5 years. Surely there were several patients included who hadn't reached their end-of-growth. Their outcomes were assessed using only one scoring system (a system developed by the authors). They noted that the other scoring systems available are not necessarily comparable, but have neglected to use more than the one scoring tool. The outcome measurements would have been stronger if other tools were used.

The piece of information not presented, which may in fact be most valuable, was the decision making process and the wealth of experience the authors have certainly accrued over time as to the extent of soft tissue release required when presented with a recurrent CTEV after a primary soft tissue release. I would be excited to read their thoughts and experience as to the anatomical problems presented to them in the past 26 years and how they tackled them.