

Journal Club: 20 April 2010

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Three papers were discussed at this journal club.

Review

1. Dr B. Vidyasagar

Long-term follow-up of replacement compared with internal fixation for displaced femoral neck fractures: results at ten years in a randomised study of 450 patients

O Leonardsson, I. Sernbo, Å. Carlsson, K. Åkesson, C. Rogmark

J Bone Joint Surg [Br] 2010;92-B:406-12.

Introduction

Femoral head preservation in fractures of the neck of the femur is considered advantageous. The primary aim of this study was to compare patients with displaced fractures of the femoral neck treated by internal fixation with those treated by replacement as regards long-term failure and patient-reported outcome. Secondly, a subgroup analysis was performed comparing patients treated successfully by internal fixation and successfully by replacement in terms of patient-reported outcome.

Methods

This prospective, randomised multicentre study included 450 patients aged 70 years and over with fractures of the femoral neck of grade 3 or grade 4 according to Garden and treated between 1995 and 1997. Patients with rheumatoid arthritis or mental impairment, those who were bed-ridden or institutionalised at admission and those with fractures older than two days were excluded. In all, 41 patients were excluded after randomisation. This resulted in 217 patients in the internal fixation group and 192 in the replacement group. At ten years 92 of the 96 surviving patients provided some information on their outcome.

Results

Failure. The ten-year results showed a significant difference between the groups with an overall total of 99 failures (45.6%) in the internal fixation group and 17 (8.8%) in the replacement group. A total of 91 patients from the internal fixation group had undergone a salvage replacement. The most common reasons for this were nonunion and avascular necrosis, and in five patients re-operation was required for non-specific pain of sufficient severity to warrant conversion to a replacement. Of the 99 failures in the internal fixation group only four had occurred between two and ten years.

Discussion

This long-term study confirms the reliability of treating these fractures by replacement including better patient-reported findings in the early period. Furthermore, the short- and long-term mortality did not differ between the two procedures. Replacement is not associated with excess complications such as aseptic loosening or peri prosthetic fracture within ten years. This is an important finding because the possibility of the development of long-term complications has discouraged some orthopaedic surgeons from performing replacement, in particular for patients aged between 60 and 80 years.

The following points were discussed.

This a good study and a very relevant one.

1. There were minor problems in randomisation.
2. Pain is not included in the definition of failure, but in the results for five patients in the internal fixation group failure to be due to pain is considered.
3. Since pain was considered as failure in the internal fixation group, shouldn't that have been considered as failure in the replacement group also?
4. If deep infection in the internal fixation group was resolved by surgery, should it be considered under failure?
5. At four months the patients who had successful internal fixation had more pain. Was the improvement in pain due to removal of internal fixation devices?
6. There was a consensus, that the internal fixation group needed more data to explain almost 50 % failure. That would be, how many patients underwent open reduction? Also the quality of reduction could have been assessed which is very important for the outcome in fracture of the neck of the femur.
7. Is Vitamin D deficiency common in this age group of patients? If so, would that affect the outcome of internal fixation? Can the unexplained pain be attributed to that?

In our context:

1. The patient pays for his treatment out of his own pocket.
2. Replacement is three to four times more expensive than internal fixation.
3. Functional outcome in one year is similar in both groups when internal fixation is successful.
4. Another factor to be considered in our patients is that, they want to sit on the floor after the surgery which is usually contraindicated in replacement.

So it was concluded that it will be ideal to look at a cohort of patients here with either of this treatment in our setting.

2. Dr Justin Arockiaraj

Micro-decompression for lumbar spinal stenosis: the early outcome using a modified surgical technique.

N. M. Orpen, J. A. Corner, R. R. Shetty, R. Marshall
J Bone Joint Surg [Br] 2010;92-B:550-4.

Introduction

The authors describe a modified technique of micro-decompression of the lumbar spine involving the use of an operating microscope, a malleable retractor and a high-speed burr, which allows decompression to be performed on both sides of the spine through a unilateral, hemilaminectomy approach.

Patients and Methods

The first 100 patients to be treated with this technique have been evaluated prospectively using a visual analogue score for sciatica and back pain, the MacNab criteria for patient satisfaction, and functional assessment with the Oswestry Disability Index.

Results

After a period of follow-up from 12 months to six years and four months, sciatica had improved in 90 patients and back pain in 84. Their result was graded as good or excellent by 82 patients according to the MacNab criteria, and 75 had subjective improvement in their walking distance. Late instability developed in four patients.

Conclusion

Lumbar micro-decompression has proved to be safe, with few complications. Post-operative instability requiring fusion was uncommon, and less than using traditional approaches in published series.

Our discussion:

1. IRB approval is not mentioned.
2. Also whether informed consent was obtained from all patients is not mentioned.
3. This is a good technique avoiding damage to soft-tissue.
4. Inclusion and exclusion criteria are well defined, as are the outcome measures and complications are mentioned in detail.
5. One main drawback is that the duration of follow-up is inadequate for assessing instability with this technique.
6. It was thought that the following information would have been ideal to have in this paper.
 - a) The number of patients with Grade 1 spondylolisthesis who underwent surgery

- b) The number of patients with Grade 1 spondylolisthesis in whom there was no progression to instability.
- c) The level of surgery in the patients who developed instability post-operatively.

3. Dr Gopishankar

Bone-marrow-derived mononuclear cells with a porous hydroxyapatite scaffold for the treatment of osteonecrosis of the femoral head: a preliminary study

T. Yamasaki, Y. Yasunaga, M. Ishikawa, T. Hamaki, and M. Ochi
J Bone Joint Surg [Br] 2010;92-B:337-41.

Introduction

Idiopathic osteonecrosis of the femoral head may develop bilaterally in the young patient and joint preserving procedures such as femoral osteotomy and vascularised bone grafting are appropriate treatment. It appears that Bone-marrow-derived mononuclear cells (BMMNC) implantation has the potential to accelerate bone repair subsequent to angiogenesis in the presence of osteonecrosis and to avoid the requirement for osteotomy or hip replacement. In this study the authors evaluated the short-term results of the transplantation of BMMNCs for bone repair at the site of osteonecrosis of the femoral head.

Patients and Methods

A total of 22 patients (30 hips) who had osteonecrosis with a minimum follow-up of one year after implantation of BMMNCs were studied. The mean age at surgery was 41 years (18 to 64) and the mean period of follow-up was 29 months (19 to 48). In a control group, cell-free IP-CHA was implanted in eight patients (9 hips) with osteonecrosis of the femoral head and the outcomes were compared.

Results

A reduction in the size of the osteonecrotic lesion was observed subsequent to hypertrophy of the bone in the transition zone in the BMMNC group. In three patients in the treatment group progression to extensive collapse was detected. In the control group subtle bone hypertrophy was observed, but severe collapse of the femoral head occurred in six of eight hips.

Conclusion

In this limited study the implantation of BMMNCs and IP-CHA appears to confer benefit in the repair of osteonecrosis and in the prevention of collapse.

Our discussion

The following points were discussed.

1. The limitations have been mentioned by the authors i.e very small control group, difference in aetiology, age and stages of the avascular necrosis.
2. Some of the potential confounding factors not mentioned in the study are the body mass index of the patient, the diseases for which steroids were used and whether the patients continued to be on steroids during this period.
3. Though the BMMNCs were isolated through standard techniques, the presence of BMMNCs in adequate quantity was never confirmed by analysing the isolate.
4. Is it possible that other cellular elements or any other biochemical molecule was responsible for the results?
5. The radiological and clinical assessment could have been blinded.