Early results of Proxima hip replacement

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Introduction

There has been a gradual but steady increase in the number of young patients suffering with degenerative arthritis of hip needing help. This, along with increased awareness has lead to a dramatic increase in the number of patients undergoing hip replacement surgeries at a younger age. Conventional cemented hips requiring revision surgery often resulted in significant bone loss and compromised results. Surgeons have been trying for long to design hips that preserve bone stock at time of surgery and in the long run making revision surgery easier. This is the philosophy behind the proxima hip implant that was recently launched for the first time in Asia at the Max Institute of Orthopedics and Joint replacement. This is a revolutionary design and is based on a small anatomical hydroxyapatite coated metaphyseal stem [1] (Fig. 1).

Figure 1. Cemented, uncemented and a proxima hip

Bioengineering

Conventional cemented hips for long have been documented to deliver good results in elderly patients, but their results in younger patients are far from satisfactory in terms of bone preservation, stress shielding and revision surgery. To address these problems, the IPS (immediate postoperative stability) stem was developed approximately 10 yrs ago [2] (Fig. 2). This stem preserved bone at the time of surgery and in the long term prevented stress shielding.

Figure 2. IPS stem

Proxima hip prosthesis displays three prominent features, the most obvious of which is the absence of a stem. The other two features are complete preservation of the femoral neck and presence of a well defined lateral trochanteric flare. This resulted in a very conservative implant that preserved bone stock and soft tissue.

Radiology and templating

Preoperative radiographs of the hip are obtained to evaluate the hip and for preoperative templating. Standard radiographs done include an AP view of the pelvis, AP view of the affected hip in 15° of internal rotation and a dead lateral view.

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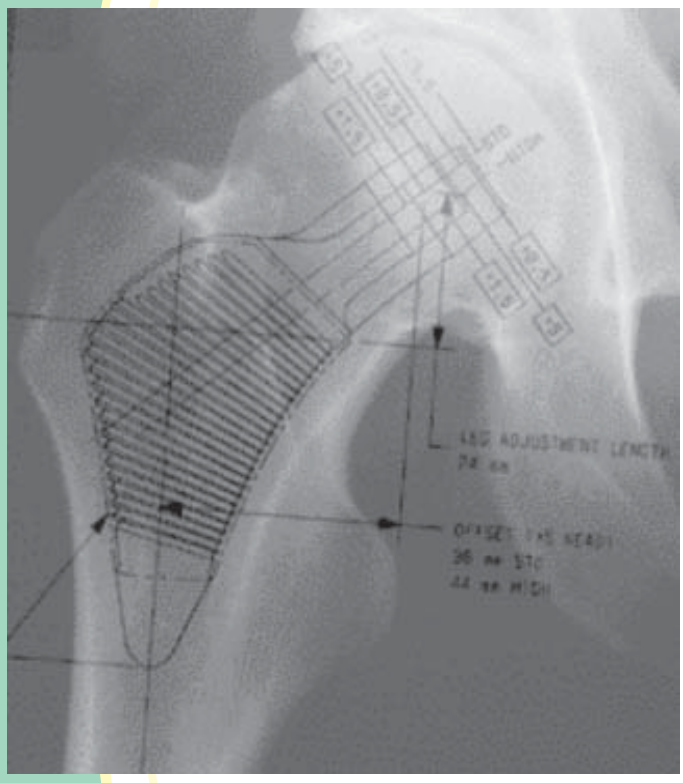

Figure 3. Templating on AP view showing central position of stem with good cancellous bone medially and laterally

Material and methods

Since July 2006, the senior author has performed 20 proxima hip replacement surgeries with very encouraging results. Max Institute is the leader in this technology in Asia and proxima hip was officially launched in Asia for the first time at this institute.

All patients had preoperative clinical and radiological examination. Preoperative templating was done on AP and lateral radiographs to determine the implant size.

Postoperatively, all patients were kept in HDU for 1 day for observation and subsequently shifted to the room.

Physiotherapy in the postoperative period involved bedside sitting by the 2nd postoperative day and partial weight bearing limited to 50 percent with walker from the 3rd postoperative day. Younger patients were allowed to progress to crutch supported walking over the next 6 weeks. Progression to full weight bearing and stick support was done gradually after 6 weeks. Active hip mobilization exercises and abductor strengthening exercises were continued. Supervised physiotherapy was usually continued for 2-3 months after surgery.

After 3 months the ability of the patients to squat and sit cross-legged was also assessed.

Results

More than 90% of the patients showed good result at 3 months after surgery with high satisfaction index and ability to sit cross-legged.

One patient had an intraoperative lateral cortex breach that was diagnosed on postoperative X-rays. The implant was otherwise in a good position. This patient was kept non-weight bearing with a walker for 6 weeks and then gradually allowed full weight bearing. Check X-rays showed complete healing of the fracture. This patient made a satisfactory recovery.

Another patient developed pain around the hip about 6 weeks after surgery due to a fall. X-rays showed that he had sustained an undisplaced fracture of the greater trochanter. There was no displacement of the prosthesis. He was treated conservatively with non-weight bearing till the fracture healed fully. He however continued to have unexplained groin pain with poor satisfaction with surgery.

At 3 months, none of the acetabular or femoral components showed loosening, osteolysis or migration.

Figure 4. Preoperative X-ray of patient with bilateral osteoarthritis secondary to avascular necrosis.

Discussion

Preservation of bone is critical in young patients undergoing total hip arthroplasty. In addition, bone remodeling should be good so as to prevent stress shielding of bone. Both these factors are crucial in obtaining a good functional outcome in young patients.

We at Max Institute have been doing all varieties of hip replacements for the last few years. Being in the forefront of joint replacement, we were the pioneers in introducing proxima hip replacement for the first time in Asia and to date have done the maximum number of cases in India.

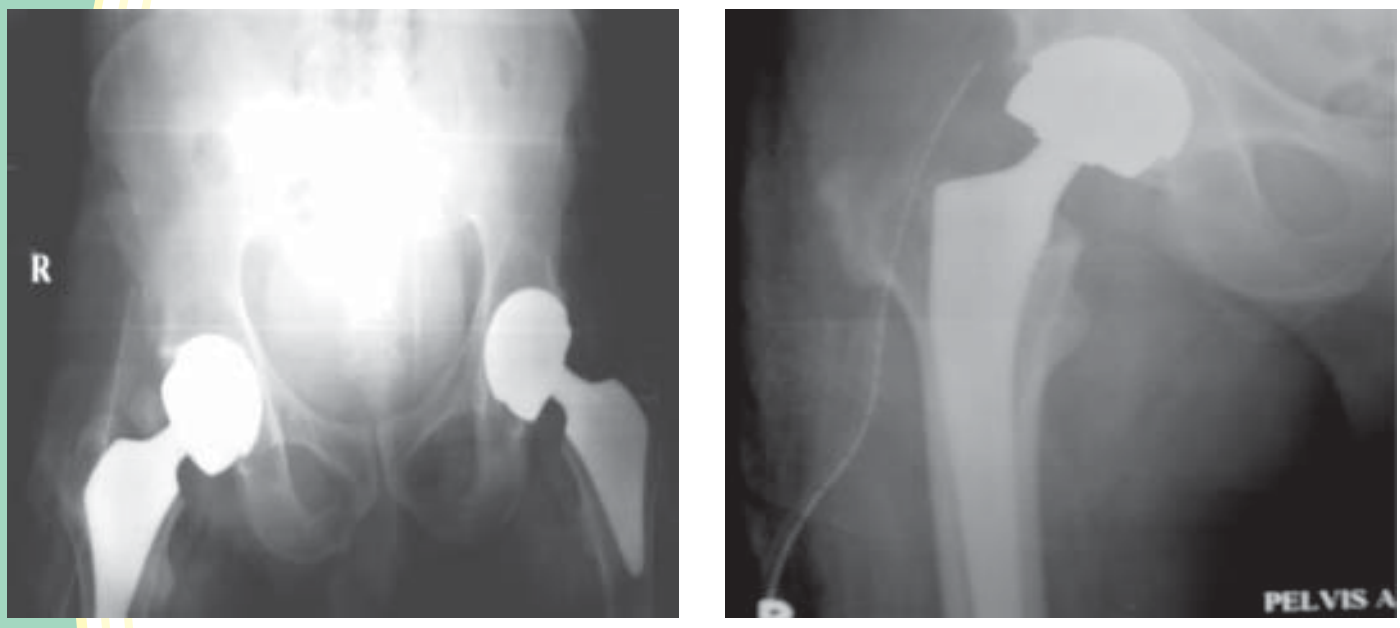

Figure 5. Postoperative X-ray after bilateral proxima hip replacement, on right side for comparison a standard uncemented hip is also shown.

Figure 6. Patient with osteoarthritis of hip

Figure 7. Postoperative X-ray

With this study, we have been able to decipher some short-term results. Stable fixation of the implant can be achieved even in the absence of stem provided full length of the neck is preserved. Good amount of bone stock is preserved during surgery but it is still too early to determine bone remodeling. Longer follow up is required to evaluate this. Approximately 96% of our patients were pain free at 3 months post surgery with 92% having a high level of satisfaction.

We hope to expand on this series and publish our long-term results in the coming years.

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