

Case Report:

Total Hip Replacement in a Systemic Lupus Erythematosus Patient

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Abstract:

Patients with systemic lupus erythematosus (SLE) going for surgery have put challenges to the treating surgeon, anaesthetist and physician as the patients can present with various medical complications perioperatively. It can be associated with polyarticular involvement especially avascular necrosis of the head of femur. The patients may present young with severe clinical findings and abnormal radiological features. The surgery in young SLE patients revolves on the longevity of the prosthesis used. We report a case of a 26-year-old lady with SLE going for right total hip replacement for her avascular necrosis of right hip.

Keyword: Systemic lupus erythematosus; total hip replacement; steroid

*Bangladesh Journal of Medical Science Vol. 19 No. 02 April'20. Page : 322-325
DOI: <https://doi.org/10.3329/bjms.v19i2.45016>*

Introduction

Avascular necrosis (AVN) of the head of femur is an important clinical calamity in patients who have systemic lupus erythematosus (SLE). Patient with AVN will present with hip pain and altered daily activities. Patient can present at younger age like our patient and may have polyarticular involvement. The femoral head is the most frequently affected site in patients who have SLE¹. The commonest risk factor for osteonecrosis of the femoral head is the use of corticosteroids. The incidence of AVN has increased by 4.6-fold for every 10 mg/ day increase in mean daily dose in the first 6 months of steroid therapy².

Total hip replacement (THR) is the mode of treatment in these patients. SLE patients who are planned for surgical intervention need to be prepared medically with a good surgical plan to prevent complications. A THR is necessary in patient who has dysfunctional

disability due to collapsed joints. The nuisance of THR in young SLE patients is the longevity of the prosthesis. We report a case of a 26-year-old lady with SLE going for right total hip replacement for her avascular necrosis of right hip and discuss our preventive measures and surgical steps.

Case Report

This is a 26-year-old active lady with history of SLE secondary to lupus nephritis presented with progressively worsening right hip pain since 6 months ago. She has background history of hypertension and Cushing's syndrome secondary to exogenous steroid. A year ago, she underwent left total hip replacement (THR) for avascular necrosis (AVN) of the hip which she had suffered for more than 6 years.

For this current problem, she felt a dull aching pain on the right hip with no radiation. The pain was very

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severe with visual analogue score of 9/10 every time she walked more than 50 meters. The pain was aggravated by prolonged walking and relieved by rest and analgesia. She also had a multiple history of fall because of the hip pain however there was no serious injury following that. She had a multiple admissions due to the SLE complications including pulmonary hemorrhage and anaemia. There were also multiple relapses in 2002, 2003 and 2008 that made the physician to frequently adjust her immunosuppressant drugs. Currently the patient is in remission with low dose oral prednisolone.

On examination, she was an obese lady with a body mass index of 42. She had an antalgic gait. There was no shortening of the lower limb. Her right hip motion was flexion of 0-100, abduction-15, adduction 15, internal rotation 30 and external rotation 15. Telescoping test was negative. Radiograph of the pelvis showed AVN of right hip, Ficat stage IV with shallow acetabulum. There was left THR in situ (Figure 1).

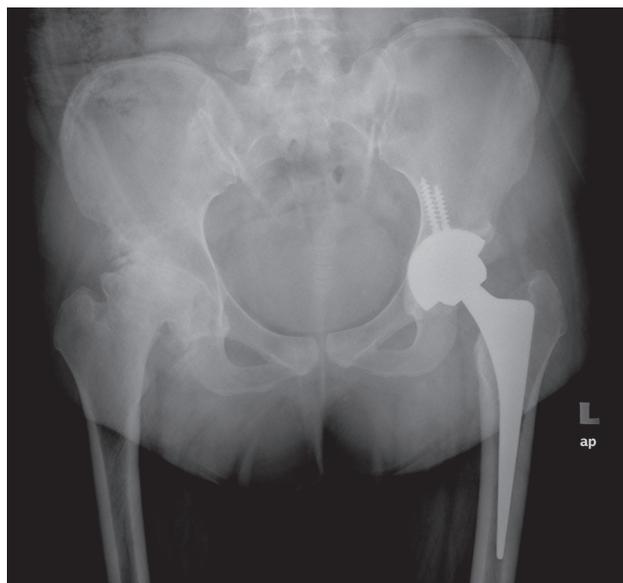


Figure 1: Anterior-posterior radiograph of pelvis showed right hip AVN with left THR in situ

Preoperative preparation was undertaken carefully. Her oral prednisolone was changed to intravenous hydrocortisone three times per day for two days duration to prevent Addisonian crisis. Preoperative templating was done. We planned for uncemented implant (ceramic on ceramic) with an autologous bone graft for acetabular augmentation. She was put under combined spinal epidural. Anterolateral

approach was used. The incision was started 2.5 cm posterior and distal to the anterior superior iliac spine. The interval between the tensor fascia latae and gluteus medius was then identified and divided midway between the anterior spine and greater trochanter. The vastus lateralis and vastus ridge were then identified, and electrocautery was used to reflect the muscle proximally 1-2 cm from its origin. Blunt dissection was then continued to expose the capsule. A retractor was placed over the anterior wall of the acetabulum, and the capsule was incised longitudinally across the anterior superior femoral neck. The femoral head was dislocated by external rotation and traction. A femoral neck osteotomy was performed using an oscillating saw. Retractors were placed anteriorly, posteriorly, and inferiorly to optimize visualization of the acetabulum. However there was an acetabular defect at the superior part of the acetabulum and we were unable to get press fit of the acetabular component due to the defect. Moreover, we were unable to augment the defect even with autologous bone graft taken from the resected head. The defect was worsened by soft pelvic bone. We proceeded with cementing technique of the acetabular component

She was discharged to the ward unremarkably. There were neither Addisonian crisis nor neurovascular complications. She was started back on tablet prednisolone 2 days after the operation. Postoperative radiograph was acceptable (Figure 2).

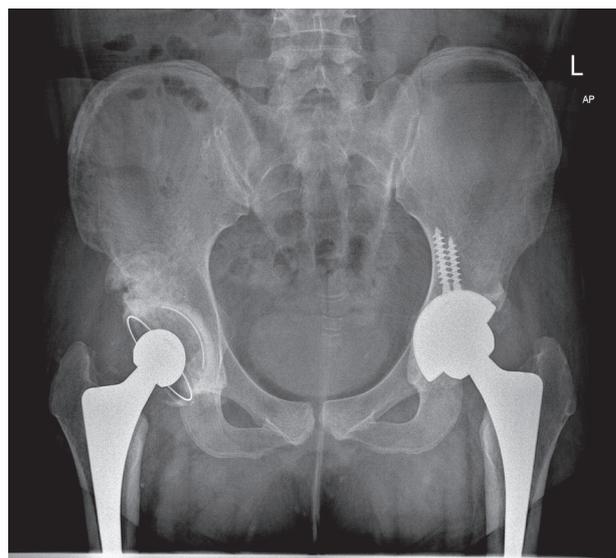


Figure 2: Postoperative anterior-posterior pelvic radiograph

She was discharged back home with a walking frame. Currently, she is still under our follow up and performing well.

Discussion

AVN is one of the disastrous complications of glucocorticoid therapy especially among SLE patients. Other aetiologies of AVN include trauma, acute lymphoblastic leukaemia, alcohol abuse and organ transplantation². Surgery is indicated if the activity of daily living is in questioned. The initial problem of preparing the SLE patient going for surgery is that the patient must be in full remission. Bentze et al had concluded that patients who have SLE should be in total clinical remission and have no evidence of nephritis before THR³. Our patient was in full remission during the surgery. Her last attack was about 4 years ago and was on low dose prednisolone preoperatively. She had no sign and symptoms of worsening renal function preoperatively. Medical team consultation was also carried out to prepare her before the operation. The blood pressure and blood parameters were also within normal range. She was deemed fit for operation.

Intraoperative complication faced in this patient was an acetabular defect with osteoporotic bone leading to the use of a cemented polyethylene acetabular component. There are several factors contribute to the higher risk of osteoporosis in SLE patients. Some of them have reduced physical activity and/or inappropriate calcium and vitamin D intake. Moreover, others include vitamin D deficiency due to chronic renal failure or conscious avoidance of sunshine, secondary hyperthyroidism, premature ovarian failure and the inflammatory process of the disease itself⁴. Advances in surgical technique and in the designs of cemented and cementless prostheses have resulted in improved outcomes of total hip arthroplasty in young patients with osteonecrosis. It is believed that osteolysis resulting from excessive polyethylene wear debris is common cause of implant failure in young active patients⁵. Despite the introduction of ultra-high molecular weight polyethylene and its improved wear characteristics, complications related to wear debris have not been fully eliminated, and hard bearings (metal-on-metal and ceramic-on-ceramic) might help to extend the longevity of current implant designs⁶. In the other hand, the results of total hip arthroplasty with

metal-on-metal bearings have also shown negligible wear in vivo, however, there have been reports of early periprosthetic osteolysis and loosening potentially related to metal ion release or delayed hypersensitivity reaction⁷. Seung-Hoon Baek et al had found that cementless total hip arthroplasty with contemporary alumina bearings was found to be a promising procedure for young, active patients with osteonecrosis of the femoral head⁸.

The most worrisome complication in patient with SLE is Addisonian crisis. An Addisonian crisis is a constellation of symptoms that indicate severe adrenal insufficiency. It is a medical emergency and potentially life-threatening situation requiring immediate emergency treatment. Patient needs to be questioned in detail regarding prolonged steroid use and due precautions need to be taken to avoid precipitating an Addisonian crisis in the perioperative period⁹. We prepared the patient by converting the oral steroid to the intravenous steroid given at 3 times per day. This is a standard anaesthetic protocol in our hospital for patient with long-standing steroid use going for operation. Glucocorticoid replacement is usually given in two or three daily doses, with a half to two-thirds of the daily dose administered in the morning to mimic the physiological cortisol secretion pattern¹⁰.

Our patient developed delayed wound healing with hemorheous discharge postoperatively. However, the problem subsided 1 week after we started her on vacuum dressing. It has been speculated that the risk of infection is increased in patients who have SLE and it is further increased if the patients taking corticosteroids¹¹. In our patient, the postulation for the serous discharge postoperatively is because of fat necrosis. She has a BMI of 42 and the adipose tissue at the operation site was relatively thick. Upon soft tissue mobilisation and also manipulation for reduction of total hip implant, the adipose tissue might get injured and lead to fat necrosis. The use of fat stitch during closure of THR wound may overcome the problem. Fat necrosis occurred in almost all THR wounds however fat stitch significantly reduced the amount of fluid drained¹².

Conclusion

Patients with SLE going for surgery can present with various medical complications perioperatively namely Addisonian crisis and surgical site infection.

Glucocorticoid replacement by converting from oral to intravenous steroid is usually undertaken to mimic the physiological cortisol secretion pattern. Low threshold suspicion is required if any complication is to happen so that the necessities can be taken as early as possible.

Ethical clearance:

Ethics approval was taken from Universiti Sains Islam Malaysia, Kuala Lumpur, Malaysia.

Disclosure of funding: None

Conflict of interest: None declared

Individual Contribution of the Authors:

Conceptual work: Md Shariff MS, Ngadiron H, Azizan N, Hayati F, Ariffin AC

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