



Girdle Stone Resection Arthroplasty A Two Staged Procedure For Septic Arthritis Of Right Hip Joint In A Young Patient : Surgical Decision Making And Outcome

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Abstract

Septic hip arthritis is a rare but serious disease which is often persistent, able to transform into chronic infection and difficult to cure. Girdle stone resection arthroplasty was first described by Sir Gathone Girdlestone in 1943. This case reports girdle stone excision arthroplasty in a 40 year old male as the final staged procedure for treatment of septic arthritis in a young healthy male without total hip replacement wherein stage 1 involves resection of femoral head and neck combined with implantation of antibiotic cement spacer and stage 2 involves removal of antibiotic cement spacer. Postoperatively patient was able to stand, walk and squat without support and perform other daily need activities after continuous physiotherapy. Girdle stone excision arthroplasty is rarely seen as an end procedure these days. With appropriate surgical technique and post operative physiotherapy a nearly 100% success rate is observed.

Keywords: Septic arthritis, girdle stone resection, arthroplasty

Introduction

Septic arthritis also known as infectious arthritis is inflammation of the joint usually caused by bacteria. It can also be caused by a virus or fungus. Typically, septic arthritis affects one large joint in the body, such as the knee or hip. Less frequently, septic arthritis can affect multiple joints.(1)

People with open wounds, weakened immune system, those with pre- existing conditions such as cancer, diabetes, intravenous drug abuse, and immune deficiency disorders have a higher risk of septic arthritis. In addition, previously damaged joints have an increased likelihood of becoming infected.(2)

Septic arthritis causes rapidly progressive and irreversible damage to the affected joint, resulting in serious morbidity and mortality. The incidence of septic arthritis ranges from approximately 2 cases per

100,000 people per year to 20 cases per 100,000 people per year in low-income settings.(3)

The girdle stone procedure, also known as femoral head osteotomy or girdle stone resection arthroplasty, is a type of excision arthroplasty of hip joint, first described in 1945 by Gathone Girdlestone, for the management of tuberculosis and other hip disorders.(4) It is an archaic procedure, currently has few indications which include infection with multiple antibiotic resistant organisms, non ambulatory patient with other co morbidities, aseptic necrosis of femoral head, long standing non-united neck of femur fracture, infected prosthesis, patient with systemic disease, a poor over health, or combination of these factors.(5) We will describe an unusual case, where this procedure was used on a young healthy male not associated with any co morbidities.

The procedure involves resection of a portion of femoral head and neck to allow fusion of the proximal femur with the acetabulum.

Functional outcome is highly variable, however, reduction in pain and removal of sepsis may necessitate this procedure.

Case Report

A 40 years old healthy male with a history of pain in right hip joint for

Last 3 months and difficulty while walking for last 1 month 2 followed by which he presented to outpatient clinic.

Patient was apparently alright 3 months back when he started experiencing pain in right hip joint for which he went to local practitioner where he was managed conservatively with analgesics and was relieved of pain over a course of one week of intravenous medications. Patient started experiencing pain, 2 days after the course of intravenous medications. When a Xray and MRI was done and was diagnosed with avascular necrosis of right hip joint with right psoas abscess for which patient got admitted in Mahatma Gandhi Medical Hospital for further evaluation and management.

No history of trauma was reported. There was no past history of tuberculosis or tubercular contact, no history of constitutional symptoms like fever or weight loss or illness was reported, no history of long term steroid intake or blood transfusion, no history of multiple joints pain. Patient was chronic alcoholic and consumes tobacco for last 5-6years. On examination there was no visible wound, hematoma, scar or sinus over right hip joint. There was no visible swelling over right hip joint. There was mild local rise of temperature and tenderness in the scarpa's triangle. Fixed flexion deformity of 20 degrees was noted on right hip joint.

Range of motion of right hip joint are as follows : flexion 0-30 degrees, extension 0-10 degrees, abduction 0-20 degrees, adduction 0 degrees, internal rotation 0-5 degrees, external rotation 0-15 degrees, indicating painful restriction of movements as compared to normal opposite i.e. left hip joint. A CT guided needle aspiration was done and send for genexpert and culture sensitivity. Culture revealed

staphylococcus aureus organism growth with no mycobacterium tuberculosis on genexpert. Laboratory findings revealed increased C reactive protein (CRP) levels of 24.6 mmol/L and Erythrocyte sedimentation rate (ESR) was reported to be 110 mm/hour. There was an increase in white leukocyte count: $12,510 \times 10^6/L$.

Radiograph of pelvis with both hips was taken in Antero-posterior view revealed features suggestive of avascular necrosis, flattening and erosion of femoral head [figure 1]. MRI of right hip joint was done showed features consistent with avascular necrosis of right hip joint, superolateral migration of femoral head with severe flattening and cortical erosion with PDFS/STIR hyperintense signal within femoral head and neck, widening of joint space secondary to T1 hypo intense, PDFS/STIR hyper intense collection within joint cavity, peripheral enhancing hyper intense collection seen in right iliopsoas muscle.

Right Hip joint hemiarthroplasty with antibiotic impregnated cement spacer[figure 2] was planned as a staged procedure and was operated with with the same[figure 3].Antibiotic spacer was placed. In combination with femoral head patient had septic necrosis of posterior acetabular wall so the antibiotic impregnated cement spacer wasn't staying reduced[figure 4]. Spacer was left inside and skeletal traction of 8 kgs was applied by transcalcaneum pin for 6 weeks.

After 6 weeks laboratory investigations were repeated and revealed C reactive protein (CRP) levels of 3.5 mmol/L and Erythrocyte sedimentation rate (ESR) was reported to be 10 mm/hour suggestive of decrease in right hip joint infection. Patient was planned for removal of antibiotic spacer and excision arthroplasty [figure 5]. Infection parameters were reduced and there were no complications in postoperative period. 3 days postoperative Physiotherapy for hip movements, knee, ankle range of motion, calf pumps, quadriceps and hamstrings muscle strengthening was started. Subsequently patient was allowed to walk initially with support followed by without support. At 6 weeks follow up, patient was able to stand, walk and squat without support and perform other daily need activities with radiographic improvement [figure 6].

Figure 1: Pre operative pelvis with both hips AP Xray : Suggestive of flattening and necrosis of right femoral head with severe joint destruction and upward migration of greater trochanter



Figure 2: Antibiotic impregnated cement spacer



Figure 3: Intraoperative picture showing femoral head replacement with antibiotic spacer



Figure 4: Postoperative Xray showing antibiotic loaded spacer inserted in femoral canal with proximal migration of femoral head due to posterior wall deficit of acetabulum



Figure 5: Immediate post operative Xray of a girdle stone right hip after removal of antibiotic impregnated cement spacer



Figure 6: Clinical pictures of the patient at 6 weeks follow up where patient is able to stand, walk and squat



Discussion

This Case report describes a rare presentation of septic arthritis of right hip joint in young patient. The 40 years old male in the case report presented with chronic right hip joint pain which aggravated over a period of time associated with difficulty in walking and limited range of movements. There was no fever or any other visible swelling.

Right hip joint was tender on palpation. Radiograph showed necrotic changes of femoral head.

Our case featured most of the characteristic features of septic arthritis of hip joint. The patient was young adult male presenting with vague symptoms of pain and discomfort. Laboratory findings were within normal limit except ESR, CRP and WBC. MRI findings supported diagnosis of infective avascular necrosis of right hip joint. There were no wounds or ports of entrance discovered for septic arthritis which suggest it is most likely due to haematogenous spread.

This clinical condition involves 2 etiologies first being avascular necrosis of femoral head followed by septic arthritis of hip joint as necrotic heads are more prone to infection, other being infection of femoral head leading to avascular necrosis of femoral head. However both conditions have similar clinical management.

This case is interesting for the reason as we have reviewed literature with girdle stone arthroplasty as a staged procedure for septic arthritis of hip joint which is followed by total hip replacement as the final procedure. Here in this case girdle stone arthroplasty was done as a final staged procedure for control of infection.

Girdlestone in both his articles in 1928 & 1942, has described radical excision of hips in tuberculosis & pyogenic infections.

He emphasised that the surgery involving excision of head, neck, greater trochanter & all musculatures is only for severe infections of hip joints. He concluded that if the surgery is done well the result is good with dramatic relief from the condition.

Conclusion

With the progress of modern orthopaedics, the Girdlestone's resection is rarely indicated as a primary procedure at the outset. However, it retains a place in the arsenal of surgical hip techniques. It is a simple procedure giving a mobile, painless and stable hip, at the cost of a shortening. This is sometimes the only indication for septic complications. It allows in most cases a certain degree of functional autonomy compatible with an acceptable daily life. In our case, the final results are more than satisfactory and have allowed to return to an active life.

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