

# An Elusive Case Report of Septic Arthritis and Multidisciplinary Management of Its Sequelae

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## ABSTRACT

The objective of this case report is to deliver a concise up-to-date review on the sequelae of septic arthritis causing rapid destructive changes in articular cartilage inducing deformity, muscle spasm and furthermore hampering all movements of hip joint inducing limp, apparent leg length discrepancy. As described by researchers the changes in the articular cartilage vary from fibrillation to complete destruction depending on the severity of the arthritis. The synovium become thick and congested, the subchondral bone shows sclerosis and cyst formation, capsule become thick and fibrosed. The aim of the multidisciplinary specializations is to identify persuading pathophysiological changes and improving functional mobility of the patient's affected limb by amalgamating specific medications and physical therapy techniques.

**Keywords:** Sequelae of Septic Arthritis, Sclerosis, Fibrosis, Limp, Apparent leg length discrepancy, Subchondral bone.

## INTRODUCTION

Septic arthritis is an acute pyogenic infection of synovial joint, which causes an intense inflammatory reaction with migration of polymorphonuclear leukocyte and subsequent release of proteolytic enzymes. This could lead to destruction of the articular cartilage and later the joint. Predisposing factors includes trauma,

diabetes, steroid therapy, malignancy, etc. Septic arthritis usually present as monoarticular affection in 90% and polyarticular in 10% of cases and fever is seen in 50% of the cases. Limp is a common complaint; the severity of clinical manifestation depends on the severity of the disease. Other features of infective arthritis are pain, swelling, local raise of temperature, redness, loss of joint movements and stiffness due to muscle spasm. The most common offending organisms are staphylococcus aureus (50)%, Streptococcus (20)%, Pneumococcus (10)%, Sequelae of infective arthritis according to Choi's classification :

Type I: Almost normal hip or mild coxa magna.

Type II: Deformed epiphysis, physis, metaphysis may result in coxa breva or progressive coxa vara or coxa valgus.

Type III: Malalignment of femoral neck, excessive anteversion, retroversion with pseudoarthrosis.

Type IV: Destruction of the head and neck of femur with the presence of remnant of medial base of neck. A complex clinical problem with limb length inequality needs immediate medical attention.

## CASE PRESENTATION

On 3<sup>rd</sup> July 2023, A 16-year-old male adult along with his guardian visited to our hospital OPD with the following chief complaints, excruciating pain around left hip, gluteal region and it was being referred

towards left lateral aspect of the knee, deformed left hip joint accompanied with restriction in all hip movements. A brief history was taken by the on-duty staff from the guardian according to him the patient had a road traffic accident, it was a side collision that had happened on 1<sup>st</sup> July 2023. He was immediately taken to the nearby local hospital for the management of minute external injuries, first aid was administered by an ordinary people rather than a professional. On the very next day, uncertainly patient had an episode of abrupt pain around left hip region, and was instantly referred to an orthopedist by a general physician. Patient was immediately admitted in an emergency care on 3<sup>rd</sup> July. For proficient diagnosis certain radiographic investigations were enacted, Radiographs AP and Axial view had shown #NOF. For fracture stabilization planned surgical intervention was performed under spinal anesthesia open reduction and internal fixation and it was being accomplished with 3 parallel 7.0 mm cannulated screw system. During observation after surgery medications were administered to the patient intravenously injection maczone 1g, injection mikacin 500mg and injection lorsaaid 8mg/2ml. Patient was fully oriented during discharge, his vitals were stable, afebrile and minimal pain was present at surgical site. Partial weight bearing was initiated after 3weeks of surgery and full weight bearing after 6 weeks. Patient had been in excellent health for 3 to 4 months after the surgery.

**Medication prescription followed by the patient for the time period of 3months after the surgery:**

Tablet Lizokef, Tablet Cefozyt CV, Tablet Signoflam, Tablet Calcor CT, Capsule Weltrex.

So as mentioned above Signoflam tablet belongs to a class of drugs known as non-steroidal anti-inflammatory drugs, it is a fixed dose combination composed of aceclofenac, paracetamol and serratiopeptidase. It is used in reduction of

pain and inflammation, oedema and pain. Aceclofenac works by blocking the action of an enzyme known as cyclo-oxygenase, which causes pain and swelling in the injured or damaged tissue. Paracetamol acts as a mild analgesic and antipyretic, which enhances the pain relief actions of aceclofenac. Serratiopeptidase is an enzyme which helps in the breakdown of the protein (fibrin) which is formed as a by-product of the clotted blood at the site of the injury. It thus causes thinning of the fluids around the site of injury thereby making fluid drainage smoother in the swollen tissue. Meanwhile Calcor CT tablet is beneficial for providing strength to bones and muscles, it contains zinc which aids in boosting the immune system and improves metabolism of the body, as it also contains calcitriol which is used to manage and avoid calcium deficiency and bone disease. Capsule Weltrex is a vitamin supplement prescribed for the treatment and prevention of vitamin B6 deficiency. It is important for the breakdown of protein, fats and carbohydrates from food.

**Clinical findings and Laboratory**

**Investigations:**

On 9<sup>th</sup> December 2023, patient presented in our orthopedic OPD with the following chief complaints, high grade fever, excruciating pain and inability to bear weight on his left lower limb. On examination there was a local swelling, tenderness around left hip region with restricted left hip joint movements. Laboratory investigations including CBC, CRP, ESR along with Fine Needle Aspiration Cytology microscopic examination were carried out for ruling out proficient diagnosis as per the presenting symptoms. As per the previous medical management summary the patient was advised hospital admission for medically managing his acute septic arthritis with infusion of intravenous antibiotics, primarily inhibiting the progression of infection uncertainly the patient party denied due to personal reasons.

**DISCHARGE SUMMARY**

UHID No: 6968 IPD No:565  
**Patient name:** Armanbir Singh S/o Gurmeet Singh **Age/Sex:** 15yM  
**Address:** V.po Jajje, Tehsil: Ajnala, Dist. Amritsar  
**Date of admission:** 03.07.23 **Date of Surgery:** 04.07.23  
**Date of discharge:** 08.07.23 **Consultant:** Dr Gurjot Singh Virdi

**Final Diagnosis:** Fracture Neck of femur left hip

**Brief history and Clinical findings:** H/o injury sustained over the left hip due to fall. No h/o loss of consciousness. No history of any other injury. No history of any drug allergy.

**Local Examination:** Obvious deformity right hip. Distal neurovascular status right lower limb normal. Distal pedal pulses palpable.

**G.P.Examination** (At time of admission): Conscious and well oriented. Anaemia nil, no cyanosis, no jaundice, JVP normal. Pulse: 72/min, Temp: 98.4 F, Resp. Rate: 20/ min, %SPO2: 98 %

**Systemic Examination:** Chest: Bilateral vesicular breathing, no crepts. CVS: S1, S2 normal, no murmurs. CNS: NAD. Abdomen: Soft, non-tender.

**Lab/Radiological investigations:** Attached along.

**Treatment given:**

INJ MACZONE 1G	IV	1-----X-----1
INJ MIKACIN 500 MG	IV	1-----X-----1
INJ LORSAID 8MG/2ML	IV.	SOS
INTRAVENOUS FLUID,RL		70ML/HR

Figure 1.1, A written summary document that outlined the patient's stay, including the reason of admission, medical history, treatment received, procedure performed, medications prescribed and recommendations for further care.



Figure 1.2, Radiographs pelvis and both hips AP view and Lateral view revealed accurate insertion of cannulated screws, implant was inserted precisely to avoid mal reduction of the bone.

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**Patient Name:** ARMANBIR SINGH Report Date: 09/12/2023 Patient ID: 5033  
**Report No:** 3 Sex: Male Report Time: 03:08PM Date: 09/12/2023  
**Referring Doctor:** DR GURJOT SINGH VIRDI Time: 03:07:30PM

Investigations	Results	Units	Normal Values
<b>HAEMATOLOGY</b>			
Haemoglobin	11.5	gm %	M-[12.0-16.0]F-[12-14]
Total Leucocyte Count	17,300	/cumm	[4000-11000]
<b>Differential Leucocyte Count :</b>			
Neutrophils	90	%	[50-75]
Lymphocytes	05	%	[20-40]
Monocytes	03	%	[2-10]
Eosinophils	02	%	[1-6]
Basophils	00	%	[0-1]
RBC Count :	3.83	mil/cu	[4.3-5.6]
PCV :	34.5	%	[39-55]
MCV :	90.2	fL	[78-98]
MCH :	33.3	pg	[26.0-35.0]
MCHC :	3.65,000	g/dl	[30.0-36.0]
Platelet Count :		/cumm	[1.4-4.5L]
<b>BIOCHEMISTRY</b>			
C.Reactive Proteins (Quantitative)	84.0	mg/L	[2-6]
<b>HAEMATOLOGY:</b>			
ESR : (Westergren)	57	mm/1st hr.	[0-15], F:[0-20]

(Lab Technologist)

\*\*End of Report\*\*

**Dr. Mandeep Sandhu**  
M.D. (Pathology)  
PMC Reg. No. 32740

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Figure 1.3, Laboratory investigations showed abnormal ranges of CRP, ESR and TLC.

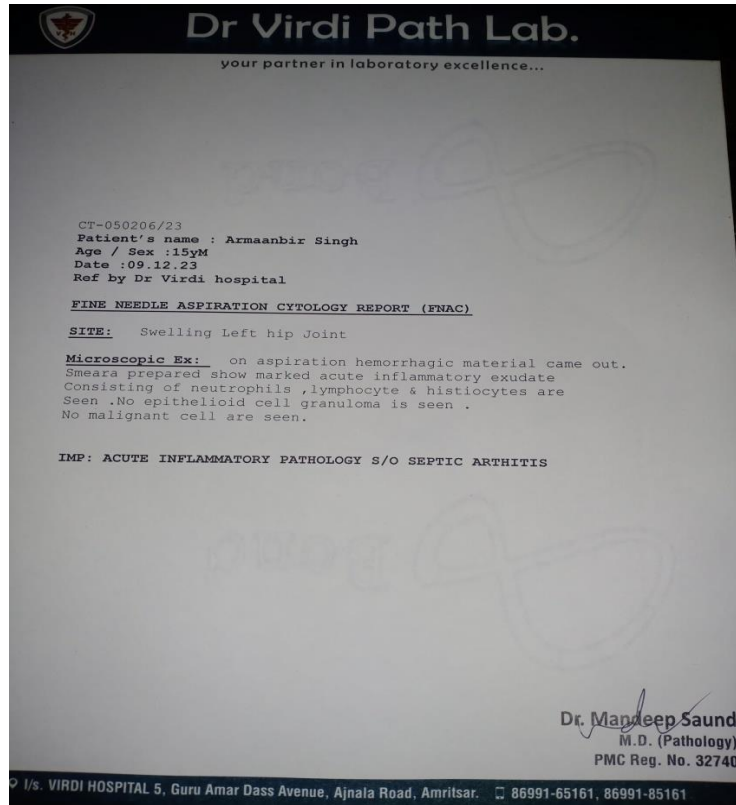


Figure 1.4, Fine needle aspiration cytology report revealed acute inflammatory pathology S/O septic arthritis.

**Timeline:**

On 7<sup>th</sup> June 2024, the patient’s hardware was removed because the purpose for inserting the hardware was achieved. On 13<sup>th</sup> July 2024, patient came back in our hospital, Scans were done to evaluate the status of the joint, henceforth it has been

ruled out that he had sequelae of septic arthritis. The orthopedist prescribed antibiotics and muscle relaxants. Tablet Flexabenz SR, Tablet Baclofen, Capsule Indocap to treat the patient’s septic arthritis sequelae, and advised physiotherapy treatment.

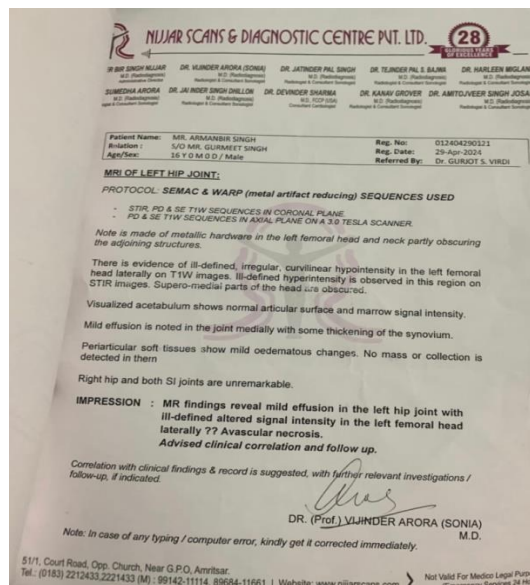


Figure 2.1, Magnetic resonance imaging revealed mild effusion in the hip joint with ill-defined altered signal intensity in the left femoral head laterally?? Avascular necrosis.



**Assessment:**

In a thorough subjective examination, pain was a consistent finding usually related to sustained position. Stiffness following rest was often more problematic than pain. In physical examination there was reduction in all hip range of motion and sustained weakness of hip abductors quadriceps, hip extensors accompanied with persistent spasm around hip, gluteal and back musculature. The weakness appears to be due primarily reduction in muscle size (atrophy). During objective examination, the patient presented altered gait pattern (Trendelenburg's and Antalgic Gait) due to spasm, pelvic girdle tilted anteriorly due to atrophied and weak muscles. Visual analogue scale and numeric pain rating scales have been preferred as self-report measures of pain, intensity of pain was reported around 8 and was severe in nature. Harris Hip Score signified severe limpness as patient was able to perform mild indoor activities by using single crutch mostly, outdoor activities were confiscated. Compensatory scoliosis was prominently seen as a mechanism to an apparent leg length discrepancy due to fixed flexion and adduction deformity of left hip culminated with ankylosed joint, hence there was no loss of bone length.

**Physical Therapy intervention:**

Proper physiotherapeutic sessions plays a significant role in the managing patient functional mobility, relieving pain, inflammation, relaxing muscles in spasm due to the following condition. The therapist structured a customized exercise program, according to FITT principle which includes frequency, duration, and intensity of exercise sessions, number of sessions and the period over which session should occur. Therapeutic ultrasound is primarily used to relieve pain and restore healing of inflamed structures, reduces spasm and joint capsule contraction by using sound waves with great frequency as it heats the bone muscle junction effectively by targeting larger muscle groups. Transcutaneous electrical

nerve stimulation stimulates nerve cells that block the transmission of pain signals. The electric current raises the level of endorphins which then trigger body's pain relieving power. Intermittent Pelvic traction stretched the spinal muscles and ligaments and thereby reduced the intradiscal pressure, straightened the spinal curve, it distracted the vertebral bodies and the facet joint. Hot Fomentation increased blood flow to the area by causing vasodilatation thereby relieving internal congestion and remove internal debris. Relaxed passive ROM exercises carried out for all movements of the hip joint 20 repetitions, 2 sets. Soft tissue mobilization covering left lower limb larger group of muscles. Deep tissue release especially covering lumbar region. Active ROM exercises to the knee and ankle joint muscles 15 repetitions, 2 sets. Pelvic lift, Bend both the knees up, push on the feet and lift, hold for a count of five and relax. Leg Stretch, Push one leg along the floor as though you are trying to make it longer than the other, hold for a count of five and relax. Exercise lying on side, with painful hip up, Side leg rising, keep the top leg straight and lift it up as high as possible, hold for a count of five and relax. Knee and hip flexion, Bend the hip and knee for a count of five. Then straighten the leg and stretch backwards as far as it will go, hold for a count of five and then relax. Exercises in sitting posture, Feet together knees apart, keep the ankles together and the move the knees apart, then relax. Exercises in standing posture, standing leg swing, hold into a table or chair with one hand, swing one forward and backward. Try to get the backwards swing as wide as possible. Standing side leg swing, Hold on to a chair with both hands. Swing bad leg out as far as it will go and then in. The outward swing is the hardest part so assistance will be given by the therapist so that leg should be allowed to fall back under muscular control.

### **Hip Joint Nonthrust Long-Axis**

#### **Oscillation Mobilization/Manipulation:**

This technique is used with the intent of creating relaxation of the muscles of the hip, decreasing tension in the soft tissues of the hip, and improving the elasticity of the joint capsule, allowing for progression of mobility with other techniques. Long-axis non thrust mobilization/manipulation of the hip in supine lying 15 to 30 degree abduction and 15 to 30 degree flexion. Caudal hip non-thrust mobilization/manipulation side lying with combined medial and inferior glide. One therapist distracts the hip while the other therapist provides medial glide to the hip. Anterior hip non thrust mobilization/manipulation in modified figure-four position, this technique is also used in conjunction with an active contraction by the patient of the external rotators of the hip, with the intent of increasing the anterior glide of the femur through the contraction of the muscles across the posterior aspect of the hip. The patient actively pushes the knee into the therapist's hand, facilitating a contraction, as the therapist mobilizes the femur anteriorly with proximal hand (7,8,9,10,11).

#### **Management Measures in Daily Life:**

Use of higher chair, which require less effort to get in and get out has be

considered. Use of western toilets avoiding the Indian types, to fit railings next to the toilet and bath to facilitate ease of movement. Patient is advised to climb stairs leading the good leg taking one stair at a time and to descend the stairs leading with the bad leg, again taking one stair at a time. To reduce the force acting across the injured joint patient is advised to use a walking stick which acts as a third limb. The stick should be held in the hand opposite to the affected hip. The top of the stick should come up to the wrist when the patient stands and the tip should be provided with a firm rubber to avoid slipping. A walking stick, by providing a third limb through which forces can be transmitted, enables the reduction of force across the injured joint from peak values of 5 to 1.5 times the body weight. Footwear with hard soles and high heels should be avoided. Keep as upright as possible as this helps to put equal weight on both the legs, avoid sitting on a low or soft chair, avoid curling up in a bed, while stretching the front of thigh and hip, lie on the stomach at least once a day for 5-30 minutes, proficiently use a walking stick when walking inside or outside the house, avoid squatting on ground, advised to wear comfortable footwear, to avoid uneven and rough ground or surfaces while walking.



**Figure 3.1, Shows significant reduction in deformity as patient abducted his left affected limb apart from the sound side.**

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Patient Name : ARMANBIR SINGH      Report Date : 01/06/2024      Patient ID : 5002  
 Report No : 2      Age : 16      Sex : Male      Report Time : 01:27PM      Date : 01/06/2024  
 Referring Doctor : DR GURJOT SINGH VIRIDI      Time : 01:26:02PM

Investigations	Results	Units	Normal Values
<b>HAEMATOLOGY</b>			
Haemoglobin	12.1	gm %	M-[12.0-16.0]F-[12-14]
Total Leucocyte Count	8500	/cumm	[4000-11000]
<b>Differential Leucocyte Count :</b>			
Neutrophils	65	%	[50-75]
Lymphocytes	30	%	[20-40]
Monocytes	03	%	[2-10]
Eosinophils	02	%	[1-6]
Basophils	00	%	[0-1]
RBC Count :	4.03	mil/cu	[4.3-5.6]
PCV :	36.3	%	[39-55]
MCV :	85.2	fl	[78-98]
MCH :	28.3	pg	[26.0-33.0]
MCHC :	32.5	g/dl	[30.0-36.0]
Platelet Count :	1,85,000	/cumm	[1.4-4.5L]
<b>BIOCHEMISTRY</b>			
C.Reactive Proteins (Quantitative)	5.5	mg/L	[2-6]
<b>HAEMATOLOGY:</b>			
ESR : (Westergren)	15	mm/1st hr.	[0-15], F-[0-20]

(Lab Technologist)

\*\*End of Report\*\*

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Figure 3.2, Illustrating normal ranges showing no evidence of acute septic arthritis infection.



Figure 3.2, Recent radiographs shows bone remodeling entailing the resorption of the damaged bone , followed by the deposition of new bone material.



**Figure 3.3, Signifies marked improvement in patient's posture as he is able to sit in an upright position without any discomfort and limbs are separated apart.**

## DISCUSSION

This case report describes the rationale and clinical decision making the incorporation of investigatory process, medical management, physical therapy into the treatment of septic arthritis sequelae. Significant changes in function as measured through the HHS, decreases in pain, corrected deformity etc. (Figure 3.1). The treatments and investigations in this case report is not based on a specific predetermined set of planned interventions but rather on the orthopedist, pathologist and consultant physiotherapist. The apparent success of manual interventions accompanied with electrotherapy promotes the potential of improved quality of life, decreased pain, and decreased personal costs associated with the condition. The rationale for this type of treatment approach in the management of ankylosed hip is to restore functional motion of the hip, allowing for an increase in the prevalence of exercise participation, medical management and to potentially improve the nutrition and tissue health of the hip joint.

## CONCLUSION

From this case report it has been concluded that multidisciplinary team together can

make invaluable changes to a patient's quality of life offering a transformative journey toward regained mobility, pain management, whether recuperating from injury, surgery, or managing chronic conditions, multidisciplinary team management emerges as a pivotal ally in the pursuit of wellness.

### *Declaration by Authors*

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

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