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A Case Report of Preoperative, Intraoperative and Postoperative Complications in THR Secondary AVN Due To Sickle Cell Anemia

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ABSTRACT
BACKGROUND
AVN of the proximal femur is a one of the most common causes of prximal femur and total hip arthroplasty id the gold standard treatment . among the various causes of AVN , sickle cell anemia requires a multidisciplinary approach and has its spectra of medical and surgical complications
MATERALS AND METHODS
This is a case report of a 27 year old male patient with arthritis of left hip secondary AVN due to sickle cell anemia was operated with uncemented total hip arthroplasty
CONCLUSION
THR in a AVN due to sickle cell disease requires a multi disciplinary approach adequate hydration , preoxygenation , appropriate vaccination , pain management and meticulous surgical procedure . THR in sickle cell anemia
KEY WORDS – *avascular necrosis , total hip replacement , sickle cell anemia*

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I. INTRODUCTION

- Sickle cell disease is a autosomal recessive hemoglobinopathy
- Caused by point mutation in beta chain of hemoglobin
- Glutamine is replaced by valine in 6 th position
- It affects the shape of the RBC (tactoids), which causes reduced Oxygen carrying capacity under low oxygen tension and impend the blood supply to the vital organs of the body

SPECTRUM OF SICKLE CELL DISEASE
Anaemia , vasocclusive crisis , chronic organ failure

- SKELETAL MAIFESTATIONS

avascular necrosis
Osteoporosis
Pathological factors
Infections - osteomyelitis , septic arthritis
Bony hyperplasia
Thinning of the trabeculae and cortices , marrow hyperplasia

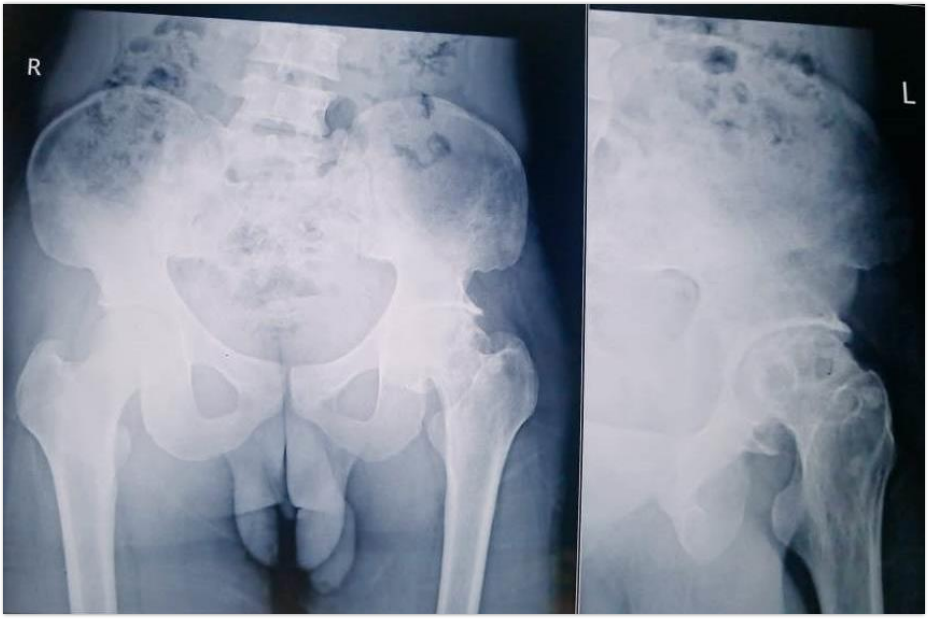
Osteosclerosis (bone within a bone appearance
Sickle cell is a one of the most common causes of AVN in the childhood
High chances of progression into osteoarthritis by 3 or 4 decade of life

II. MATERIALS AND METHODS

This is a case report of a 27 year old male patient
Known case of sickling since child hood , with 2 episodes
General examination
Pallor + (hb – 6 gm / dl) - around 6 episodes of blood transfusion since childhood
Icterus + (Total bilirubin - 7 gm with indirect hyperbilrubunaemia)
Autosplenectomy
History of surgery for retinal detachments right eye

LOCAL EXAMIATION

Skin and soft tissue appears normal
No active signs of local infection
Tenderness over the left hip
Global restriction of movements
2cm limb shortening

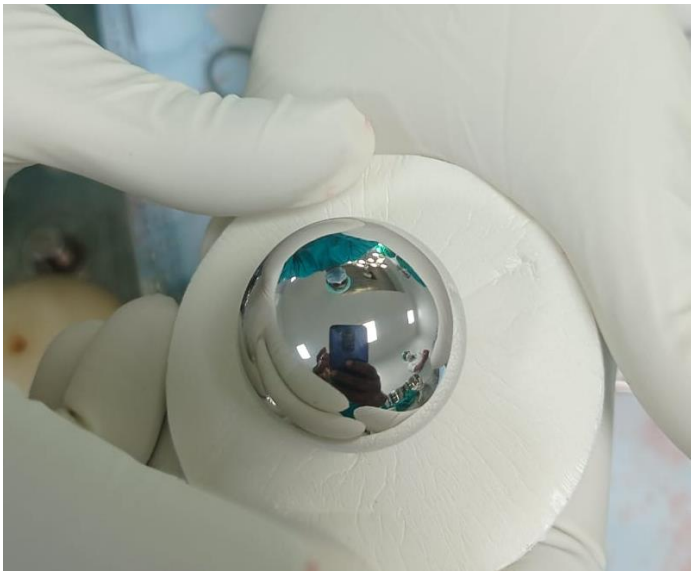


- **PREOPERATIVE WORK UP AND IMPLANT DATA**
- Pre operative work up - optimize the blood and liver paramaters
- Preoperative and intraoperative oxygenation 4 litres of oxygen
- Adequate hydration to the patient
- Preoperative prophylactic vaccination of pneumococcal , hepatitis - b , hempphilus influenza - b
- Hydroxy urea dose - 15 – 20 mg / kg body weight
- Oral zinc adminstartion
- Hydroxyapaptite coated stem is used due to the osteoporortic nature of the bone
- PRBC , 3 units FFP should be made available intraoperatively
- COUNSEL the patient regarding the complications

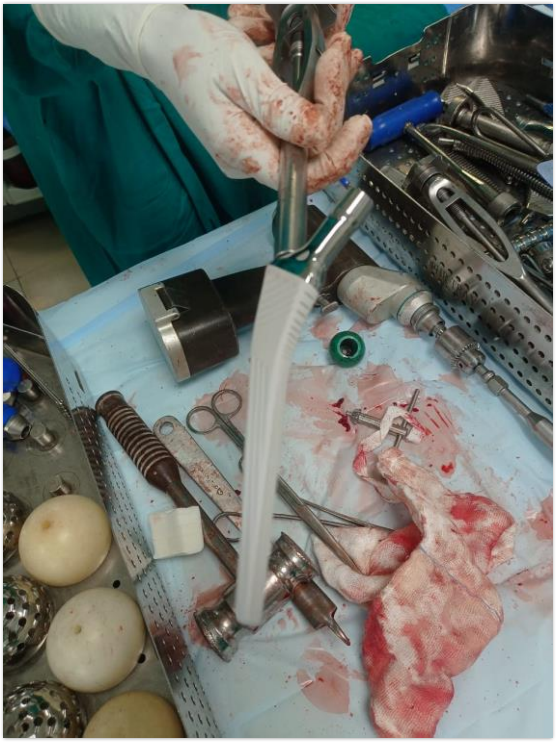
III. DISCUSSION

- The primary THR in patients suffering from sickle cell related AVN has high percentage of medical , intraoperative and postoperative complications
- Sickle cell crisis and transfusion related are the most common medical complications
- Intraoperative complications include – vasoocclusive crisis spectra and sudden death , iatrogenic # , difficult intraoperative reaming due to osteosclerosis

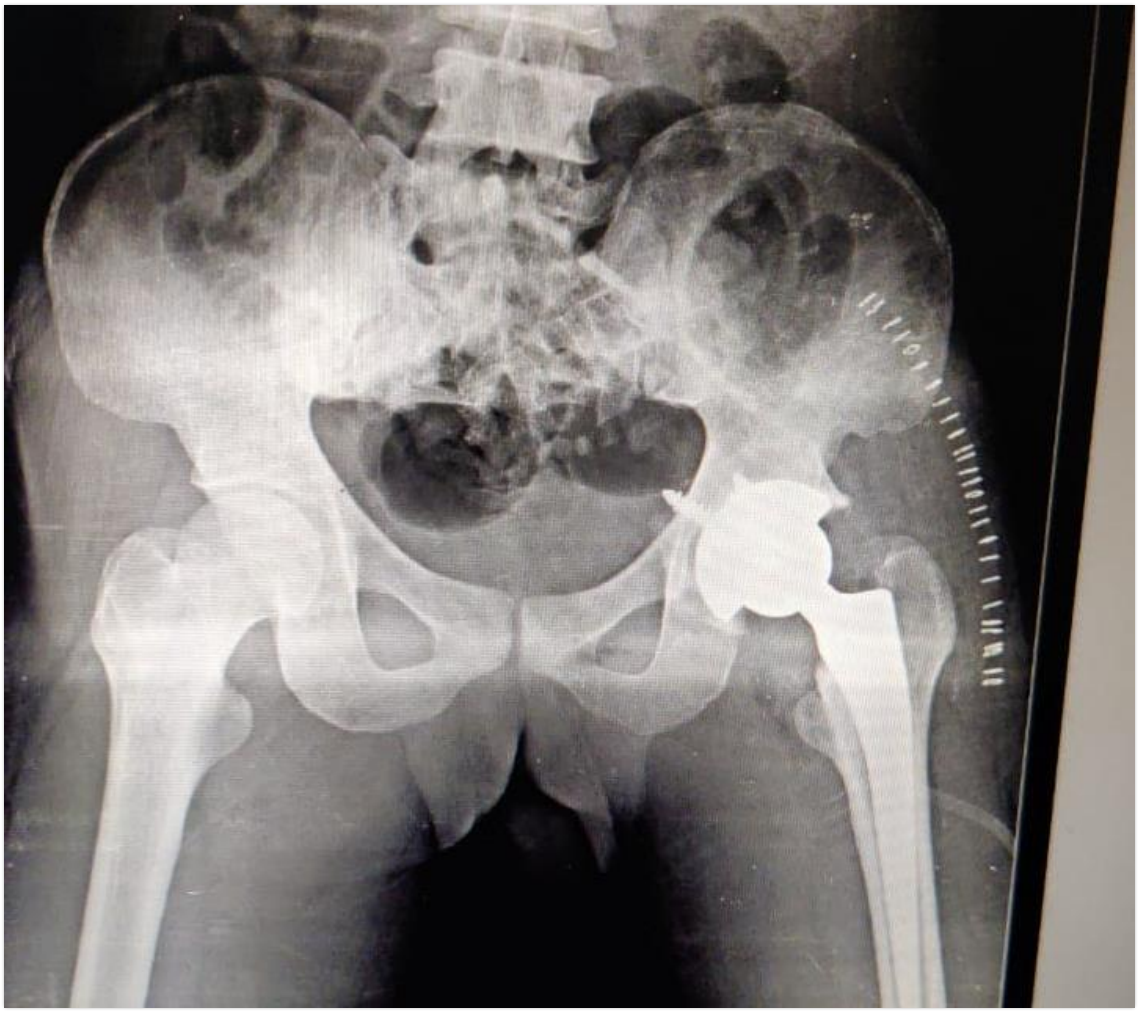
- Post operative complications include – infection and aseptic loosening of the prosthesis high incidence of the revision rates
- Loosening of prosthesis can be prevented by hydroxyapatite coated stem for better ossous integration and acetabular screws to prevent acetabular component loosening
- Despite of all the complication total hip arthroplasty remains the gold standard for the avascular necrosis secondary to sickle cell disease
- Total hip arthroplasty significantly improves the range of movement , quality of life , and daily activities of living .
- Thus we should be aware of the complications before executing a total hip arthroplasty in a sickle cell anemia patient



Ceramic on poly acetabular cup



hydroxyapatite coated proximal fitting femoral stem



Postoperative x ray showing THR with restrostion of off set and acetabular screws for better stablity

IV. CONCLUSION

- THR in sickle cell anemia needs a multi disciplinary approach with regard to high incidence of complications
- Adequate preoperative hydration , warming , pre and intraoperative oxygenation
- Exclusion of the infective focus from the entire body
- Adequate care in handling soft tissue and bony structures
- Written and informed consent regarding the complications

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