BILATERAL ROBOTIC HIP JOINT REPLACEMENT IN A CASE OF ANKYLOSING SPONDYLITIS

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UNDER THE GUIDANCE OF **DR RAHUL SALUNKHE** PROFESSOR AND HOD,

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CASE HISTORY

- A 39 year old male c/o pain over bilateral hip regions since 15 years (Rt>Lt) presented to us on 13th may 2023
- Pain in both hips was gradual in onset progressive over a period of 15 years and presently has severe pain in both hips with predominant pain in right side.
- The patient due to pain had restriction of daily activities and was not able to walk since 9 years
- He had to use a wheel chair for his day to day activities.
- He also had on and off complaints of back pain.

- FFD of 30^0 degrees in both the hips.

- All spine movements restricted.

- TLC 7100
- ESR 51
- CRP 32

ROM RIGHT HIP

MOVEMENT	RIGHT HIP
FLEXION	10 – 20
ABDUCTION	10
ADDUCTION	5 – 10
INTERNAL ROTATION	External rotation deformity
EXTERNAL ROTATION	15 (fixed)

ROM LEFT HIP

MOVEMENT	LEFT HIP
FLEXION	30 – 50
ABDUCTION	10
ADDUCTION	5 – 10
INTERNAL ROTATION	20
EXTERNAL ROTATION	10

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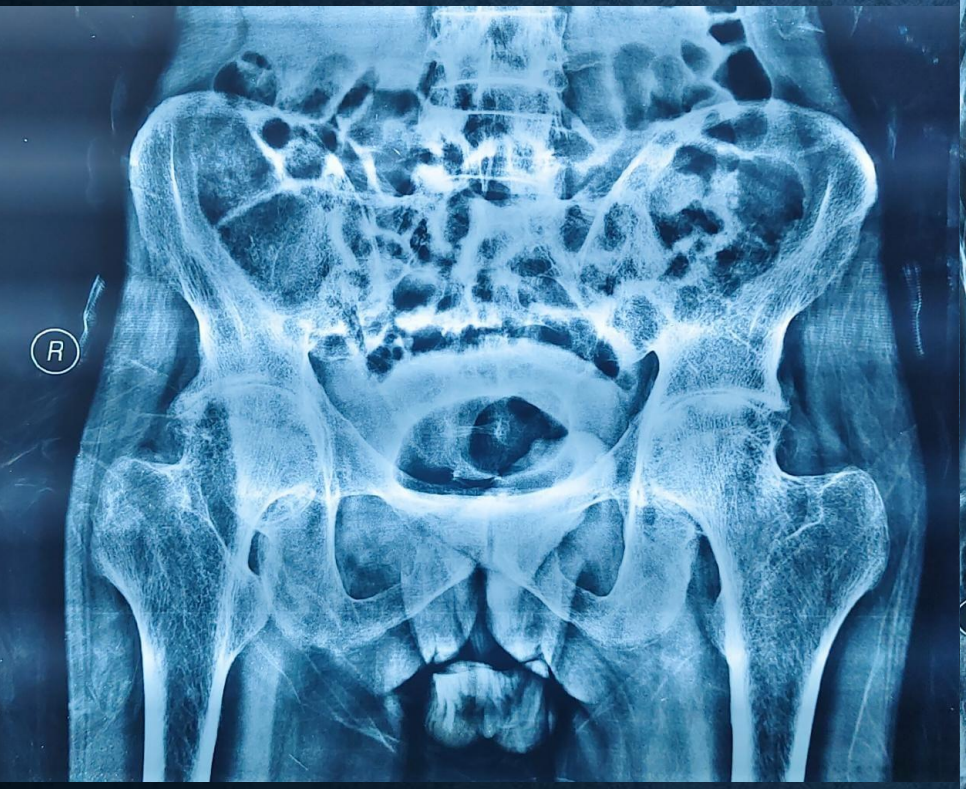

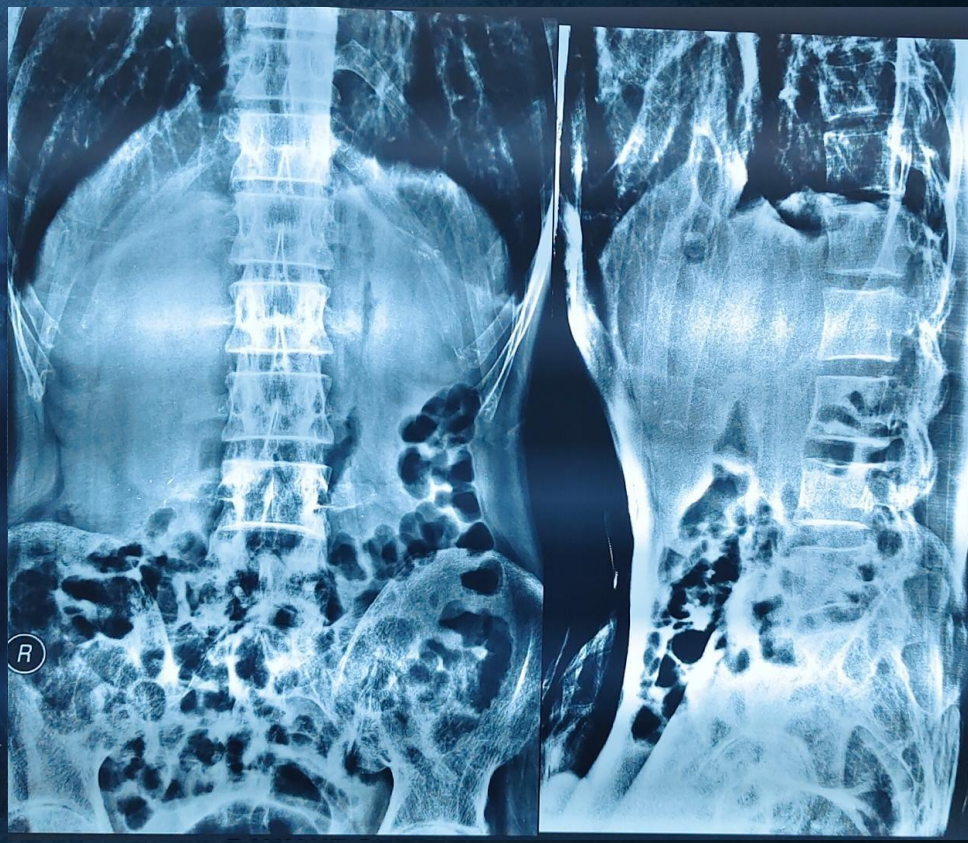

WHAT IS OUR DIAGNOSIS ?

- Young male
- Associated back pain (> 3months)
- With associated restricted spine movements
- Severe hip joint destruction and restricted mobility

ANKYLOSING SPONDYLITIS WITH B/L HIP JOINT INVOLVEMENT

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OUR PLAN
BILATERAL ROBOTIC THR

OUR GOALS

- Pain relief
- Range of movements
- Ambulation
- Deformity relief
- Posture correction
- rehabilitation

WHAT MAKES THIS CASE INTRESTING?

- Anaesthesia
- Surgical exposure
- Abnormal spino-pelvic biomechanics
- Femoral neck osteotomy due to difficulty in dislocating a ankylosed hip
- Identifying the true acetabulum
- Proper cup positioning
- Risk of femur fracture due to osteoporosis

RIGHT SIDE PRE OP PLAN
BY DOING A CT SCAN & APPROPRIATE PAC AND FITNESS

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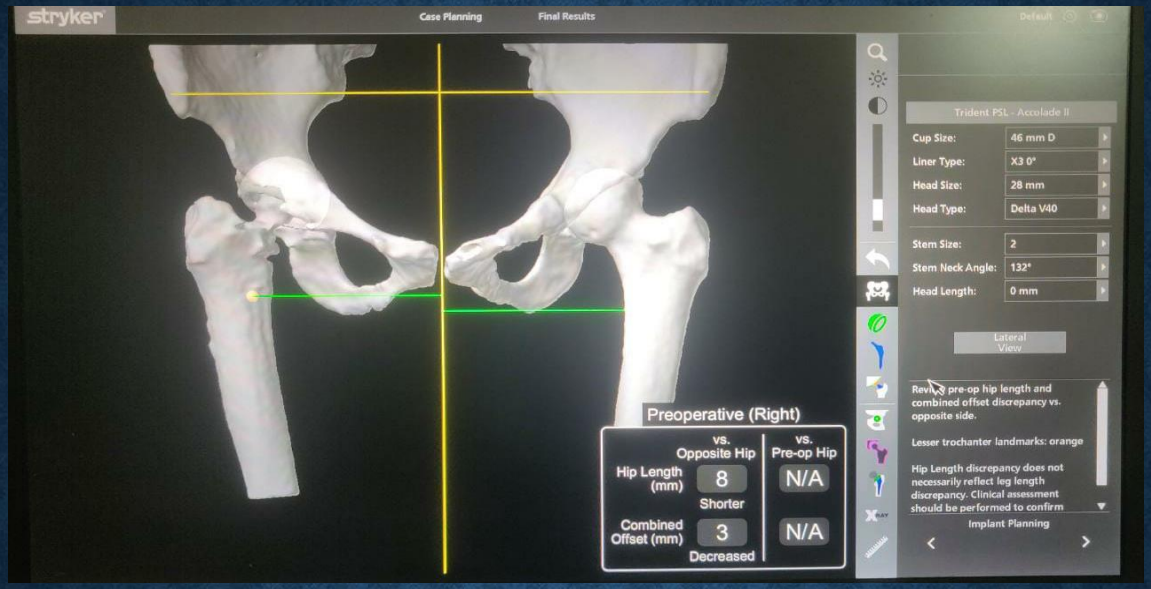
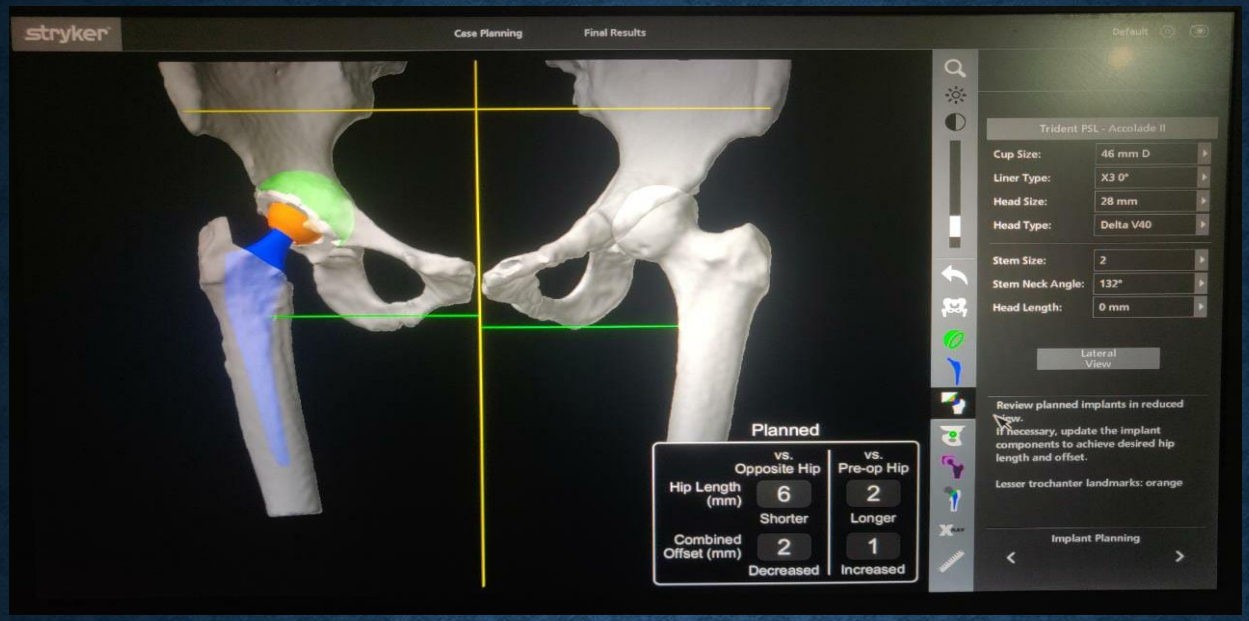


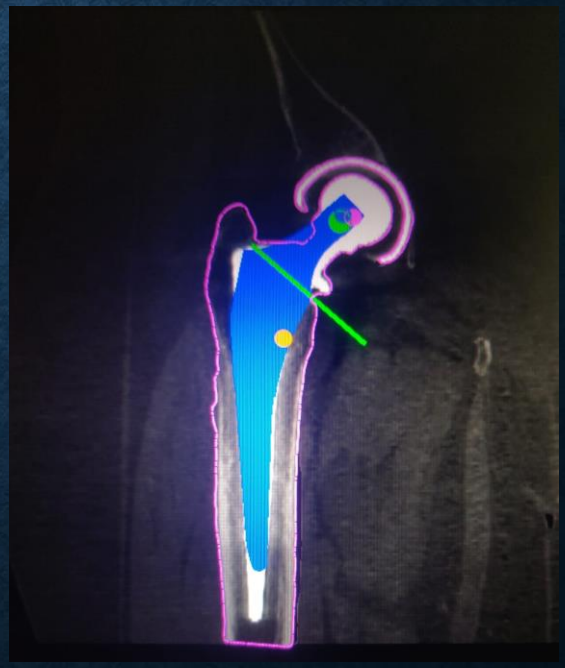
ANTERIOR COVERAGE

POSTERIOR COVERAGE



FINAL CUP AND STEM PLACEMENT

MEDIAL



STEM SIZE AND PLACEMENT

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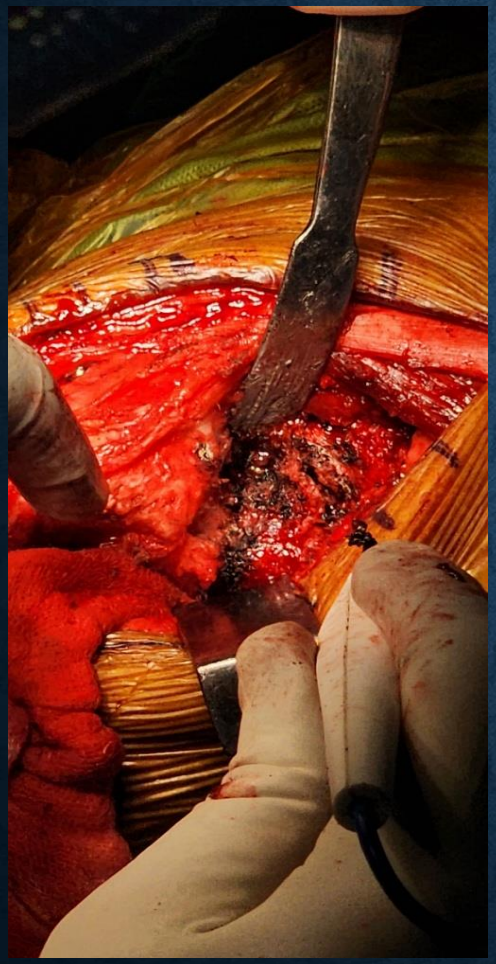
PATIENT WAS OPERATED ON 23TH MAY 2023 – RIGHT SIDED ROBOTIC TOTAL HIP REPLACEMENT USING THE ANTEROLATERAL APPROACH (FOR EXTERNAL ROTATION DEFORMITY) USING STRYKER UNCEMENTED CERAMIC ON POLY IMPLANT

INTRA OP FINDINGS



NECK CUT WITHOUT DISLOCATION

PEICEMEAL REMOVAL OF FEMORAL HEAD

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THE PATIENT PRESENTED TO US FOR THE SECOND TIME ON 30TH JUNE 2023 FOR HIS LEFT THR.

MOVEMENT	LEFT HIP	RIGHT HIP
FLEXION	30 – 45	100
ABDUCTION	10	40
ADDUCTION	5 – 10	30
INTERNAL ROTATION	20	30
EXTERNAL ROTATION	10	30

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LT SIDE PRE OP PLAN BY DOING A CT SCAN AND APPROPRIATE PAC AND FITNESS FOR SURGERY

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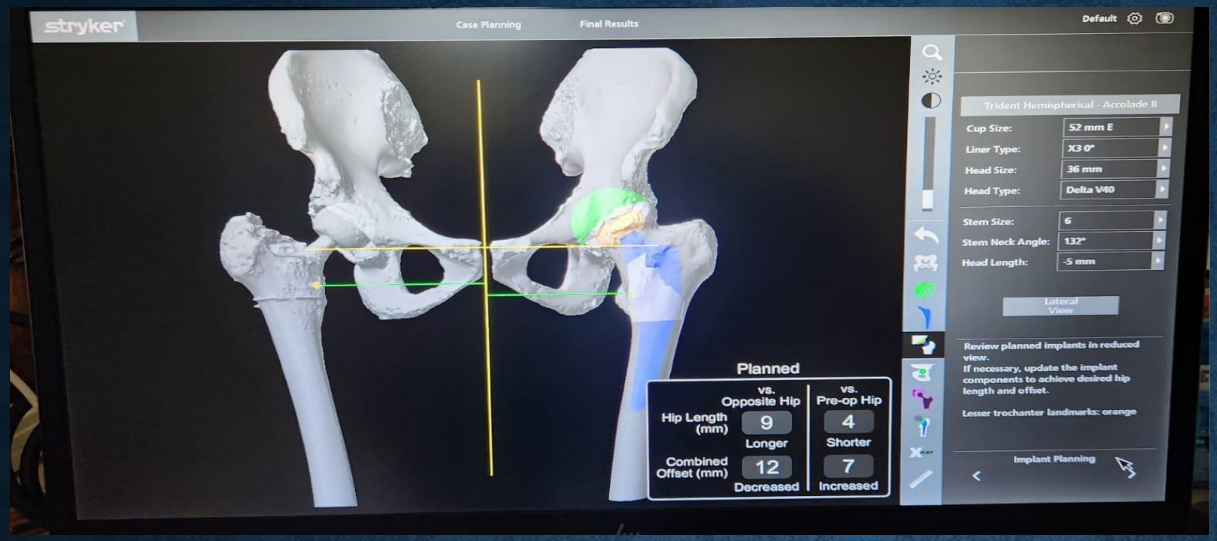
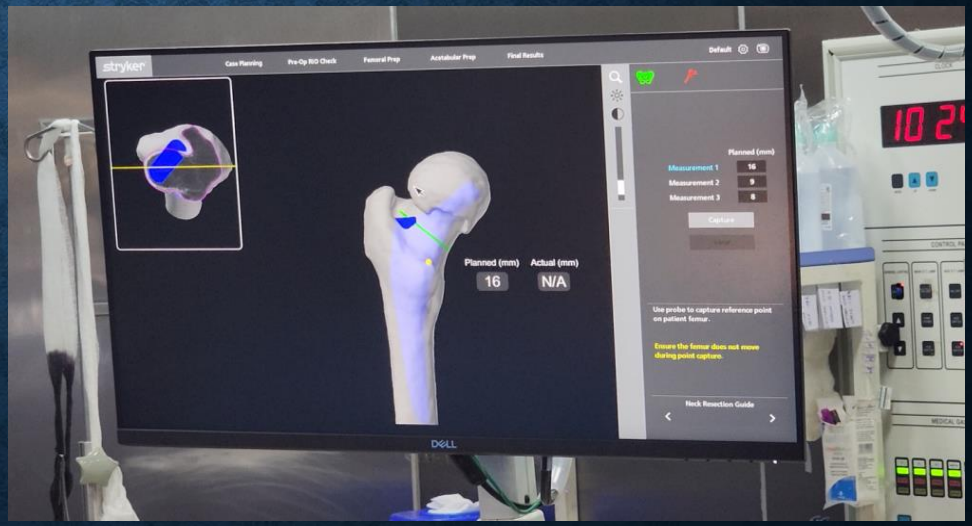


FINAL IMPLANT POSITIONING

ACETABULAR COVERAGE AND MEDIAL WALL



FEMORAL NECK RESECTION

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PATIENT WAS OPERATED ON **5TH JULY 2023** – LEFT SIDED ROBOTIC TOTAL HIP REPLACEMENT USING THE **POSTEROLATERAL APPROAC**H USING STRYKER UNCEMENTED CERAMIC ON POLY IMPLANT

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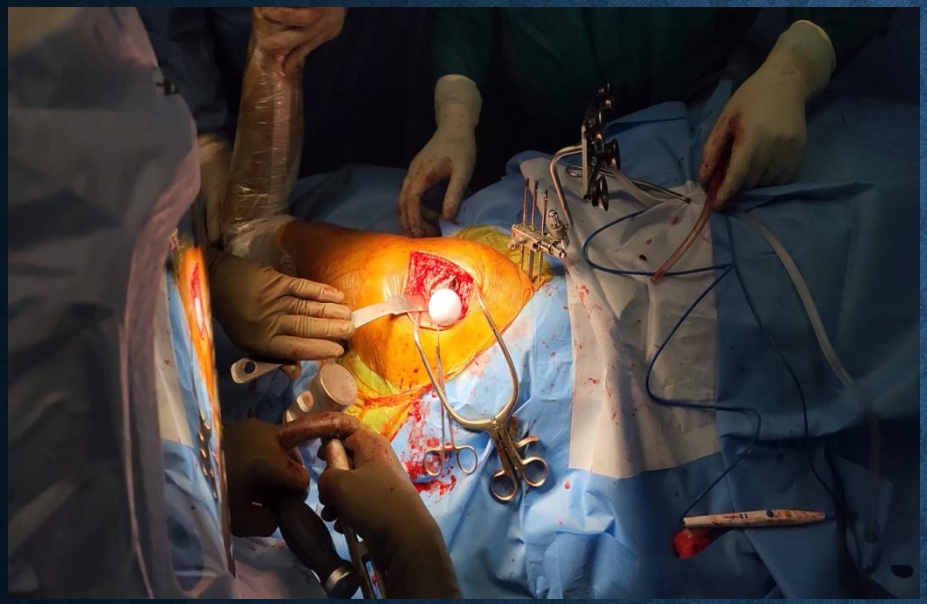
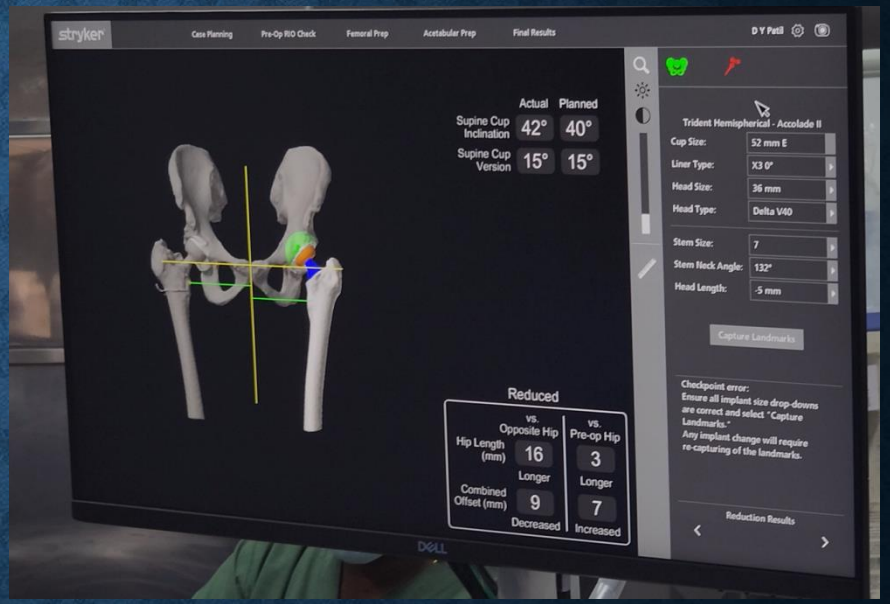


STEM INSERTION WITH CERAMIC HEAD



FINAL COMPONENT POSITIONING

POST OP XRAY

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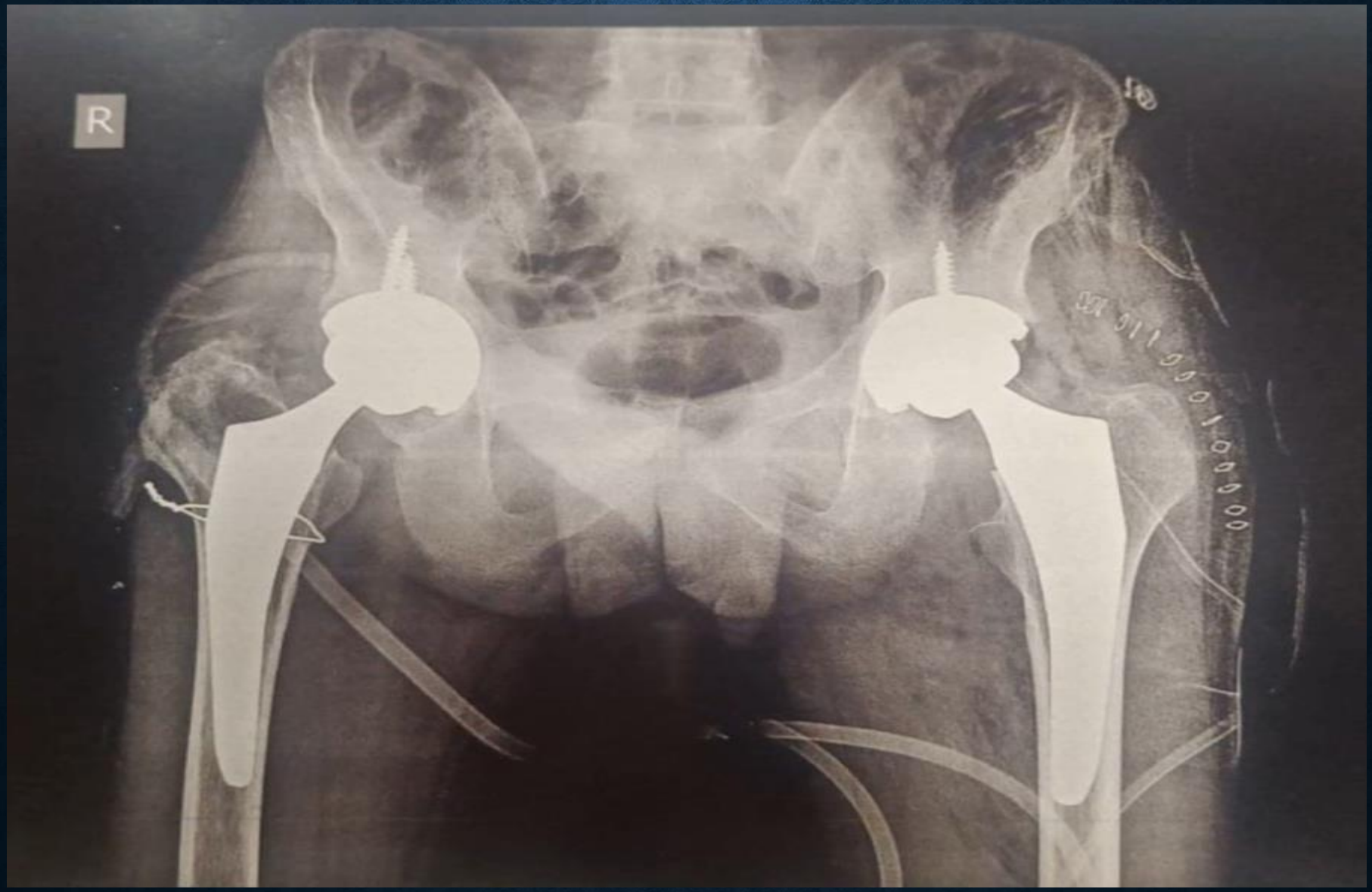

WALKING VIDEO AFTER BILATERAL ROBOTIC THR

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- Ankylosing spondylitis (AS) is a chronic inflammatory-type arthritis that forms part of the group of spondyloarthritides.
- Spine and pelvis .
- onset is 20 – 30
- Male predominance.
- 50 – 70 % have bilateral hip involvement
- The hip disease progression seems more significant in males with younger age of onset.
- DMARDs

UNDERLYING PATHOLOGY

- Inflammation with **pathological new bone formation** is characteristic of AS with hip and spine involvement

- **Synovial and capsular inflammation** responsible for pain and decreased movement, with other incompletely specified mechanisms, eventually leads to hip degeneration in AS.

- The hip joint radiographs reveal **concentric osteoproliferation and acetabular erosion.**

Vander Cruyssen B, Muñoz-Gomariz E, Font P, Mulero J, de Vlam K, Boonen A, Vazquez-Mellado J, Flores D, Vastesaeger N, Collantes E ASPECT-REGISPONSER-RESPONDIA working group. Hip involvement in ankylosing spondylitis: epidemiology and risk factors associated with hip replacement surgery. Rheumatology (Oxford) 2010;**49**:73–81.

- Most AS hips have **fixed deformities with stiff spines** and loss of spinopelvic mobility.
- Flexion, abduction or extension deformities

- The individuals are unable to sit comfortably due to the absence of a normal **spinopelvic mobility** pattern that occurs from standing to sitting position.

- Arthroplasty on a single side alone will not restore mobility and independence to this group of patients.

- Disability is predominantly due to decreased mobility resulting in stiffness and activity restriction.
- Hips with ankylosis require
  - *in situ* **femoral neck osteotomy**,
  - identification of **acetabular margins**,
  - identification of **true acetabular floor** to achieve correct acetabular component placement.
- **Acetabular anteversion** of 15-25 degrees needs to be reduced in these hips with decreased spinopelvic mobility.

CONCLUSION

- Bilateral total hip arthroplasty is a safe and effective treatment of advanced hip disease in AS.
- Debate still exists on the ideal prosthesis, fixation method and approach to use and depends ultimately varies from patient to patient
- Cementless and cemented THA have shown good long-term results.
- A careful pre operative planning is necessary for a good outcome.
- Robotics help in accurate planning and placement of the components precisely to get good functional outcomes.

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Thank You