

# CORRECTION OF BILATERAL GENU VARUM DEFORMITY IN 3 YEAR OLD CHILD BY GROWTH MODULATION HEMIEPIPHYSIODESIS USING 8 PLATE – 4 YEAR FOLLOW UP

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VIRTUAL CONFERENCE

## Introduction

Persistent Genu varum deformity after 3 years of age is considered abnormal. The presence of genu varum alters the forces at the knee so that the line of force shifts farther medially from the knee joint center intensifying the medial compartment load and creating a medial joint reaction force that is nearly three and a half times that of the lateral compartment [1]

## Case report

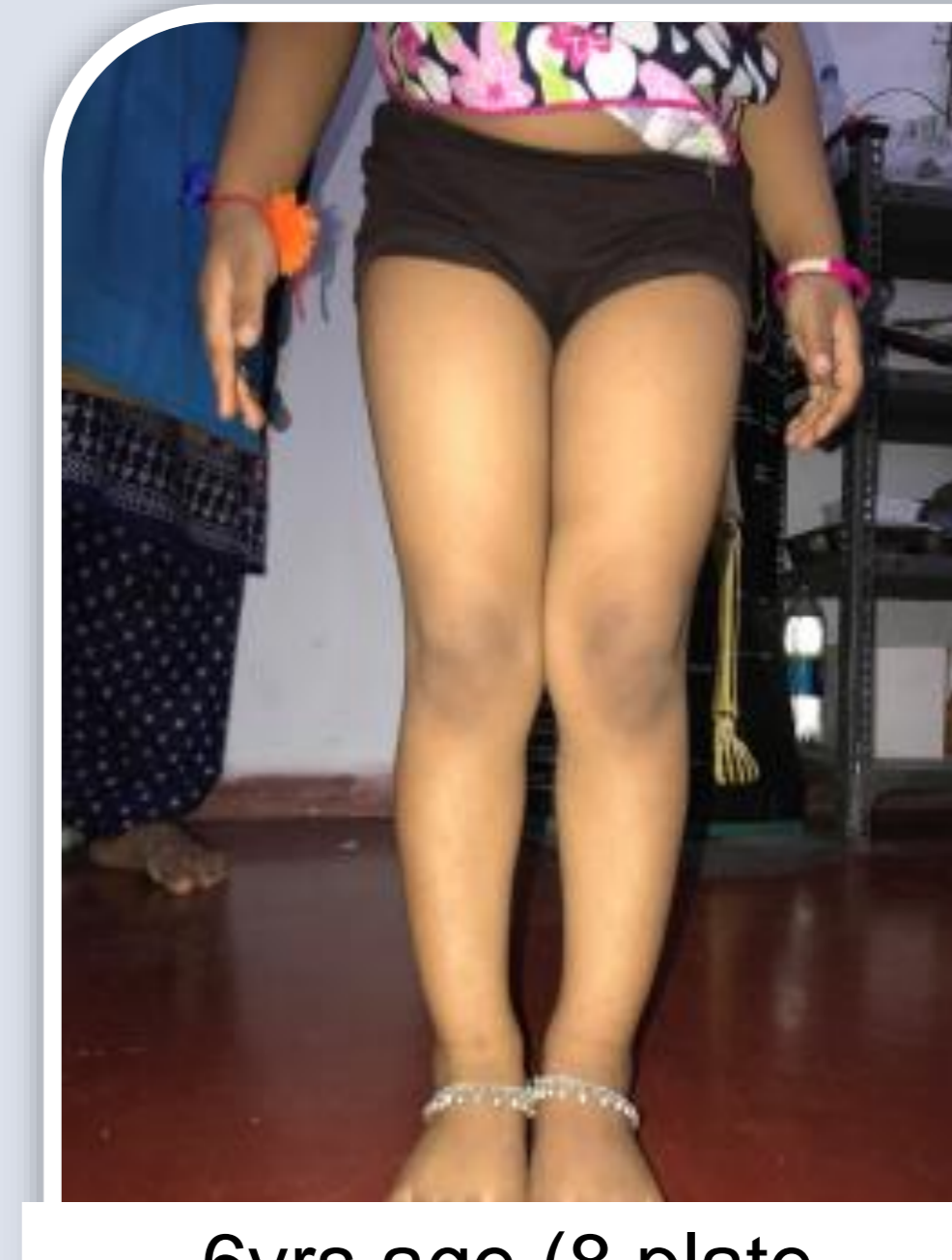
3 year old girl presented with bilateral genu varum deformity. Which was noted at 1.5 years, blood investigation were within normal limits with no metabolic abnormalities. Preoperative lower limb 3 joint xrays was done . options were discussed with parents. Child was managed with growth modulation by hemiepiphysiodesis using flexible titanium 8 plate at 3 years of age, no intraoperative or postoperative complications . Child was ambulated immediately after surgery, as soon as pain subsided. monthly followup was done to look for recurrence. At 4.5years mechanical axis was neutral, after which yearly follow up was done to look for recurrence.by 6 years the mechanical axis was in slight valgus 8 plate was removed at 6 years.By 4 years follow up , deformity is completely corrected with full range of movement of knee



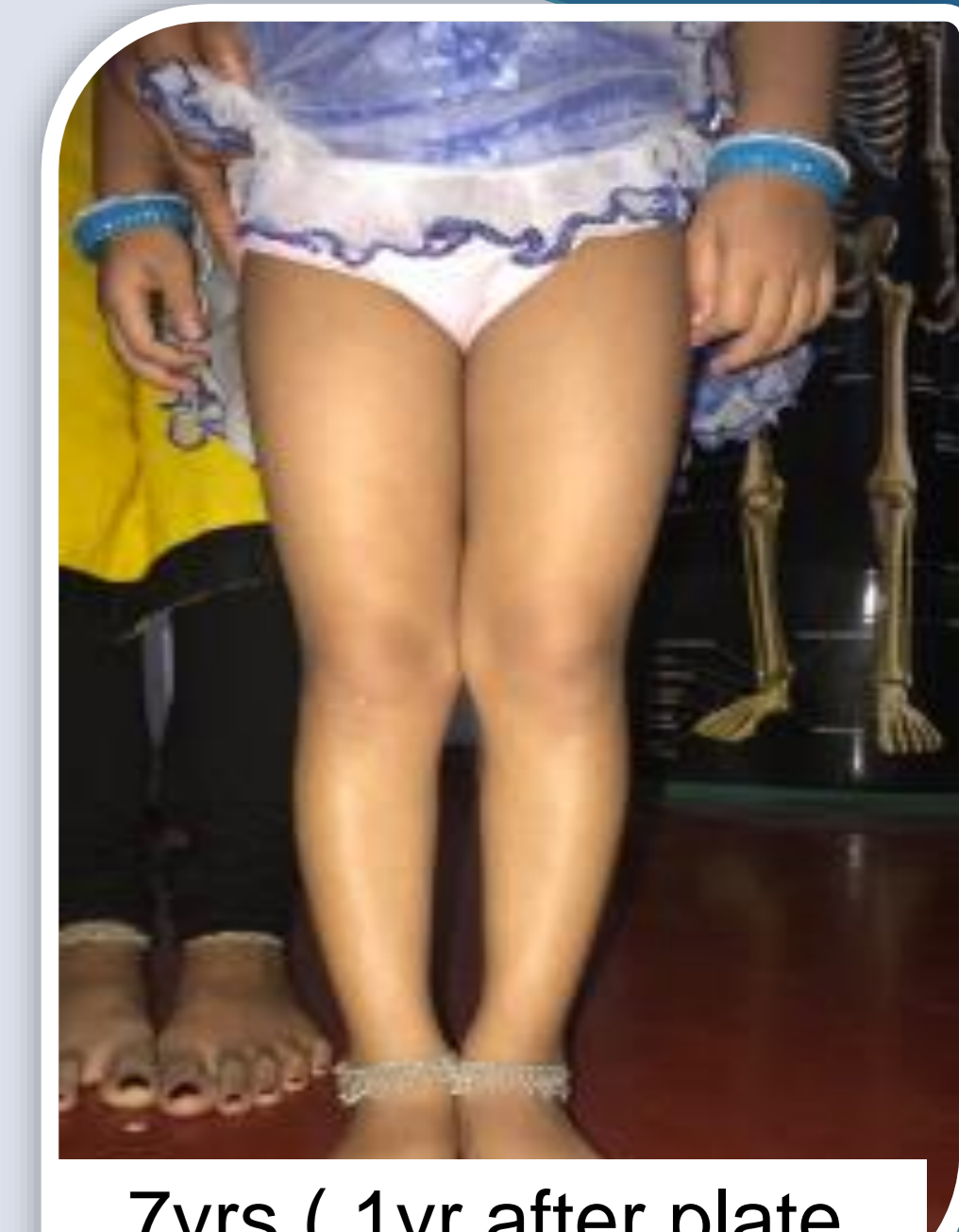
Pre-operative( 3yrs age)



4.5 yrs age



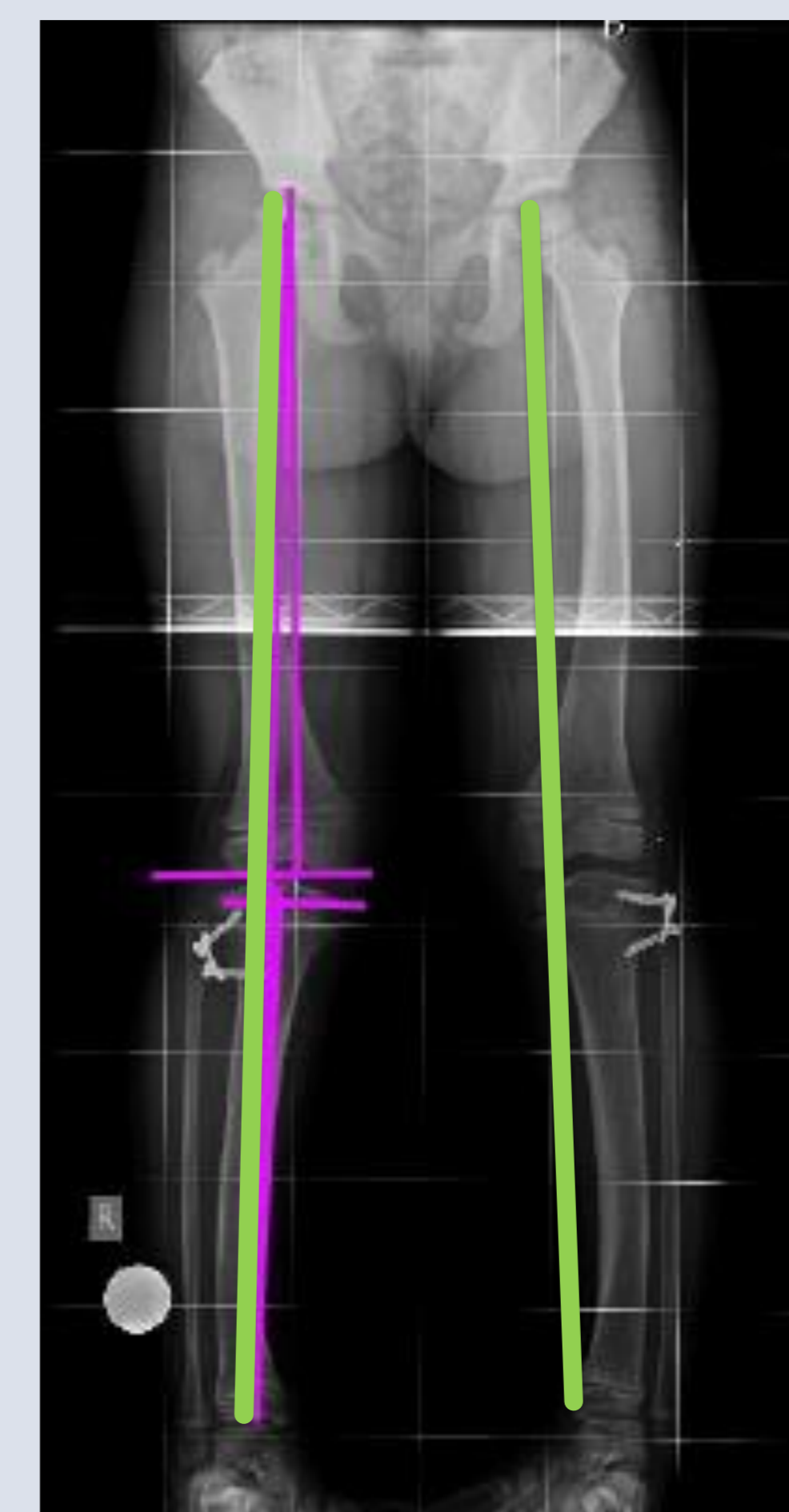
6yrs age (8 plate removed)



7yrs ( 1yr after plate removal)



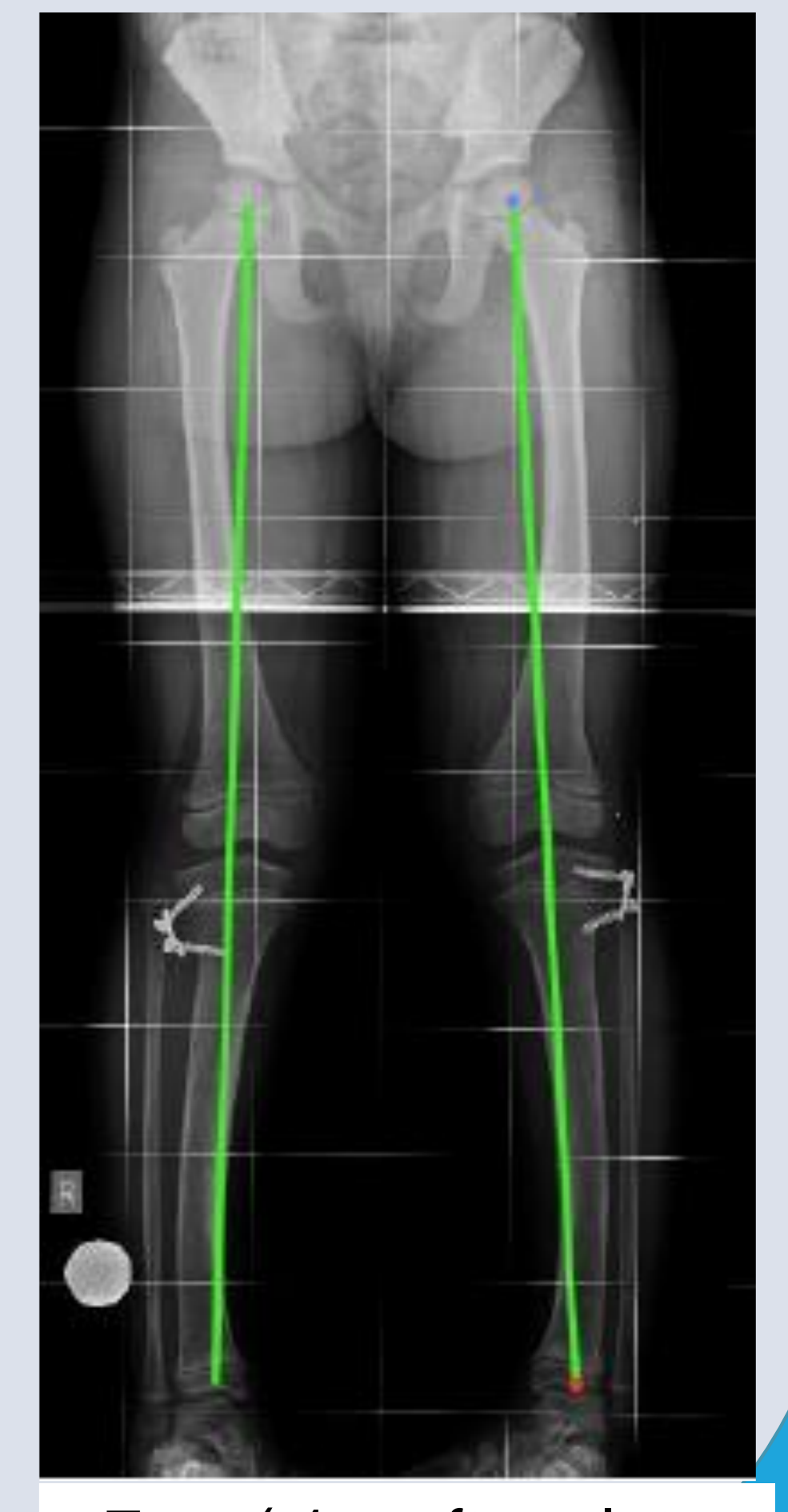
Immediate post-op



4.5 yrs age



6yrs age



7yrs ( 1yr after plate removal)

## Principle Of Treatment



The eight-plate acts as a focal hinge at the perimeter of the physis with a longer lever arm, so as the physis grows, the screws toggle in the plate and pivot in the bone bringing about gradual correction and does not produce compression at the physis, thus preserving the growth potential[2][3]. It acts as a tension band on one side of the growth plate and offers the advantage of reversible hemiepiphyseal growth modulation . Due to elastic nature of the plate, it allows the screws to divert during growth preventing any screw breakage.

## Conclusion

- Hemi epiphyseal growth modulation using 8 plate is a minimally invasive technique useful in bilateral case .
- Regular follow-up is essential to look for gradual correction

## Discussion

- Severe genu varum with marked malalignment of the mechanical axis of the lower limbs, occasionally osteotomy of the tibia or hemiepiphyseal modulation of the distal femur and/or proximal tibial physis is indicated to correct the deformity[4]
- Our result reflect the efficacy of flexible titanium eight-plate which corrects angular deformity by acting as a tension band on one side of the growth plate and offers the advantage of reversible hemiepiphyseal growth modulation.
- Guided growth modulation is best available option for the treatment of angular deformities in the skeletally immature patient due to its versatility, simplicity to use and cost-effectiveness. Although there is a minor risk of rebound growth after hemiepiphyseal modulation in younger patients, it continues to be a success at an early stage of deformity and is promising.

## References

1. Bradway JK, Klassen RA, Peterson HA. Blount disease: a review of the English literature. J Pediatr Orthop.
2. Stevens P.M. Guided growth for angular correction: a preliminary series using a tension band plate. J Pediatr Orthop
3. Burghardt R., Herzenberg J., Standard S. Temporary hemiepiphyseal arrest using a screw and plate device to treat knee and ankle deformities in children
4. Kodkani PS. Dome osteotomy of the proximal tibia for genu varum treated with a new fixation device. J Knee Surg