

# Enhanced Preoperative Mechanical Temporal Summation predicts Postoperative Pain After Inguinal Hernia repair

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## Introduction

- Severe acute postoperative pain (APOP) remains a widespread but still an underestimated problem
- Identification of preoperative factors predicting the severity of APOP often helps in planning individualised targeted pain management protocol
- Among the various predictors, temporal summation, the dynamic psychophysical measure representing physiological wind up phenomenon plays a significant role (Mechanical, electrical / thermal stimuli of  $\delta > 0.3\text{Hz}$ )
- Present study was designed to evaluate the role of simple bedside test in predicting the severity of APOP in patients undergoing Inguinal hernia repair (IHR)

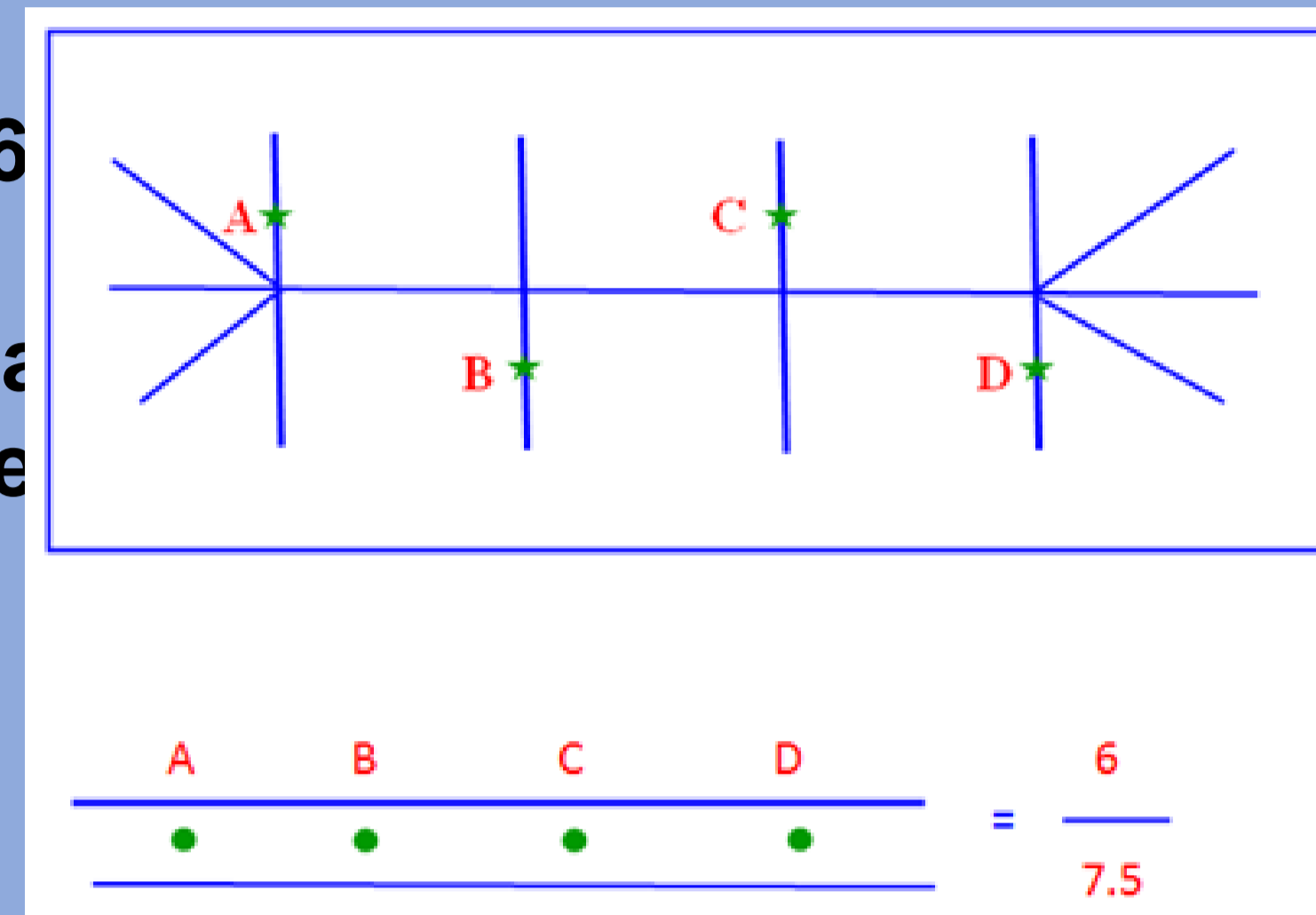
## Aims

- To evaluate the role of mechanical temporal summation (mTS) in predicting the severity of APOP in terms of analgesic consumption & wound hyperalgesia index (WHI) in patients undergoing inguinal hernia repair(IHR)

## Methodology

- Ninety patients posted for open IHR were included. mTS was evaluated with Vonfrey filaments (#6 180g) on the volar aspect of dominant forearm using numerical pain scale on the day of surgery.
- mTS was presumed to be present if the last pain score > first (mTS>0). Twice done; average was taken
- IHR done under Spinal anesthesia; USG TAP block was given with 20ml of .25% bupivacaine at the T12-L1 level
- WHI measured at 24 & 48h; analgesic consumption, quality of analgesia up to 48h measured

$$\text{WHI} = \frac{\text{Sum of distance to incision from point of hyperalgesia (cm)}}{\text{Length of incision cm}}$$



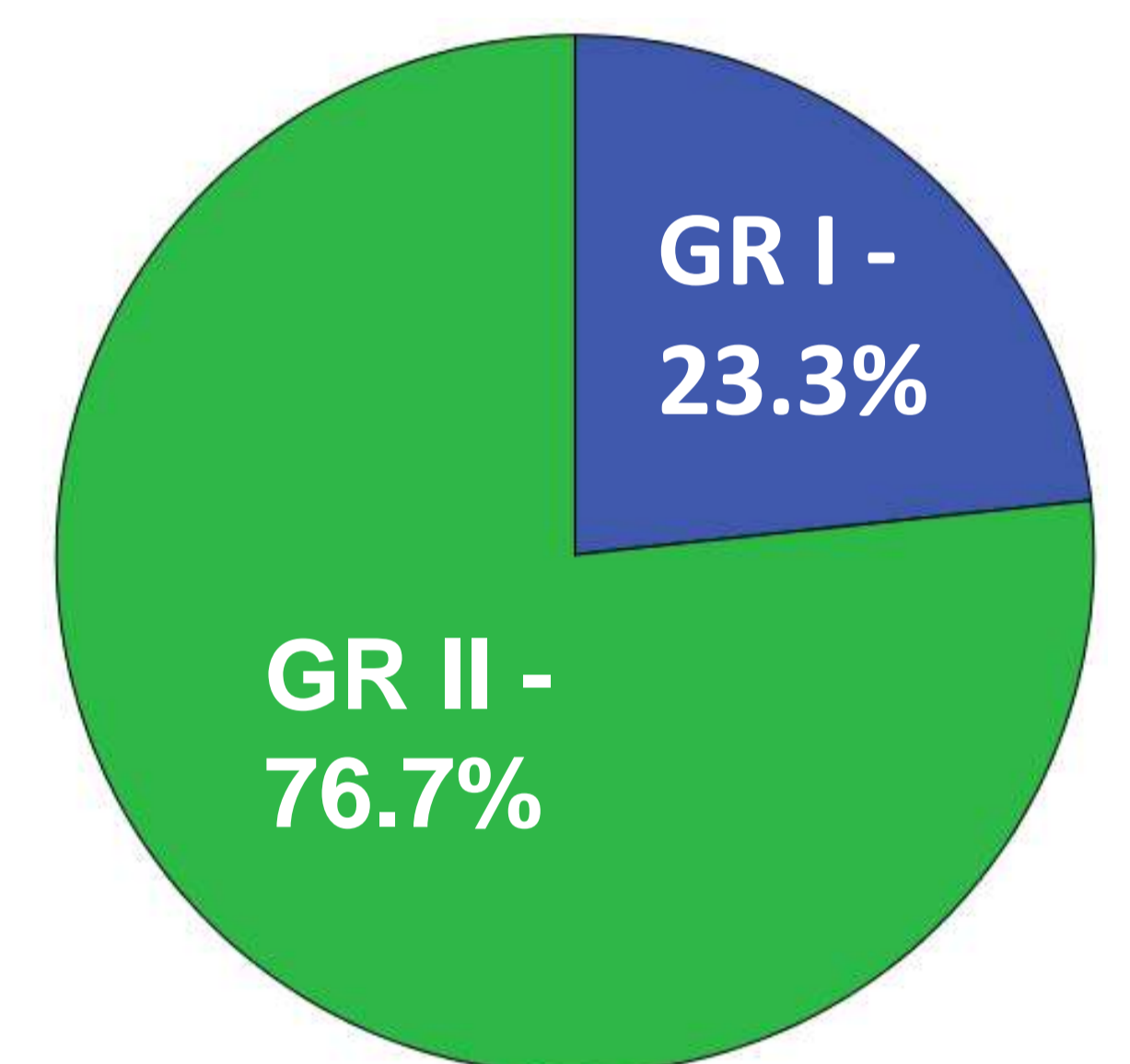
## Results

- Demographic (age/ BMI) & operative characteristics (duration of surgery/ length of incision) were comparable
- Post block time to first administration of tramadol was longer in GR II than GR I [399.91(26.9) vs 361.28(12.35)] (p=.001)
- Number of tramadol doses (48h) required were more in GR I [7(0) vs - 6.13(.62)] spearman correlation Co eff (0.623)- (p=.00)

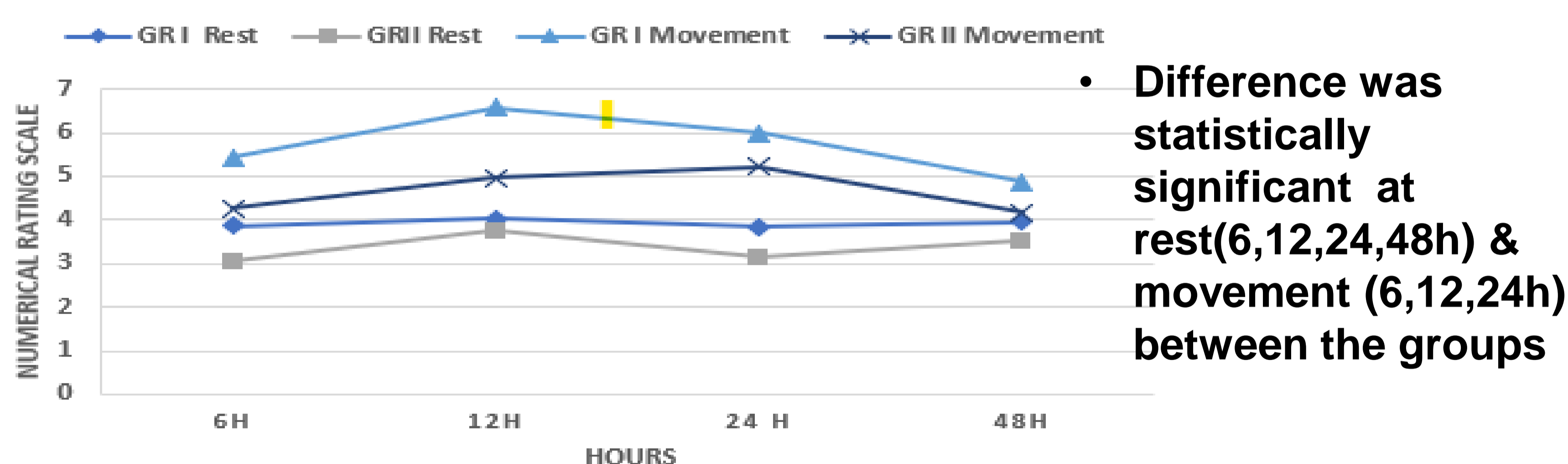
GR I – 23.3%(mTS>0)

GR II – 76.7%( mTS =0)

p value - 0 .000

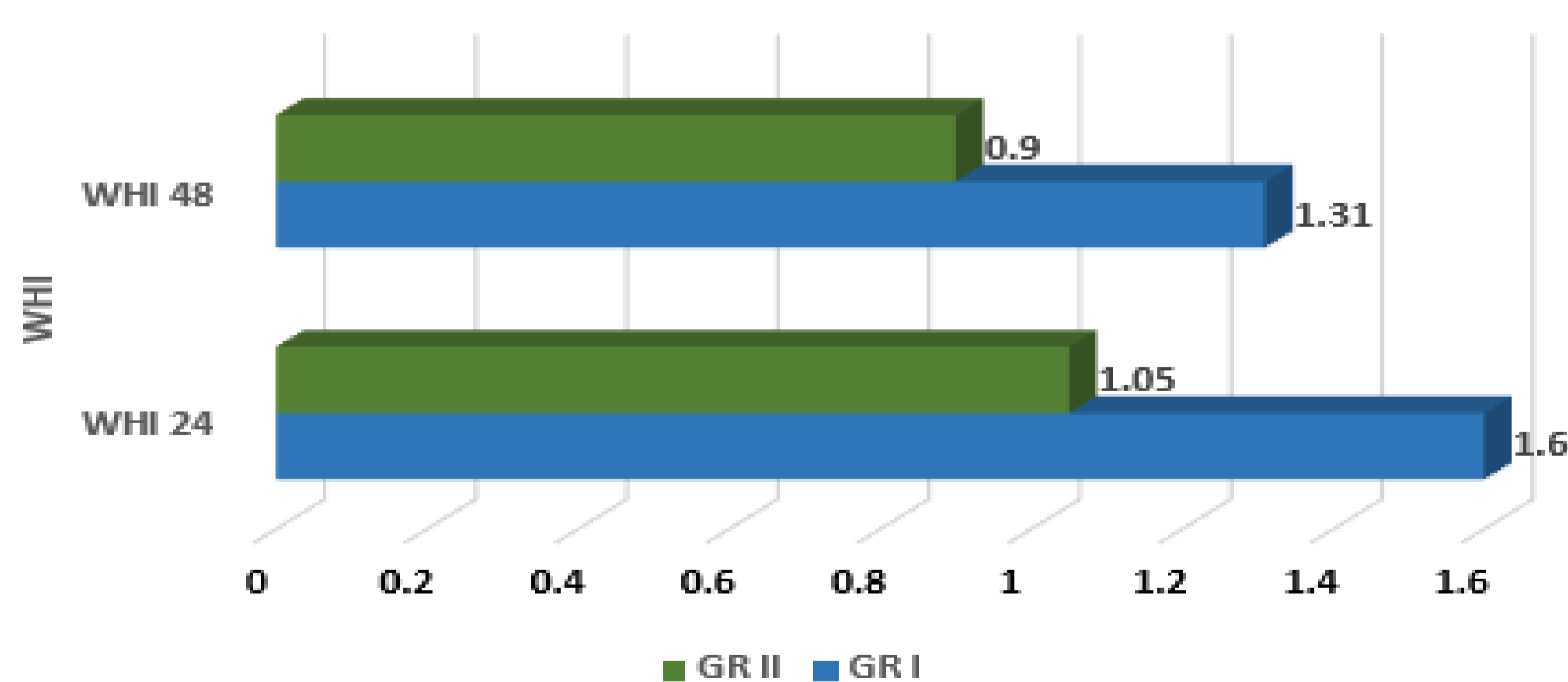


## PAIN (REST/MOVEMENT)



- Difference was statistically significant at rest(6,12,24,48h) & movement (6,12,24h) between the groups

## Wound Hyperalgesia Index



- Spearman correlation  
WHI24= .603  
WHI48=.312  
p= .000

## Discussion

- 23.3% of patients had evoked mTS, which was similar to incidence of evoked mTS(22%) present in 89 women posted for LSCS
- Mean magnitude of mTS was 12.85(4.87), which was associated with pain at rest & movement & analgesic consumption; it was similar to the mean magnitude of mTS (11.2(13.4)) evoked in patients prior to thoracotomy which was found to be associated with provoked pain
- Dynamic test TS is considered to be a correlate of windup of 2<sup>nd</sup> & 3<sup>rd</sup> order neurons reflecting central sensitization.
- Enhanced mTS associated with ↑WHI both at 24 & 48h; similarly in post LSCS women, scar hyperalgesia had been associated with preop mTS & post op WH at 48h
- Preop assessment of TS in pain free patients adds more value to prediction of APOP

## Conclusion

- Present study shows that 23.3% of patients have enhanced mTs which also have clinical potential for predicting APOP after inguinal hernia repair.

## References

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- Bollag, L., Richebe, P., Siaulyis, M., Ortner, C. M., Gofeld, M., & Landau, R. (2012). Effect of transversus abdominis plane block with and without clonidine on post-cesarean delivery wound hyperalgesia and pain. *Regional Anesthesia & Pain Medicine*, 37(5), 508-514.