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USE OF ULTRASOUND FOR EPIDURAL NEURAXIAL BLOCKADE IN HIP AND KNEE REPLACEMENT SURGERIES: A RANDOMISED CONTROLLED STUDY

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INTRODUCTION

- High Variability Of Epidural Space
- Its Depth And Anatomical References
- Obesity
- Suboptimal Positioning
- Spine Abnormalities
- Indistinct anatomical landmarks
- Degenerative Spine Changes
- Narrowed intervertebral spaces

❖ Difficult access to epidural space

❖ Multiple attempts

❖ Increased risk of procedural complications

AIM

To **DETERMINE** the utility of ***PREPROCEDURAL ULTRASOUND SCAN*** compared with the **CONVENTIONAL BLIND TECHNIQUE** for epidural neuraxial blockade in patients undergoing **HIP AND KNEE *REPLACEMENT SURGERIES*** in terms of technical difficulty, clinical efficacy, safety and patient comfort.

MATERIAL AND METHODS

210 patients aged 50-88 years with BMI 30-45kg/m2 and osteophytic spines including abnormalities

Randomisation

GROUP A CONVENTIONAL BLIND GROUP (n = 105)

CSEA was performed by CONVENTIONAL BLIND TECHNIQUE i.e anatomical surface landmark guided technique

GROUP B ULTRASOUND GROUP (n = 105)

Preprocedural ultrasound was done to IDENTIFY LEVEL OF INTERVERTEBRAL SPACE and NEEDLE INSERTION SITE

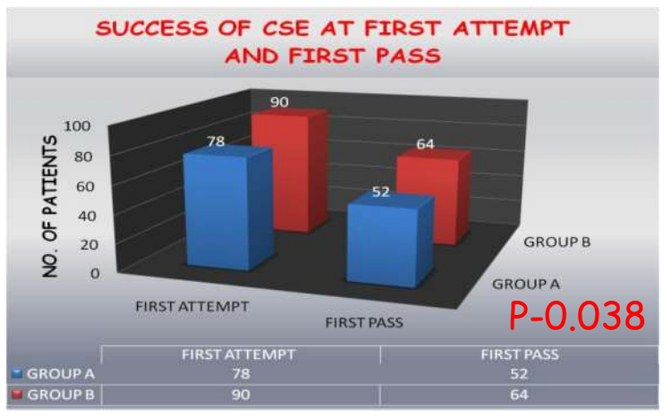
Epidural depth was measured from SKIN TO MIDPOINT OF POSTERIOR COMPLEX in median longitudinal and transverse view.

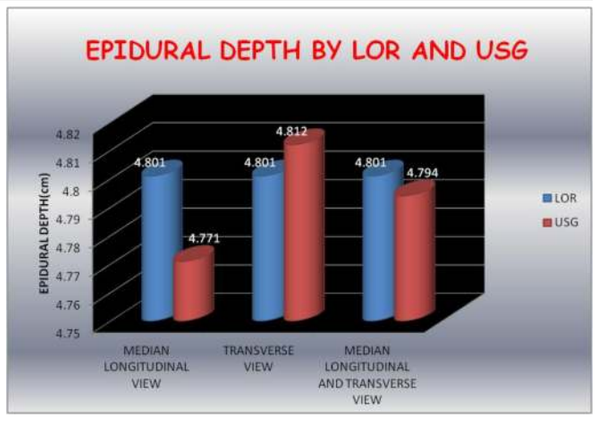
CSEA was performed at PREVIOUSLY MARKED NEEDLE INSERTION SITE with PREDETERMINED DEPTH OF EPIDURAL SPACE measured by ultrasound.

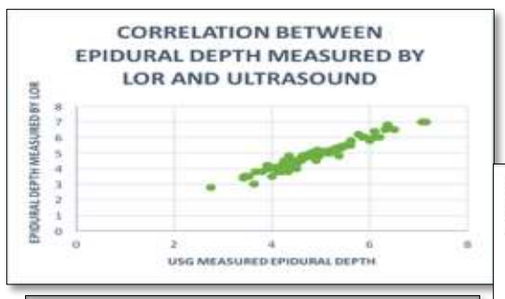
Two tailed tests, Pearson correlation coefficient and Bland-Altman analysis with 95% confidence interval

RESULTS

CHARACTERISTICS	Group A	Group B	p value
Age	66.25 (±7.8)	64.71 (±7.465)	0.147
Weight	77.88(±8.42)	78.36(±9.65)	0.698
BMI	32.54(±2.38)	32.90(±2.92)	0.246
SPINE DEFORMITIES	20 (19.04%)	21(20%)	0.627







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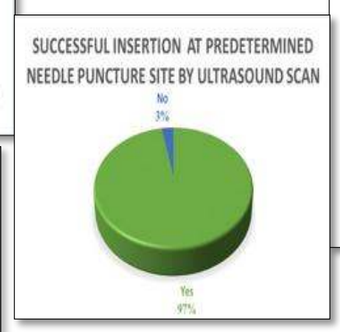
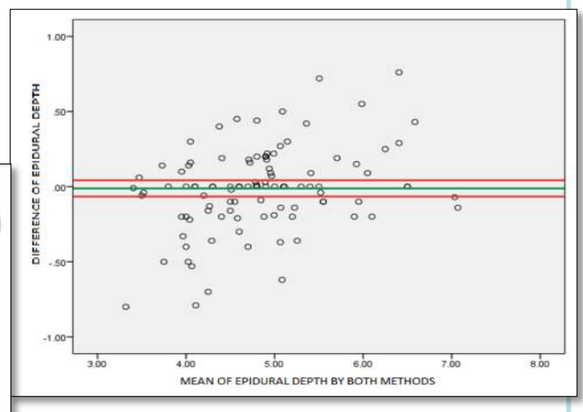
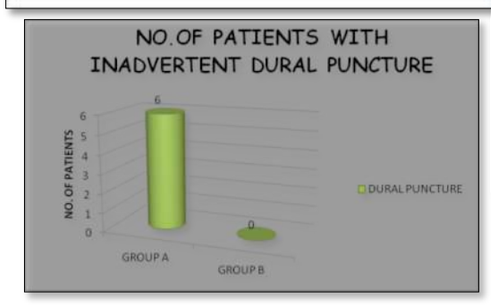




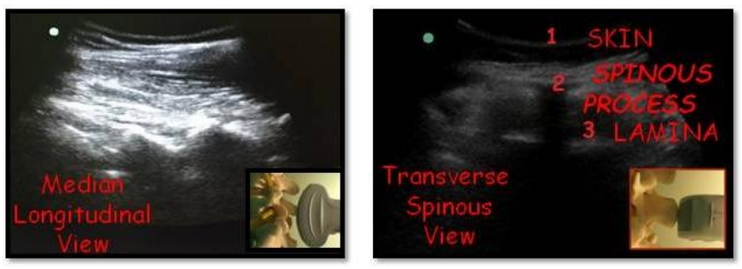
Bland Altman analysis revealed mean difference of 0.007cm[-0.044,0.030]



DISCUSSION

SAFE, NON INVASIVE, PORTABLE	
DECREASED NO. OF ATTEMPTS	0.013
DECREASED NO. OF PASSES	0.022
DECREASED MULTIPLE ATTEMPTS & PASSES	0.030
DECREASED ANAESTHESIOLOGIST	0.044
DECREASED COMPLICATIONS	0.003
DECREASED ACCIDENTAL DURAL PUNCTURE	0.013
BETTER VAS SCORE	0.157
BETTER PATIENT SATISFACTION SCORE	0.019

IDENTIFY THE SPINOUS PROCESS

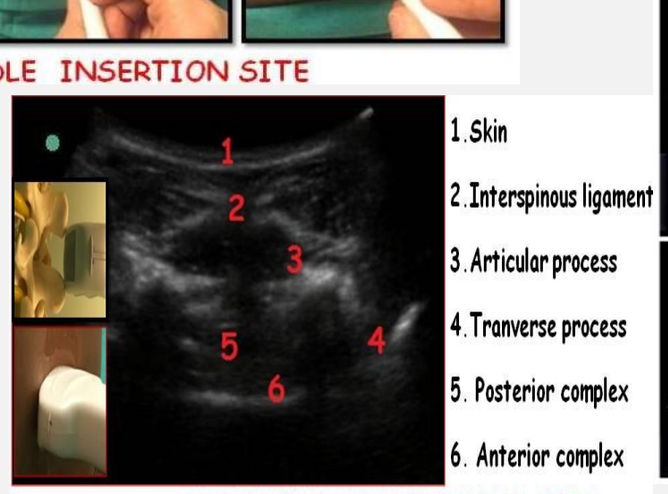


IDENTIFYING MIDLINE OR SPINE

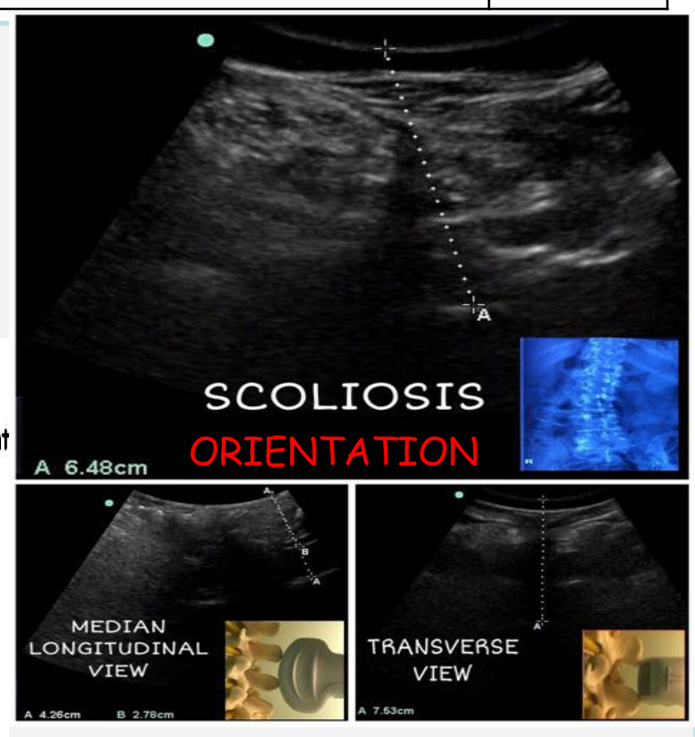
NEEDLE INSERTION SITE

IDENTIFYING INTERVERTEBRAL LEVELS

- ❖ REDUCED TECHNICAL DIFFICULTY
- ❖ IMPROVED EFFICACY
- ❖ INCREASED SAFETY
- ❖ MORE PATIENT COMFORT
- ❖ STEEP LEARNING CURVE
- ❖ TEACHING TOOL



TRANSVERSE INTERLAMINAR VIEW



CONCLUSION

PREPROCEDURAL ULTRASOUND SCAN **improves success rate for epidural neuraxial blockade .**

It can be used as *AN ADJUNCT TO LUMBAR EPIDURAL BLOCKS* in obese patients with osteophytic abnormal spines.

Therefore, lumbar ultrasound scan is *a valuable skill* to learn to ensure higher standards of healthcare.

Ghosh S, Madjdpour C, Chin K. Ultrasound-guided lumbar central neuraxial block. BJA Educ 2016;16(7):213-220

Srinivasan KK , Lee PJ , Lohom G. Ultrasound for neuraxial blockade. *Med Ultrason* 2014; 16(4):356-363

Perlas A, Chaparro LE, Chin KJ.Lumbar Neuraxial Ultrasound for Spinal and Epidural Anesthesia:A systemic review and Meta-Analysis.*Reg Anesth Pain Med* 2016 Mar-Apr;41(2):251-60