Determination of analgesic efficacy of levobupivacaine by ultrasound-guided transversus abdominis plane (TAP) block in laparoscopic total extraperitoneal (TEP) repair of inguinal hernia

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BACKGROUND AND AIMS :

Laparoscopic inguinal hernia repair surgeries are less painful compared to open surgeries, but, tissue dissection, port access and gas insufflation into abdominal wall layers leads to some amount of pain. A bilateral transversus abdominis plane (TAP) block may bring down such pain. Our aim was to determine the efficacy of levobupivacaine given by bilateral TAP block in such laparoscopic TEP repair surgeries.

METHODS :

- Institution Ethics Committee approval was obtained and study was registered with the Clinical Trial Registry of India **CTRI/2017/04/008287**. Randomized controlled trial.
- **Inclusion Criteria** - 60 patients of ASA I-II aged between 18 to 80 years planned for TEP repair under general anesthesia
- **Exclusion Criteria** – patient refusal, known allergy to drugs used
- **Randomization** - into two groups – by computer-generated random number
- **Sample size** - calculated based on anticipated time to rescue analgesic difference of 40% between groups based on pilot study, calculated for an α of 0.05 and β of 0.2 with a power of 80% and alpha error 0.2
- **Two groups** – 30 each
- **Group TAP** – received GA along with Inj Fentanyl 2mcg/kg at start of surgery and before start of surgery received bilateral TAP block with 0.25% levobupivacaine 0.3mL/kg on each side. Fentanyl supplemented if required with 1mcg/kg intraoperatively.
- **Group C (Control)** – received GA along with Inj Fentanyl (same as in Group TAP) and did not receive any block Postoperatively, at the time for first rescue analgesic (Trescue), Inj Tramadol 50mg slow i.v was administered followed by Inj Tramadol 50 mg i.m SOS for 24 hours from extubation time.
- **Observations made** –
Time to first rescue analgesic (Trescue) and VAS at Trescue
VAS at rest and on cough were noted at 2,4,6,12 & 24 hours postoperatively were noted.
Total 24 hours dose of tramadol required was noted.
Presence of postoperative nausea and vomiting (PONV) noted and Inj Ondansetron 4mg i.v administered SOS.
- **Analysis by** - by SPSS 19.0 software
P value of < 0.05 was considered as significant

RESULTS :

@ Mann-Whitney test
^ Chi-Square test
Student's unpaired t test

- Time to rescue analgesic longer in TAP group ($p=0.015$) with lower VAS scores at time points 24 hours ($p=0.018$) and 12 hours ($p=0.04$)
- PONV less in TAP group ($p<0.001$)

Primary Outcomes	Group TAP (Median-IQR)	Group C (Median-IQR)	P < 0.05 Significant
T Rescue	235 (438)	175 (156)	0.015@
VAS T Rescue	7 (2)	7.5 (1)	0.096@
Total Analg mg/kg	1.5 (1.2)	1.85 (0.9)	0.156@

Other parameters	Group TAP		Group C		P<0.05 significant
PONV	7		21		<0.001^
Fentanyl	120	40	130	33	0.224@
Surgery Duration	100.7	37.5	84.2	28.8	0.061#

CONCLUSION : Bilateral TAP block with levobupivacaine is a relatively simple and efficient means of analgesic for laparoscopic extraperitoneal (TEP) repair of inguinal hernia, with minimal side effects

References :

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- 2) Tong YS, Wu CC, Bai CH, Lee HC, Liang HH, Kuo LJ, Wei PL, Tam KW. Effect of extraperitoneal bupivacaine analgesia in laparoscopic inguinal hernia repair: a meta-analysis of randomized controlled trials. Hernia. 2014 Apr 1;18(2):177-83.