Original Research

Evaluation of efficacy of the Thoracolumbar interfascial plane block after spinal surgeries

[1]Dr. Mamta Sharma, [2]Dr. Anil Sharma

[1]Associate Professor, Department Of Anesthesiology, Govt. Medical College Bundi.
[2]Associate Professor, Department Of Gastroenterology, Govt. Medical College Kota. Rajasthan.

Corresponding author
Dr. Anil Sharma
Associate Professor, Department Of Gastroenterology,Govt. Medical College Kota. Rajasthan.

Received date: 2 January, 2024 Acceptance date: 5 February, 2024

Abstract
Background: The present study was undertaken for evaluating the efficacy of the TLIP block after spinal surgeries.
Materials & methods: A total of 100 patients o of either sex from 18-60 years of age of ASA grade of 1 and II scheduled to undergo elective lumbar spinal surgeries were enrolled. All the patients were randomized into two study groups with 50 patients in each group- TLIP group and control group. Completed demographic and clinical details of all the patients was obtained. VAS score was sued for evaluation of pain at different time intervals on a scale of 0 to 10 with 0 indicating no pain and 10 indicating severe unbearable pain. Time to first analgesia (TFA) was noted and the total amount of morphine consumption at the end of 24 hours given was also recorded.
Results: While comparing the VAS among the two study groups at post-anaesthesia care unit, post-operative 2 hours and post-operative 6 hours, significant results were obtained. Mean time of first analgesic requirement (minutes) among the patients of the Group TLIP and control Group was 216.3 minutes and 62.8 minutes respectively. Mean time of first analgesic requirement (minutes) was significantly higher among the patients of the Group TLIP in comparison to the Control Group. Significant results were obtained while comparing the quantity of morphine consumption at different time intervals and total morphine consumed at 24 hours in between the two study groups.
Conclusion: TLIP block is a superficial, easy block which is a viable option for awake endoscopic discectomies. TLIP block will be the analgesic option of choice for postoperative analgesia after multi-level lumbar laminectomies as well there by reducing the need for opioids in these patients.
Key words: Thoracolumbar, Interfascial plane block, Spinal

Introduction

Low back pain is the leading cause of years lost to disability worldwide, and this burden is increasing as our population ages. The challenge becomes multifold in resource-challenged countries like India. The improvement in perioperative management and the development of new techniques in anesthetics and surgical sciences have led to substantial reduction of complications related to lumbar spine surgery. An understanding of these complications is important and valuable for both the patient and the surgeon.[1, 2]There are a variety of pharmacological options available for effective pain relief after surgery. Each one of them has inherent pros and cons which restrict their universal usage. Therefore multimodal analgesia using systemic opoids, NSAIDs, and regional anaesthesia is recommended as the best approach in controlling post operative pain in spinal surgeries which includes neuraxial techniques, peripheral nerve blocks and local infiltration of anaesthetics.[3, 4]ERAS (Enhanced Recovery after Surgery) protocol recommends the use of regional anaesthesia as it helps supplement the multimodal approach and improve quality and duration of post-operative analgesia. Lumbar epidural, caudal epidural and Sub arachnoid Block (SAB) have been used after spinal surgery but these blocks can cause hemodynamic instability and motor block.[5, 6]The cornerstone of multimodal analgesia is regional analgesia. Thoracolumbar interfascial plane block (TLIP block), a novel regional anesthesia technique, was first performed in 2015. TLIP block effectively prevents the occurrence of pain via its action on the dorsal rami of spinal nerves.[7]Hence; under the light of above mentioned data, the present study was undertaken for evaluating the efficacy of the TLIP block after spinal surgeries.

Materials & methods

A total of 100 patients o of either sex from 18-60 years of age of ASA grade of 1 and II scheduled

to undergo elective lumbar spinal surgeries were enrolled. All the patients were randomized into two study groups with 50 patients in each group- TLIP group and control group. Patients of TLIP group received the standard general anaesthetic technique with the Thoracolumbar In terfascial Plane block (TLIP) with 20 ml mixture of 0.25% bupivacaine and 1:200000 Adrenaline on each side. Control group received the standard General Anaesthesia with conventional analgesia. Completed demographic and clinical details of all the patients was obtained. VAS score was sued for evaluation of pain at different time intervals on a scale of 0 to 10 with 0 indicating no pain and 10 indicating severe unbearable pain. Time to first analgesia (TFA) was noted and the total amount of morphine consumption at the end of 24 hours given was also recorded. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results

Mean age of the patients of the Group TLIP and Control Group was 45.3 years and 42.7 years respectively.58 percent of the patients of the Group TLIP and 56 percent of the patients of the Control Group were males while the remaining were females. Mean VAS among the patients of TLIP group at post-anaesthesia care unit, post-operative 2 hours, post-operative 6 hours and post-operative 24 hours was 2.1, 2.5, 2.6 and 2.2 respectively. Mean VAS among the patients of control group at post-anaesthesia care unit, post-operative 2 hours, post-operative 6 hours and post-operative 24 hours was 4.3, 3.9, 3.99 and 2.3 respectively. While comparing the VAS among the two study groups at post-anaesthesia care unit, post-operative 2 hours andpost-operative 6 hours, significant results were obtained. Mean time of first analgesic requirement (minutes) among the patients of the Group TLIP and control Group was 216.3 minutes and 62.8 minutes respectively. Mean time of first analgesic requirement (minutes) was significantly higher among the patients of the Group TLIP in comparison to the Control Group. Significant results were obtained while comparing the quantity of morphine consumption at different time intervals and total morphine consumed at 24 hours in between the two study groups.

Table 1: Comparison of VAS

VAS	Group TLIP		Control Group		p- value
	Mean	SD	Mean	SD	
Post-anaesthesia care unit	2.1	0.8	4.3	1.5	0.010 (Significant)
Post-operative 2 hours	2.5	0.6	3.9	1.5	0.000 (Significant)
Post-operative 6 hours	2.6	0.6	3.9	1.2	0.000 (Significant)
Post-operative 24 hours	2.2	0.5	2.3	0.8	0.775 (non-significant)

Table 2: Comparison of time to first analgesic requirement

Time to first analgesic requirement (minutes)	Group T	Group C
Mean	216.3	62.8
SD	26.3	13.8
p- value	0.000 (Significant)	

Discussion

A Post-operative pain following spinal surgeries is very severe. Ultrasound guided Thoracolumbar interfascial plane block (TLIP) is more superficial as compared to other blocks and has shown to have extensive spread as compared to local infiltration of the wound. Thoracolumbar interfascial plane targets the dorsal rami of the thoracolumbar nerves as they pass through paraspinal masculature between the multfidus and longissimus muscle block .TLIP block has the potential benefit of blocking sensations from spinal and paraspinal.[7- 10]Hence; under the light of above mentioned data, the present study was undertaken for evaluating the efficacy of the TLIP block after spinal surgeries. Mean age of the patients of the Group TLIP and Control Group was 45.3 years and 42.7 years respectively. While comparing the VAS among the two study groups at post-anaesthesia care unit, post-operative 2 hours and post-operative 6 hours, significant results were obtained. Zhang TZ et al determined the effectiveness of pre-operative Erector spinae plane block ESPB) in enhancing recovery of posterior lumbar surgery. A total of 60 patients undergoing open posterior lumbar decompression surgery under general anes the sia were randomized into two groups. T12 group was performed pre-operatively bilateral ESPB with ropivacaine at the T12 level, but control group did not receive the block. The primary outcome was the Modified Observer's Assessment of Alertness/Sedation (MOAA/S) score at 10 minutes after extubation. The mean (SD) MOAA/S scores at 10 minutes after extubation were 4.2 (95% CI, 4.0 to 4.4), and 3.4 (95% CI, 3.2 to 3.6) in the T12 and control groups ($P < 0.001$), respectively. Intraoperative sufentanil consumption ($P = 0.007$) and postoperative morphine consumption ($P = 0.003$) were lower in the T12 group than in the control group. Although first time to ambulation after surgery was

sooner in the T12 group than in the control group (P =0.003), hospital length of stay was similar (P=0.054). Pre-operative bilateral ESPB at T12 can enhance recovery after posterior lumbar surgery and reduce perioperative opioid consumption.[12]In the present study, mean time of first analgesic requirement (minutes) among the patients of the Group TLIP and control Group was 216.3 minutes and 62.8 minutes respectively. Mean time of first analgesic requirement (minutes) was significantly higher among the patients of the Group TLIP in comparison to the Control Group. Ekinci M et al compared the analgesic efficacy of the US-guided m TLIP block and wound infiltration following lumbar disc surgery. 60 patients aged 18-65 years, ASA classification I-II, and scheduled for lumbar disc surgery under general anesthesia were included in the study. US-guided m TLIP block was performed via the lateral approach in group T (n=30), and wound infiltration was performed in group W (n=30). Opioid consumption, postoperative pain scores and adverse effects of opioids, such as allergic reactions, nausea, and vomiting, were recorded. Opioid consumption and the use of rescue analgesia were significantly lower in group T in all the postoperative periods (1, 2, 4, 8, 16, and 24 h) ($p<0.05$). The VAS scores for pain during mobility and while at rest were significantly lower in group T than those in group W 8 h after the surgery ($p<0.05$). The incidences of nausea, vomiting, and itching in group W were higher than the incidences in group T. The m TLIP block provides effective analgesia for the first 24 h following lumbar disc surgery, and it may be an alternative to wound infiltration for pain management.[13]In the present study, significant results were obtained while comparing the quantity of morphine consumption at different time intervals and total morphine consumed at 24 hours in between the two study groups. Ciftci B et al examined the practicality and analgesic efficacy of US-guided m TLIP and c TLIP blocks following lumbar disc surgery. A thoracolumbar interfascial plane (TLIP) block is a novel ultrasound (US)-guided technique that provides effective analgesia after lumbar spinal surgery. Two approaches for a TLIP block have been defined: a classical (cTLIP) technique and a modified (m TLIP) technique. Sixty patients aged 18-65 years with an American Society of Anes the siologists classification of I or II who were scheduled for lumbar disc surgery under general anesthesia were included. US-guided m TLIP (n=30) and cTLIP (n=30) blocks were performed. The performance time of the block procedures, the success of a one-time block, postoperative pain scores, opioid consumption, adverse effects, and block-related complications were recorded and analyzed. The performance time was significantly less in the m TLIP group ($p<0.001$). The success of a one-time block was significantly higher in the m TLIP group ($p<0.001$). The active/passive visual analog scale scores, intraoperative and postoperative opioid consumption, and rescue analgesic requirements were similar between the groups ($p>0.05$). The results showed that a US-guided m TLIP block had a shorter performance time and a higher one-time block success rate compared with the c TLIP block. The quality of analgesia provided by the m TLIP and c TLIP blocks was similar.[14]

Conclusion

TLIP block is a superficial, easy block which is a viable option for awake endoscopic discectomies. TLIP block will be the analgesic option of choice for postoperative analgesia after multi-level lumbar laminectomies as well there by reducing the need for opioids in these patients.

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