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Is TAP Block with 0.25% Bupivacaine Superior to Local Infiltration with 0.25% Bupivacaine for Postoperative Analgesia in Lower Abdominal Surgeries: A Comparative study

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ABSTRACT:
Background: The comprehensive treatment of patients following any surgery must include adequate postoperative analgesia. A shorter hospital stay and higher patient satisfaction are related to effective pain treatment. Several regional analgesic approaches are now in use.

Methodology: In this study, 90 patients were enrolled, and they were equally split into two groups of 45 patients each. A local infiltration of 0.25% bupivacaine was applied to the surgical incision in one group while TAP block was administered to the second group. The study comprised patients with an ASA grade of I or II, of either gender, between the ages of 18 and 65. Any unfavorable occurrences or hemodynamic instability were noted.

Results: Patients who underwent a TAP block using 0.25% Bupivacaine had considerably lower pain scores in the second, fourth, twelfth-, and twenty-fourth hours following surgery. No procedure-related major adverse events were recorded. The hemodynamic parameters in the two groups did not significantly differ from one another.

Conclusion: Lower abdominal surgery patients may find that a TAP block using 0.25% Bupivacaine is an effective postoperative pain control method.

KEYWORDS: 0.25% Bupivacaine, local surgical wound infiltration, TAP block

INTRODUCTION:

One of the essential needs of post-operative patient care is pain management which happens due to tissue or organ damage because of invasive procedures. The severity of postoperative pain is dependent upon various factors that include the type of surgery, the extent of the surgical procedure, and location amongst other factors [1]. Guidelines for the management of postoperative pain that included

multimodal techniques were proposed by Chou R et al. [2] from the American Pain Society in 2016. Preoperative education, postoperative pain management planning, the utilization of organizational strategies, and the transition to outpatient care were some of the key elements considered.

There is a lengthy history behind transverse abdominal plane (TAP) blocks, and there is currently a wealth of clinical knowledge surrounding them. Abdominal wall blocks can be carried out in a variety of ways, however, a significant improvement in TAP block performance can be achieved quickly by using ultrasound guidance. The surgeon may also use an abdominal wall block during surgery while they are inside the abdomen [3]. Local wound infiltration is also a form of loco-regional analgesic technique and an alternative to the systemic use of opioids. This can help reduce opioid use and thereby their systemic complications [4].
In this study, we evaluated the quality of analgesia provided by 0.25% Bupivacaine used in TAP block and local wound infiltration in patients undergoing surgeries of the lower abdomen after the operation was done.

RESEARCH METHOD AND RESEARCH MATERIALS:

Ethical committee approval number-IESC/FP/2020/17
90 patients were recruited in the study after obtaining consent in their native language. The objective and purpose of the study were explained to them in detail. Institutional ethics committee clearance was obtained before the start of the study. Patients aged between 18 to 65 years, of either gender, with ASA grade I or II, and willing to provide consent for the study were included in the present study. Patients with significant co-morbidities, malignancies, or with a history of hypersensitivity to Bupivacaine were excluded from the study. The chosen participants are separated into two groups.

Group 1: Patients received a TAP block with an Injection of 0.25% Bupivacaine (2mg/kg body weight). This was assisted using ultrasonography.

Group 2: Patients received a local infiltration with 0.25% bupivacaine (2mg/kg body weight).
Both techniques were executed after the surgical procedure. The Visual Analog Scale measurements were documented at rest.

RESULTS:

Table 1: Characteristics of study groups

Variables		Group 1	Group 2	P value
Age (Mean±S.D.)		36.77±10.64	38.27±13.26	0.63
Gender	**Males**	18 (40%)	18 (40%)	1
	Females	27 (60%)	27 (60%)	
ASA grade	**I**	25 (55.6%)	25 (55.6%)	1
	II	20 (44.4%)	20 (44.4%)	

The mean age of the participants was 36.77 ± 10.64 years in Group -1 which received TAP block whereas it was 38.27 ± 13.26 years in the group that received local surgical wound infiltration. Equal numbers of participants in both groups were males and females. An equal number of participants belonged to ASA grade I and Grade II in both groups. Hence, the study was matched with age, gender, and ASA grade to remove any bias. [Table 1]

Table 2: VAS scores among study groups

VAS score	Group 1	Group 2	P value*
2nd hour	1.18 ±0.38	1.4 ±0.49	**0.02***
4th hours	2.22 ±0.92	3.18± 0.83	**<0.0001***
12th hour	5.27 ±1.03	5.78 ±0.95	**0.017***
24th hour	5.6 ±0.96	6.04 ±1.04	**0.038**

*Independent sample t-test

Table 2 shows that the VAS scores were significantly better in the group that received TAP block at the effect was apparent at all the time intervals. At 2nd hour postoperatively, they were 1.18±0.38 in the TAP block versus 1.4 ±0.49 in the local infiltration group with a P value of 0.02. At the 4th hour, they were 2.22 ±0.92 in the TAP block versus 3.18± 0.83 in the local infiltration group with a P value of <0.001. At the 12th hour, they were 5.27 ±1.03 in the TAP block vs. 5.78 ± 0.95 in the local infiltration group with a P value of 0.017. At the 24th hour, the VAS score was 5.6 ±0.96 in the TAP block

versus 6.04 ±1.04 in the local infiltration group with a P value of 0.038.

DISCUSSION:

Various workers have utilized TAP block in surgeries of the lower abdomen and noted that there was a significant analgesic effect in the post-operative period whereas some studies have concluded that there is no difference in post-operative analgesia when TAP block was compared to local infiltration techniques. Buluc H et al. [5] performed ultrasound-guided TAP block in patients undergoing cesarean section using 0.25% Bupivacaine and noted that the administration of USG-TAP block resulted in a substantial reduction in post-operative pain with lesser requirement of rescue analgesia when compared to those receiving only normal saline.

Damadi AA et al. [6] showed that the use of a laparoscopically inserted bupivacaine TAP block as a component of an enhanced recovery route can decrease the length of stay (LOS), usage of postoperative opioids, time required for ambulation and bowel function, and LOS.

In their study by Skjelsager et al. [7], a comparison was made between TAP block and wound infiltration in the context. The authors observed no clear advantage associated with TAP blocks, in contrast to our investigation, where TAP blocks outperformed local anesthetic infiltration.

None of the patients showed any serious adverse events in our study. One patient in both groups had nausea whereas one patient in the TAP block group complained of pruritus. It is important to note that the local infiltration techniques and TAP block reduce the necessity of opioid analgesics. Opioid analgesics can have systemic toxicity [8] and this is reduced when loco-regional forms of analgesic techniques are used.

LIMITATIONS OF THE STUDY:

- The study did not include a group where traditional methods of analgesic techniques were followed.
- Length of stay in hospital was not evaluated.
- The cumulative dose requirement of rescue analgesia was not compared between the groups.
- Additives are not used in both groups.

CONCLUSION:

TAP block after lower abdominal surgeries was significantly associated with better analgesia as visualized by improvement in pain scores up to 24 hours in the post-operative period when compared to local infiltration of the wound. We suggest conducting similar studies with various other pharmaceutical agents in adjunct to Bupivacaine when can have further better analgesia.

CONFLICT OF INTEREST: NIL
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