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TAP BLOCK VERSUS WOUND INFILTRATION IN SUBJECTS WITH GYNECOLOGICAL SURGERIES

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ABSTRACT

BACKGROUND: Transversus abdominis plane (TAP) block and wound infiltration (WI) with local anaesthetics are used for postoperative analgesia following gynaecological surgeries, reducing the need for administration of opioids. **OBJECTIVE OF THE STUDY:** The objective of our study was to assess the post-operative relief of pain in subjects who receive TAP block versus local wound anaesthetic infiltration with 0.25% bupivacaine following open gynaecological surgeries, using visual analogue scale at rest and movement. **METHODS:** We included a total of 100 cases based on inclusion and exclusion criteria. TAP block was administered in 50 subjects who underwent gynecological procedures and local wound infiltration was administered in 50 subjects who underwent gynecological procedures. **RESULTS:** it is quite evident that the post-operative VAS scores were significantly reduced in subjects with TAP block compared to the VAS scores in the subjects with local wound infiltration. **CONCLUSIONS:** The TAP block is more effective and safe technique for postoperative analgesia for lower abdominal gynaecological surgeries, compared to the surgical wound infiltration.

KEYWORDS: Gynaecological surgeries, post-operative VAS score, postoperative analgesia, surgical wound infiltration

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INTRODUCTION

Gynaecological surgeries are performed by abdominal incision is common and post-operative pain and discomfort is always anticipated. Postoperative pain is the most common problem which gives the patients an unpleasant experiences and hemodynamic stress responses. Poorly controlled pain is associated with unwanted post-operative consequences like patient suffering, distress, confusion, respiratory and heart problems, prolonged hospital stays, and expenditures. Provision of adequate postoperative analgesia reduces the neuro-endocrine stress response, postoperative respiratory complications and the incidence of myocardial ischemia can be minimized [1-3].

Transversus abdominis plane (TAP) block, first described by Kuppuvelumani et al. in 1993 [4] and formally documented by Rafi in 2001 [5], is used for the management of surgical abdominal pain by injecting local anesthesia into the plane between the internal

oblique and transversus abdominis muscle [5, 6]. TAP-block technique has been shown to be a safe and effective postoperative adjunct analgesia method in a variety of general [7, 8], and gynecological [9–11] surgeries, and it is suggested as part of the multimodal anesthetic approach to enhance recovery after lower abdominal surgeries.

Single shot local anesthetic infiltration (LAI) is also a commonly used method for reducing postoperative pain. Pain relief can be obtained by single injection of local anesthesia into skin and subcutaneous tissue layer at surgical incision sites, which could lower the pain scores until 24 hours postoperatively [12].

Surgical outcomes are generally improved when pain control is optimized in the postoperative setting. After laparotomy, the traditional modality for pain control remains narcotics. Unfortunately, narcotics are associated with side effects including nausea and delayed recovery of bowel function. Multimodal approaches to postoperative pain management are often utilized to attempt to avoid these side effects, including the incorporation of epidurals and spinal anaesthetics. Recently, the utilization of the transversus abdominis plane (TAP) block has been on the rise. TAP block is a peripheral nerve block designed to anesthetize the afferent nerves supplying the anterior abdominal wall from T6 to L1 between the internal oblique and the transversus abdominis muscle. Local anaesthetic infiltration along the surgical wounds through subcutaneous planes also provides adequate analgesia without much of side effects. Both these techniques reduce the post-operative need of opioids and other side effects [1-3].

OBJECTIVES OF THE STUDY: The objective of our study is to assess the post-operative relief of pain in subjects who receive TAP block versus local wound anaesthetic infiltration with 0.25% bupivacaine following open gynaecological surgeries.

MATERIALS AND METHODS

Source and place of study: This is a prospective randomised clinical study, conducted at Dept. of OBG in collaboration with Anaesthesia. We included the subjects undergoing gynecological procedures based on inclusion and exclusion criteria. We included a total of 100 who were divided into two groups by simple random method of sampling. Group 1 we included 50 cases in whom TAP block was administered who underwent gynecological procedures and Group 2 we included 50 cases in whom local wound infiltration was administered who underwent gynecological procedures.

Procedure: TAP block is a simple regional block was first described by Rafi as a traditional blind landmark using the lumbar triangle of petit. Traingle of petit is bounded by latissimus dorsi posteriorly, the external oblique anteriorly and the iliac crest inferiorly, which is the base of the triangle. The floor of the triangle is formed by internal oblique muscle. The alternative method for TAP block is ultrasound image guidance. Local anaesthetic wound infiltration was performed with 0.25% bupivacaine, following open gynaecological surgeries.

Postoperative analgesia: Postoperative pain was assessed using visual analogue score (VAS

0–10) as VAS 0 – no pain and VAS 10 – maximal pain. VAS assessment was done at 30 min, 1 h, 2, 4, 6, 12, and 24 h postoperatively. Injection tramadol intramuscularly was given whenever VAS was >3 as rescue analgesic. If the patients experienced pain early, they were instructed to request pain medication and were advised not to wait until the next VAS score assessment schedule. The duration of analgesia was defined from the administration of infiltration or TAP to the time of request to the first rescue analgesic administration. Total rescue analgesic consumption is defined as the total of number of doses administered in the first 24 h postoperatively. Adverse effects such as bradycardia, hypotension, nausea, and vomiting was tabulated and treated as per standard guidelines.

RESULTS: We included a total of 100 subjects who underwent gynaecological procedures. We group the subjects into Group 1 (no = 50) who were managed with TAP block for post-operative pain and Group 2 (no = 50) who were managed with local anaesthetic wound infiltration. The mean age and SD in years in group 1 was 45.26 ± 3.2 and in group 2 was 48.93 ± 4.6 respectively.

Table 1: VAS score on rest

	Group 1	Group 2	P value
30 min	1.13	1.55	<0.05
2 hours	1.59	2.92	<0.05
4 hours	2.31	3.61	<0.05
6 hours	2.34	3.33	<0.05
12 hours	2.09	2.73	<0.05
24 hours	2.33	2.98	<0.05

Table 2: VAS score on movement

	Group 1	Group 2	P value
30 min	0.2	0	>0.05
2 hours	0.73	2.73	<0.05
4 hours	0.92	2.43	<0.05
6 hours	5.92	6.87	<0.05
12 hours	5.73	6.82	<0.05
24 hours	5.80	6.92	<0.05

From the table 1 and 2, it is quite evident that the post-operative VAS scores were significantly reduced in subjects with TAP block compared to the VAS scores in the subjects with local wound infiltration.

DISCUSSION

In our study, we compared the TAP block with local anaesthesia infiltration, for post-operative pain management in subjects undergoing gynaecological procedures. Since there was limited data regarding the comparison of efficacy of TAP block versus local wound

infiltration we have taken up this study. We found that the VAS scores were significantly less in subjects receiving TAP block compared to the subjects who received local wound infiltration, assessed postoperatively at intervals of 30 m, 2h, 4h, 6h, 12h & 24 h respectively. At rest, there was no significant difference in VAS score between the two groups at 30 min following the surgical intervention.

TAP block acts only on the nerves supplying the anterior abdominal wall and thereby reduces parietal component of pain. The complications of TAP block were intravascular entry of local anaesthetic drugs, liver injury and local anaesthetic toxicity. TAP block provided superior analgesic effect, without significant differences in the hemodynamic but the duration of analgesia was better in the TAP block. The duration of analgesia due to block as indicated by the need for rescue analgesia, the duration was significantly higher in the TAP block group as compared to the surgical site infiltration group. The requirement of opioid, Tramadol was lesser (3%) in the TAP block group than the surgical site infiltration group (22%) [3.6]. In our current practice, we are using plain bupivacaine hydrochloride in TAP block. But certain studies have also come with utilization of liposomal bupivacaine in the setting of post-operative pain management. Liposomal bupivacaine consists of microscopic vesicles with a lipid soluble lining and an aqueous core containing encapsulated bupivacaine, which allows it to be released slowly over a period of 72–96 h. When compared to bupivacaine hydrochloride, liposomal bupivacaine significantly decreased opioid use in the gynaecologic population when used as local infiltration in abdominal. The cost of liposomal bupivacaine is currently 100-fold higher than bupivacaine hydrochloride and thus has not been as widely used.

However, the incorporation of this drug in TAP block has been shown to decrease pain scores over bupivacaine hydrochloride in the urologic literature and is worthwhile to consider in the future for gynecologic surgery (Hutchins et al., 2016).[7]Our findings were similar to the studies conducted by other authors in the past.[8,9]

CONCLUSION: The TAP block is more effective and safe technique for postoperative analgesia for lower abdominal gynaecological surgeries, compared to the surgical wound infiltration. The need of Tramadol in the postoperative period is less in patients receiving TAP block.

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