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Original Research Article

Efficacy of Intraperitoneal Bupivacaine for Postoperative Analgesia

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ABSTRACT

Introduction: The intraperitoneal route of analgesia has been studied over the years for effective pain relief during various laparoscopic surgeries, but there were conflicting reports of its use.
Materials and Methods: This study was undertaken to compare the efficacy and safety of postoperative analgesic effect of 10 ml intraperitoneal bupivacaine 0.125% and diclofenac 100 mg per rectal in patients posted for laparoscopic tubal ligation. 60 patients with ASA status I and II, undergoing laparoscopic tubal ligation were randomly allocated into two groups: group I (Intraperitoneal Bupivacaine) and group II (Diclofenac Suppository) with 30 patients in each. After the commencement of the procedure, group I patients received 10 ml bupivacaine 0.125% infiltration through the cannula after the laparoscope was removed. Whereas, Group II patients received Diclofenac Suppository 100 Mg.
Results: Consumption of rescue analgesics was considerably higher in group II. 12 patients from group II patients required rescue analgesics, where as in group I only two patients demanded post operative analgesia. Mean pain score (PAVS) of both the groups for 6 hours were analyzed statistically. Pain score of group I patients was significantly lower than group II. (P Value 0.0001)
Conclusion: Administration of 10 ml 0.125% intraperitoneal bupivacaine is safe and effective method for pain relief in the immediate postoperative period after Laparoscopic Tubal Ligation.

Key words: Laparoscopic Tubectomy, post-operative Pain Management, Intra peritoneal instillation, Local Anaesthetics, Bupivacaine, comparison, conventional NSAIDs.

INTRODUCTION

Although tubal ligation is a routine procedure, there is a significantly higher incidence of continued postoperative pain. As a result of this persistent pain, discharging these patients on the same day is not possible, thus increasing the hospital cost. Mechanisms of pain after laparoscopic surgeries are multiple. Local pain is associated with incisions for the operative ports. Lower abdominal pain may depend on the extent of intraperitoneal manipulation during laparoscopic procedures. Ligation of tube may cause ischemia or damage to the fallopian tubes and are generally more painful than simple diagnostic procedures.

NSAIDs are commonly used to provide post operative pain relief. However NSAIDs may not be adequate to alleviate or reduce post operative pain. [(1)] Poor analgesia, nausea, and vomiting can cause distress to the patient and may result in overnight admission and financial burden. [(2)] It is essential that the analgesia provided is sufficient for the patient to mobilize by the evening of surgery and control the pain. Opioids on other hand have limited its usage due to the risk of PONV and sedation which may result in overnight hospital stay and may not be suitable for day case surgeries.[(3)]

The intraperitoneal route of analgesia has been studied over the years for effective pain relief during various laparoscopic surgeries, but there were conflicting reports of the use of intraperitoneal analgesic administration. [4,5]

Here we compare the efficacy of analgesic effect of intraperitoneal bupivacaine 0.125% with Diclofenac 100 mg administered as a suppository. This study was undertaken to compare the efficacy and safety of postoperative analgesic effect of 10 ml intraperitoneal bupivacaine 0.125% and diclofenac 100 mg per rectal in patients posted for laparoscopic tubal ligation.

MATERIALS AND METHODS

After obtaining the approval from the institutional ethical committee and written informed consent from patients, 60 patients with ASA status I and II, undergoing laparoscopic tubal ligation were randomly allocated into two groups: group I (Intraperitoneal Bupivacaine) and group II (Diclofenac Suppository) with 30 patients in each. Randomization was done with help of a computer generated random number table.

Inclusion criteria were fertile ladies aged between 22 and 39, scheduled for either interval laparoscopic ligation or MTP with laparoscopic tubal ligation. Patients with different socioeconomic status and religion were included in the study. Exclusion criteria include patients with ASA grade III or above, patients with history of cardiac illness or renal disease, and psychiatric patients.

On arrival to the operating room pulseoximeter, non-invasive blood pressure and ECG monitors were placed and base line readings were noted. After confirming the patency of peripheral IV access, all the patients received Inj. buprenorphine 150 micrograms and induced with thiopentone sodium 5 mg/kg. Intubation was done with appropriate sized endotracheal tube after muscle relaxation achieved with succinyl choline 1.5 mg/kg. All the patients were maintained on oxygen, nitrous oxide and 1 MAC isoflurane.

After the commencement of the procedure, group I patients received 10 ml bupivacaine 0.125% infiltration through the cannula after the laparoscope was removed. While infiltrating the cannula was withdrawn slowly so that the drug uniformly gets infiltrated in the peritoneum, peritoneal cavity and abdominal muscles. Whereas, Group II patients received diclofenac suppository 100 mg immediately after removing the laparoscopic cannula.

All the patients were observed postoperatively for 6 hours for assessment of post operative pain. Pain perceived by the patients was measured by Pain Assessment Visual Scale (PAVS). It involves use of a 10 cm line on a piece of white paper and it represents patient's perception of the degree of pain. It was explained preoperatively to all the patients that, one end of the line depicts '0' which represents no pain at all, while the other end depicts '10' which represents worst pain he/she has ever felt. The assessment was carried out by an anaesthesiologist who was blinded to the group to which the patient belonged.

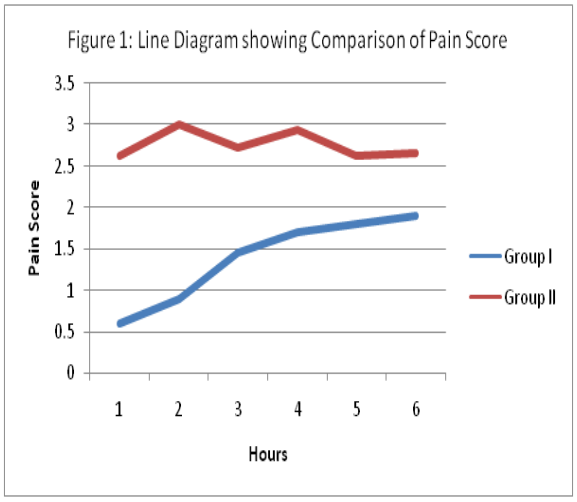
Pain score were recorded every hour for 6 hours. Prophylactic analgesics were not given in both the groups other than the study drugs. Rescue analgesics, inj. Diclofenac 75 mg intravenously were given in both the groups, when the regimen failure occurred. Vital parameters like BP, Pulse rate are noted every hour for six hours and side effects such as nausea, vomiting are also observed and managed.

Group I and II were compared by simple random sampling. This was a single blinded prospective study. Pain score of both the groups were compared and analyzed. Demographic profile, socio-economic status, type of surgery and post operative vitals were also compared between the two groups. All the parameters are expressed as mean standard deviation. Data were analyzed using unpaired't' test or the chi square test as applicable. A 'p' value of <0.05 was considered statistically significant.

RESULTS

Demographic profile, body mass index, socioeconomic status and religion were statistically comparable in both the groups and found insignificant statistically. Types of surgeries ie, interval laparoscopic tubal ligation versus post medical termination of pregnancy (MTP) laparoscopic tubal ligation (TL) were also compared between the groups. 8 patients of group I and 6 patients of group II patients underwent interval laparoscopic TL. Likewise 22 group I patients and 24 group II patients underwent post MTP laparoscopic TL, so there was no statistically significant difference between the two groups. Mean pulse rate and blood pressure were also recorded postoperatively and analyzed. However there was no significant difference between the two groups.

Study on requirement of Rescue analgesics in both the groups shows a statistically significant difference between the two groups (P Value 0.001). Consumption of rescue analgesics was considerably higher in group II. 12 patients from group II patients required rescue analgesics, where as in group I only two patients demanded post operative analgesia.



Mean pain score (PAVS) of both the groups for 6 hours were analyzed statistically. The pain score of group I patients were lower than group II and statistically this difference is considered to be extremely significant. (P Value 0.0001)

10 patients of group I and 11 from group II had suffered from PONV in the post operative period, which is not significant statistically. (P > 0.05)

DISCUSSION

There are several components of pain after laparoscopic gynaecological surgery. Peritoneal insufflations of gases may cause secondary scapular pain especially when an exaggerated Trendelenburg position is used. [(6)] In addition, there is visceral pain, and pain caused by pelvic inflammation and traction on uterus and tubes. [(7)] The intraperitoneal local an aesthetic agents were studied by many authors to evaluate the efficacy as an analgesic agent in the postoperative period and also as analgesic agent in the intraoperative period. [(8,9)] However there are no reported studies to assess the analgesic efficacy of intraperitoneal administration of bupivacaine 0.125% during postoperative period in the patients posted for laparoscopic tubal ligation.

We compared the efficacy of 10 ml intraperitoneal bupivacaine 0.125% with diclofenac suppository for providing postoperative analgesia in the patients underwent laparoscopic tubal ligation during immediate post operative period and it was found that intraperitoneal bupivacaine 0.125% is superior.

The rescue analgesic requirement was much lower in the patients received intraperitoneal bupivacaine, as compared to the patients received diclofenac suppository. 40 % of the patients from diclofenac group received rescue analgesic while only 6.6 % of bupivacaine demanded for rescue analgesia. Administration of Intraperitoneal bupivacaine reduced the consumption of analgesic by six times.

Analysis on pain score shows a significant difference between the two groups. Pain felt by the patients who received intraperitoneal bupivacaine was nil to mild, where as diclofenac patient felt significantly higher degree of pain i.e., moderate to severe. But due to the

consumption of rescue analgesics, the average value of pain score in diclofenac patients had reduced to 2.8. However in bupivacaine patients, the average pain scores value was lower in spite of lesser use of rescue analgesics. This shows the superior analgesic efficacy of intra peritoneal bupivacaine.

The pain score in the first 3 hours were almost nil in the patients received intraperitoneal bupivacaine (Average PAVS 0.98) and pain score of next 3 hours is 1.8. This shows the approximate duration of analgesia after intraperitoneal bupivacaine 0.125% is 3-4 hours after laparoscopic TL.

In diclofenac suppository patients pain score in the first 3 hours was 2.8 and was almost same in next 3 hours (2.7).

Also, intraperitoneal bupivacaine could provide a painless post operative period (PAVS 0.86), while diclofenac patients felt moderate pain during post operative period (PAVS 3.73).

The efficacy of intraperitoneal local an aesthetic agent has been studied by many authors. The evidence generated by most of the authors, was similar to our findings. [8,9] Local anesthetic infiltration has been shown to attenuate postoperative pain after laparoscopic cholecystectomy. [10,11]

However, there have been only a few reports on the efficacy of intraperitoneal local an aesthetic administration for pain relief after laparoscopic gynecologic surgery. Manjunath AP et al. found that intraperitoneal instillation of lignocaine was effective method for pain relief during laparoscopic tubal occlusion intraoperatively. [12]

According to Goldstein a et al incidence of PONV was lower when intra peritoneal local an aesthetic agents were used. [13] In this study incidence of PONV was slightly lesser in the patients receiving intraperitoneal bupivacaine, however this was not significant statistically.

The vital parameters were within the acceptable range in both the groups. There were no significant differences in the vitals between the two groups.

Carbon dioxide is usually used to expand the abdomen to allow surgical visualization. Although it is a soluble gas in comparison to oxygen and nitrogen, it can take up to two days to be absorbed from the peritoneal cavity. [14] Pain from the residual gas is of delayed onset and may present once the patient has gone home. Hence we had advised oral analgesics to all our patients for three days. [15]

CONCLUSION

Administration of 10 ml 0.125% intraperitoneal bupivacaine is safe and effective method for pain relief in the immediate postoperative period after Laparoscopic Tubal Ligation.

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