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COMPARISON BETWEEN EFFICACY AND SAFETY OF DICLOFENAC SODIUM SUPPOSITORY AND INTRAPERITONEAL BUPIVACAINE IN REDUCING PAIN AFTER LAPAROSCOPIC CHOLECYSTECTOMY

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Abstract:

Introduction: *Over the years, the intraperitoneal analgesic pathway has been studied for effective pain relief after laparoscopic cholecystectomy, but there are conflicting reports of its use.*

Objective: *This study was conducted to compare the safety and efficacy of postoperative analgesic, diclofenac 100 mg per rectal and 10 ml 0.125% intraperitoneal bupivacaine in patients planned for laparoscopic cholecystectomy.*

Place and Duration: *In the Surgical Unit II and Anesthesia department of Govt Teaching Hospital Shahdara Lahore for one year duration from February 2019 to February 2020.*

Methods: *80 patients who underwent laparoscopic cholecystectomy were divided randomly into 2 groups. There were 55 males and 25 females. The intraperitoneal bupivacaine was given in group I and diclofenac suppository was given in group II, 40 patients in each group. After the start of the operation, patients in Group I were subjected to 10 ml of infiltration with 0.125% bupivacaine from the cannula after removal of the laparoscope. Meanwhile, patients in group II received 100 mg of diclofenac suppository.*

Results: *In group II; Ingestion of rescue analgesics was significantly greater. Rescue analgesics were required in 18 subjects in Group II, and postoperative only in 3 subjects in Group I. In both groups; mean pain score (PAVS) for 6 hours was statistically analyzed. In group I; the patient's pain scores were considerably lesser than in group II. (P value 0.0001)*

Conclusion: *The10 ml intraperitoneal administration of 0.125% bupivacaine is effective and safe method for relief of pain postoperatively after laparoscopic cholecystectomy.*

Keywords: *laparoscopic cholecystectomy, treatment of postoperative pain, local anesthesia, intraperitoneal instillation, comparison, bupivacaine.*

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INTRODUCTION:

Although laparoscopic cholecystectomy is a monotonous procedure, the continuity of postoperative pain is much higher[1-2]. As a result of this constant pain, it is not possible for these patients to be discharged on the same day, which increases hospital costs[3-4]. Pain mechanisms are numerous after laparoscopic surgery. Local pain is related with the surgical ports incisions[5]. The pain in the Low abdomen at the epigastric and hypo-gastric region can be caused by the degree of intraperitoneal operation throughout laparoscopic surgeries. NSAIDs are often given to get rid of postoperative pain. Though, NSAIDs might not be enough to reduce or relieve postoperative pain. Nausea, vomiting and poor analgesia can stress the patient and cause long hospitalization and financial burden. It is important that the analgesia delivered is adequate for the patient to move after the procedure in the evening and pain management must be adequate[6-7]. Contrary to this, opioids have restricted its use due to the risk of sedation and PONV, which may cause long stay in the hospital overnight and may not be suitable for day care surgery[8-9]. Intraperitoneal analgesia has been studied for several years to alleviate effective pain in several laparoscopic operations, but there are contradictory informations of intraperitoneal analgesics[10]. Here, we compare the effectiveness of intraperitoneal 10ml bupivacaine of 0.125% with 100 mg diclofenac directed as a suppository. This study was conducted to compare the safety and efficacy of 0.125% bupivacaine and 10 ml postoperative analgesic 100 mg diclofenac after surgery in patients undergoing laparoscopic cholecystectomy.

MATERIALS AND METHODS:

This comparative prospective study was held in the Surgical Unit II and Anesthesia department of Govt Teaching Hospital Shahdara Lahore for one year duration from February 2019 to February 2020. 80 patients who underwent laparoscopic cholecystectomy were divided randomly into 2 groups: The intraperitoneal bupivacaine was given in group I and diclofenac suppository was given in group II, 40 patients in each group. After the start of the operation, patients in Group I were subjected to 10 ml of infiltration with 0.125% bupivacaine from the cannula after removal of the laparoscope. Meanwhile, patients in group II received 100 mg of diclofenac suppository. There were 55 males and 25 females. The study was approved by the Ethical committee. Inclusion criteria were patients suitable for laparoscopic cystectomy after complete evaluation. Patients with various religions and socioeconomic levels were selected for the study. Exclusion criteria include patients with a history of kidney or heart disease, and patients having psychiatric problems. Upon arrival at the OT, non-invasive ECG and blood pressure monitors were placed and basic readings were made. After confirmation of peripheral intravenous access permeability, all patients were injected Buprenorphine 150 micrograms and maintained on 5 mg / kg of sodium thiopentone. Intubation was carried out using an appropriate size intubation tube after muscle relaxation by succinylcholine 1.5 mg / kg. All subjects were maintained on nitric oxide, oxygen and one MAC isoflurane. During the infiltration, the cannula was removed slowly so that the drug would distribute evenly into the peritoneal cavity, abdominal muscles and peritoneum. In contrast, patients in Group II were given 100 mg suppository of diclofenac immediately after laparoscopic cannula removal. All patients observed that postoperative pain was evaluated for 6 hours after surgery. Patient pain was measured using a Pain Assessment Visual Scale (PAVS). It comprises a 10 cm line on white paper piece and signifies the patient's sensitivity of the gradation of pain. All patients stated that from the 1st side of the line was "0" before surgery, meaning no pain, and the other end represented "10", the worst pain. Pain scoring were documented every hour for six hours and blindly recorded by anesthesiologist. In both groups, Prophylactic analgesics were not given with the exception of research drugs. If the 75 mg diclofenac regimen failed, it was given intravenously to both groups. Important parameters such as BP and pulse rate are observed every hour for 6 hours, and side effects such as vomiting and nausea are also controlled and observed. The pain scores of both groups were analyzed and compared. The socioeconomic status, demographic profile, postoperative vital signs and type of surgery were also compared. All parameters were articulated as mean SD. The chi-square and student "t" test was used for data analysis. Less than 0.05 P value was measured significant statistically.

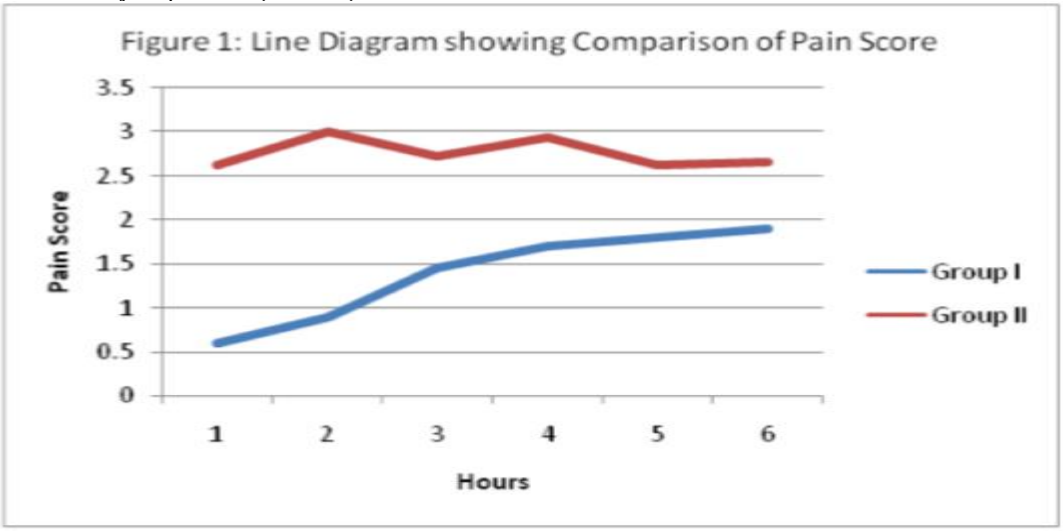
RESULTS:

The body mass index, demographic profile, religion and socio-economic status were statistically comparable and statistically insignificant in both groups. The laparoscopic cholecystectomy was performed in 80 patients. Mean blood pressure and heart rate were also analyzed and documented after surgery. Though, there was no important alteration among the 2 groups. Inspection of the need to recovery analgesia in both groups shows that there is a statistically momentous alteration between the 2 groups (p-value 0.001). The use of rescue analgesics was very high in group II.

The demographic data and patient required rescue pain killers were given in Table-I

Gender	**Male**	**Female**
	55(68.75%)	25(32.25%)
Patients Required Rescue analgesia	**Group I(40)**	**Group II(40)**
	3(7.5%)	18(45%)
Postoperative nausea and vomiting (PONV)	**Group I(40)**	**Group II(40)**
	11(27.5%)	12(30%)

Rescue analgesics were required in 18 subjects in Group II, and postoperative only in 3 subjects in Group I. In both groups; mean pain score (PAVS) for 6 hours was statistically analyzed. In group I; the patient's pain scores were considerably lesser than in group II and this variance was deliberated significant statistically. (P value 0.0001) In the postoperative period, 11 cases from Group I and 12 cases from Group II had PONV and this was not statistically important. (P> 0.05)



DISCUSSION:

After laparoscopic cholecystectomy surgery, there are various components of pain. Inhalation of peritoneal gases can cause secondary scapular pain. In addition, there is visceral pain and pain in the abdomen caused by pelvic traction and inflammation[11-12]. Many authors have studied intraperitoneal topical aesthetics to assess efficacy as a painkiller postoperatively and as a painkiller in the intraoperative period[13]. Though, there is no study conducted to compare the safety and efficacy of postoperative analgesic, diclofenac 100 mg per rectal and 10 ml 0.125% intraperitoneal bupivacaine in patients planned for laparoscopic cholecystectomy and this study was held to know its efficacy. The need for analgesic treatment was lower in patients receiving intraperitoneal bupivacaine than in patients receiving diclofenac suppositories[14]. Intraperitoneal bupivacaine decreased analgesic requirement 6 times. Analysis of pain results showed important variance among the 2 groups. While the pain experienced by subjects receiving bupivacaine intraperitoneal was from zero to mild, the patient with diclofenac experienced much more pain, i.e. modest to severe. However, because of the use of rescue analgesics, the mean pain score in subjects with diclofenac has been reduced to 2.9. Though, patients with bupivacaine had lower average pain scores despite less consumption of painkillers. This indicates a better analgesic effect of intraperitoneal bupivacaine. In the first three hours; pain score was nearly zero in cases receiving bupivacaine intraperitoneally (0.98 PAVS on average), and 1.8 was the pain score in the next 3 hours. This indicates the estimated interval of painlessness after intraperitoneal bupivacaine; it is three to four hours after laparoscopic cholecystectomy. In patients with suppositories of diclofenac, in the first 3 hours the pain score was nearly the same as 2.8 over the next three hours. In addition, intraperitoneal bupivacaine may deliver a painless postoperative period (PAVS 0.86), while diclofenac patients may experience moderate postoperative pain[15]. Many authors have studied the effectiveness of a local and aesthetic intraperitoneal agent. The confirmation presented by most writers was alike to our results. After laparoscopic cholecystectomy; Local anesthetic infiltration decrease postoperative pain significantly. Though, there are few literatures on the effectiveness of local and intraperitoneal

analgesic administration in relieving pain after laparoscopic cholecystectomy. Manjunath AP et al found that intraperitoneal administration of lignocaine is an operative technique for relieving pain during intraoperative or postoperatively cholecystectomy. Significant parameters were within satisfactory ranges in both groups. There was no significant difference in vital signs among the 2 groups.

CONCLUSION:

The10 ml intraperitoneal administration of 0.125% bupivacaine is effective and safe method for relief of pain postoperatively after laparoscopic cholecystectomy.

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