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Research Article

Instillation Of 0.5% Bupivacaine Soaked Surgicel in the Gall Bladder Bed and Infiltration at Port Sites-Efficacy of Pain Relief after Laparoscopic Cholecystectomy

Abstract

Background: This study aims to evaluate the effectiveness of 0.5% bupivacaine soaked surgicel placed in the gall bladder bed and infiltration at port sites at laparoscopic cholecystectomy, in relieving pain during 1st 24 hours post procedure.

Method: In this RCT, 50 patients with chronic cholecystitis were divided into two groups of 25 each. Group- A –Bupivacaine soaked surgicel kept in gall bladder bed and infiltration at trocar sites, Group-B – no local anaesthesia was used in the gall bladder bed and at trocar sites. Population was included on the basis of systemic random sampling based on the inclusion and exclusion criteria. Post operatively, the character and intensity of pain was assessed by visual analog scale (VAS) scoring for 24 hours.

Result: The findings of our study showed variable intensity of parietal, visceral and shoulder pain in two groups over 24 hours post-surgery. The intensity of pain in Group-A was less than in Group-B.

Conclusion: Parietal, visceral and shoulder pain were prominent after laparoscopic cholecystectomy and can be effectively controlled by 0.5% bupivacaine soaked surgicel in the gall bladder bed and infiltration at trocar sites.

Introduction

Laparoscopic cholecystectomy is considered the gold standard treatment for benign gall bladder disease. It is characterized by a short hospital stay and an early return to regular activities [1,2]. Strategies to handle the different intra-abdominal surgical pathologies with a laparoscopic approach offer a significant benefit compared with the conventional technique [1,2]. Laparoscopic cholecystectomy has improved surgical outcomes in terms of reduced pain and convalescence compared to conventional cholecystectomy [3]. Several studies have shown that laparoscopic cholecystectomy has a number of advantages in relation to laparotomy, such as pain reduction and lower consumption of analgesics in the postoperative period, smaller skin incision, reduced bleeding, smaller need for hospitalization at intensive care units, fewer infectious complications, shorter hospital periods and, from the view point of surgical stress, it shows less trauma, as measured by stress hormones (ACTH and cortisol) [3].

Laparoscopic Cholecystectomy has also become the gold standard for gall stone disease. Various treatments have been proposed to make this surgery as pain free as possible [4]. Purpose of this prospective randomized trial was to assess the character of post cholecystectomy pain and to evaluate the efficacy of 0.5% bupivacaine soaked surgicel kept in gall bladder bed as well as port sites for post-operative pain relief after laparoscopic cholecystectomy.

Method

This study was designed as RCT (Randomized control clinical trial) which enrolled fifty patients with gall stone disease admitted for elective laparoscopic cholecystectomy from July'2014 to December'2014 in BIRDEM General Hospital, Dhaka Bangladesh on the basis systemic random sampling. All the patients were classified to American Society of Anesthesiology (ASA) 1 to 3. They underwent USG (ultrasonography) of whole abdomen, liver function test and other haematological

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and biochemical investigation. Patient with previous major abdominal surgeries, choledocholithiasis, acute cholecystitis were excluded from this study. Inform consent was obtained. The patients were divided into two groups of 25 patients each.

Group-A –Bupivacaine 0.5% (1 mg/kg) was instilled over the oxidized regenerated cellulose strips (surgicel) in the gall bladder bed and infiltration at port sites. Group-B –nothing was given in gall bladder bed and at port sites.

Patients were pre medicated with 5mg of Diazepam orally at night before surgery.

Inj. Fentanyl (2 µg/Kg) and promethazine were given before surgery. Thiopentone induced anesthesia was maintained with oxygen nitrous oxide and halothane. The anaesthetist performed intraoperative non-invasive monitoring. 3rd generation-ceftriaxone 1 gm was injected before induction of anaesthesia. Laparoscopic cholecystectomy was completed with the standard four port technique and CO_2 pneumoperitonium, pressure was maintained at/or less than 11 mm Hg throughout procedure.

After complete haemostasis of gall bladder bed, Surgicel strip was inserted through the umbilical port over the gall bladder bed. Next 0.5% (1 mg/kg) bupivacaine was instilled over the surgicel with the help of aspiration needle through the mid clavicular port. The port site infiltration was accomplished by using 0.5% bupivacaine with three- fifth of it infiltrated at the umbilical and epigastric ports and remaining two fifths at anterior axillary and mid clavicular ports.

Rescue analgesia (Intramuscular ketorolac 30 mg) was administered if VAS is higher than 40 mm. Post operatively, pain was assessed by VAS 4, 8 and 24 hours after surgery. After 24 hours –pain was not too much to give rescue analgesia. Some patients complained of mild pain in the umbilicus that was managed by giving paracitamol. The method using the VAS had been explain to all patients preoperatively. The VAS is a 100mm horizontal scale representing varying intensities of pain with end points labeled as "no pain" and "worst possible pain" (Figure 1).

The character of the pain also was assessed simultaneously. Visceral pain was defined as deep seated pain located in the right hypochondrium or referred to the shoulder. Parietal pain was defined as incisional pain located at trocar sites that increased with greater intra-abdominal pressure.

Results

The 50 patients varied in age from 34 to 55 years (41.52). The two groups did not differ in mean age, body weight or ASA status. Classical biliary dyspeptic symptoms were observed in 36% of patients. The duration of symptom varied from one month to two years. None of the patients had a history of jaundice or gall stone pancreatitis. Previously 30% patient had undergone either lower abdominal or extra abdominal surgery. There was no significant difference in the duration of surgery among the two groups (Table 1).

The mean VAS score for Group A was significantly less than that of Group B at 4 hours (P=0.0001) without any rescue analgesia (Table 2). Patient in Group B required rescue analgesia. In the same way VAS score at 8 hours Group A was significantly better than Group B (without any rescue analgesia) and in Group B pain was less because of rescue analgesia (P-0.0001).

But in VAS score at 24 hours there was no difference between two Groups (P-0.751) because no effect of local anesthesia-persist in Group A. Both groups were same. Some patients complained of mild pain at port sites that was managed by giving mild analgesic. 12% of patients of Group A did not feel any pain at all.

The overall incidence of visceral, shoulder and parietal pain in our study were 60%, 50% and 68% respectively (Table 3). However the incidence of visceral, shoulder and parietal pain in Group A was less than in Group B.

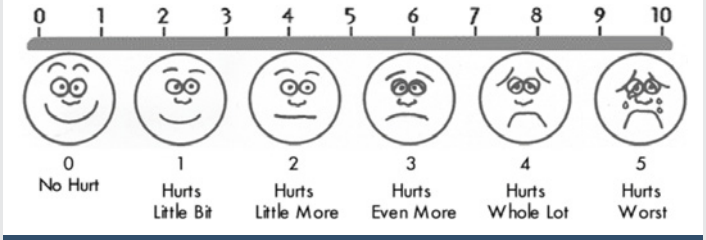

Figure 1: Pain assessment tool (Wong-Baker FACES scale).

Table 1: Demographic characteristics of study subjects.

Variables		
Age (years)	Mean±SD: 41.58±5.50	Range: 34-55
Sex (Male:Female)	n=13:37	Ratio: 26%:74%
ASA status	ASA 1: 32 patients (64%)	ASA 2: 18 patients (36%)
Dyspeptic syndrome	18 patients	36%
Previous extra-biliary surgery	15 patients	30%
Duration of operation (minutes)	Mean±SD: 33.92±6.87	Range: 22-48

Table 2: Multiple comparisons of visual analog scores (VAS) for both groups.

Dependent variable	Group	n	Mean±SD	Mean difference	SE	P value
VAS-4 hours	A B	25 25	4.04±0.93 4.20±0.89	3.04	0.14 0.16	0.0001
VAS-8 hours	A B	25 25	2.44±0.51 3.96±0.61	1.52	0.10 0.12	0.0001
VAS-24 hours	A B	25 25	1.16±0.69 4.12±0.83	0.008	0.19 0.17	0.751

Table 3: Incidence of pain after Laparoscopic cholecystectomy ±up to 24 hours post-operative period.

Group	No of Patient	No/insignificant Pain- n-(%)	Visceral n-(%)	Shoulder n-(%)	Parietal n-(%)
A B	25 25	06 (24%) 00 (0%)	7 (28%) 23(92%)	5 (20%) 20(80%)	10 (40%) 24 (96%)
Total	50	6 (12%)	30(60%)	25 (50%)	34 (68%)

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Discussion

Pain after Laparoscopic cholecystectomy can be divided in to three component namely of visceral, shoulder and parietal pain with different intensities and time courses [5]. In early postoperative period- visceral pain accounts for most of the pain experienced after surgery [5]. This may be attributable to greater surgical handling of the dissection area. Visceral and parietal pain tends to decrease in 24 to 48 hours [6]. We have observed a significant reduction of pain after port sites and gall bladder bed-instillation with 0.5% bupivacaine. This effect is indirectly reflected progressive reduction in VAS score in 4, 8 and 24 hours after surgery than control subjects (Group-B).

Number of clinicians have used intra peritoneal bupivacaine to minimize pain in post laparoscopic cholecystectomy. Some series have reported benefit in terms of pain reduction [7-9], whereas others have reported no benefit [10]. The inefficacy could be attributable to the lower concentration of bupivacaine in addition to the site and method of its administration.

Joris et al. [11], and others [12], irrigated 0.125% to 0.15% bupivacaine under the right dome of diaphragm. In their opinion, the local anesthetic tented to get deposited away from the gall bladder bed because of intraperitoneal flux. Hence the bupivacaine was not effective in relieving post-operative pain.

Similarly, Schute et al. [13], instilled bupivaine at the surgery site through the mid clavicular port with the help of low pressure spraying devices. In their opinion, the flows towards the diaphragm because of continuous anatomic influx. Hence, its contact with gall bladder bed is short lived, resulting in its inefficiency in reducing post-operative pain.

We soaked the surgical with 0.5% bupivacaine and kept in the gall bladder bed. This ensured that the drug remained in contact with row gall bladder bed longer time. This appears to be the reason for this efficacy in our study.

In our study, surgicel soaked with the 0.5% bupivaine (1mg/kg) in the gall bladder bed also was effective in reducing the shoulder pain. Gharaibeh, Jaberi [14], and Chundrigar et al. [15], also have reported a significant reduction in post laparoscopic cholecystectomy shoulder pain with peritoneal bupivacaine administration.

The incidence and intensity of post-operative visceral/ shoulder/parietal pain was significantly less in study group than in control group.

Conclusion

Incidence and intensity of post-operative visceral/ shoulder/ parietal pain was significantly less in study group than that in control group. Intensity of postoperative pain over 4 and 8 hours as assessed by VAS score which was also significantly low in study group.

References

1. Nguyen NT, Perez RV, Fleming N, Rivers R, Wolfe BM (2002) Effect of prolonged pneumoperitoneum on intraoperative urine output during laparoscopic gastric bypass. J Am Coll Surg 195: 476–483. Link: https://goo.gl/nnt3RP
2. Nishio S, Takeda H, Yokoyama M (2009) Changes in urinary output during laparoscopic adrenalectomy. Br J Urol Intl 83: 944–947. Link: https://goo.gl/cioWHv
3. McDougall EM, Monk TG, Wolf JS Jr, Hicks M, Clayman RV, et al. (2006) The effect of prolonged pneumoperitoneum on renal function in an animal model. J Am Coll Surg 182: 317–328. Link: https://goo.gl/0XVoSj
4. Shuto K, Kitano S, Yoshida T, Bandoh T, Mitarai Y, et al. (2005) Hemodynamic and arterial blood gas changes during carbon dioxide and helium pneumoperitoneum in pigs. Surg Endosc 9: 1173–1178. Link: https://goo.gl/9enSCQ
5. Joris J, Thiry E, Paris P, Wecrts J, Lamy M (1995) Pain after Laparoscopic cholecystectomy: Characteristics and effect of intraperitoneal bupivacaine. Anesth Analg 81: 379-384. Link: https://goo.gl/ELr2Ho
6. Meaoric A, Jurisic T, KoglerMajeric V, Sustic A (1997) Intraperitoneal bupivacaine for analgesia after laparoscopic cholecystectomy. Acta Anaesthesiol Scand 41: 193-196. Link: https://goo.gl/y8WTP3
7. Lepner u, Goroshima J, SamarutalJ (2003) Post-operative pain relieve after Laparoscopic cholecystectomy: A randomized double blind clinical trial. Scan J sorg 92:121-124. Link: https://goo.gl/FwxyUI
8. Sarac AM, Aktan AO, Baykan N, Yagan C, yalin R (1996) The effect and timing of local anaesthesia in laparoscopic cholecystectomy. Surg Laparosc Endosc 6: 362-366. Link: https://goo.gl/ykP8sK
9. Tsimoyianis EC, Glartzouris G, Lekkas ET, Siakas P, Jaburin M, et al. (1998) Intraperitonial normal saline and bupivacaine infusion for reduction of Postoperative painafter laparoscopic cholecystectomy. Surg Laparosc Endosc 8: 416-420. Link: https://goo.gl/dkCs5L
10. Radimaker BM, Kalkman CJ, Odoom JA, Wit LD, Ringer J (1994) Intraperitoneal local anaesthetics after Laparoscopic Cholecystectomy: effect on postoperative pain, metabolic response and lung function. Br J Anaesth 72: 263-266. Link: https://goo.gl/jsS1h2
11. Scheinin B, Kellokumpu I, Lindgren L, Haglund C, Rosenberg PH (1995) Effect of intraperitoneal bupivacaine on pain after laparoscopic cholecystectomy. Acta Anaesthesiol Scand 39:195-198. Link: https://goo.gl/PXHFRj
12. Schulte-Steinberg H, Weninger E, Jokisch D, Hofstetter B, Misera A, Lenge V (1995) Intraperitoneal versus intrapleural morphin or bupivacaine for pain after laparoscopic cholecystectomy. Anaesthesiology 82: 634-640. Link: https://goo.gl/ZwoDsI
13. Ure BM, Troidl H, Spangenberger W, Neugebaner E, Lefering R, et al. (1993) pre-incisional local anaesthetic with bupivacaine and pain after laparoscopic cholecystectomy: a double blind randomized clinical trial. Surg Endosc 7: 482-488. Link: https://goo.gl/iAIyx5
14. Gharaibeh KI, Ai Jahar TM (2000) Bupivacaine instillation into gall bladder bed after laparoscopic cholecystectomy: does it decrease shoulder pain? J Laparoendosc Adv Surg Tech A 10: 137-709. Link: https://goo.gl/aGbPze
15. Chundrigar T, Morris R, Hedges AR, Stamatakis JD (1993) Intraperitoneal bupivacaine for effective pain relief after laparoscopic cholecystectomy. Ann R Coll Surg Engl 75: 437-439. Link: https://goo.gl/w7aTM9

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