



RESEARCH ARTICLE

EFFECT OF BUPIVACAINE SOAKED ABSORBABLE GELATIN SPONGE PLACED OVER GALLBLDDER BED ON POSTOPERATIVE PAIN, AFTER LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Introduction: Our study is about effectiveness of 0.5% bupivacaine soaked absorbable gelatin sponge placed in gallbladder bed, on postoperative pain management after laparoscopic cholecystectomy.

Material and methods: 60 cases of laparoscopic cholecystectomy were divided in two groups. In one group 0.5% bupivacaine soaked absorbable gelatin sponge was placed in gallbladder bed in other group normal saline soaked absorbable gelatin sponge was placed in gallbladder bed. Postoperative pain was assessed using VAS scale.

Result and conclusion: placement of absorbable gelatin sponge soaked with bupivacaine at the gall bladder bed and infiltrating bupivacaine at the trocar insertion sites helps in reduction of immediate postoperative pain after laparoscopic cholecystectomy.

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INTRODUCTION

Laparoscopic cholecystectomy has established itself as the gold standard treatment for symptomatic gallstone disease (Tan et al., 2006; Zehetner et al., 2007). Many centers around the world are performing laparoscopic cholecystectomy in daycare setup (Topal et al., 2007). Postoperative pain management is very important component of daycare surgery. Postoperative pain prolongs hospital stay in operated patients. Many intraoperative techniques for reducing postoperative pain have been described. These technical developments are aimed at reducing health care expenditure without compromising the quality of care (Boothe et al., 1998; Fleisher, 1999). Our study is about one such intraoperative technique which is supposed to reduce postoperative pain. In this research we have studied the effect of 0.5% bupivacaine soaked absorbable gelatin sponge in gallbladder bed, on postoperative pain management after laparoscopic cholecystectomy.

MATERIALS AND METHODS

60 patients of symptomatic gallstone disease, who were to undergo interval cholecystectomy, were included in this study.

Patients having acute cholecystitis, laparoscopic converted to open surgery, not giving consent of participation and <12 years of age were excluded from this study. Study population was divided into two groups of 30 each: group A (bupivacaine soaked gelatin sponge kept in gallbladder bed), group B (normal saline soaked gelatin sponge kept in gallbladder bed). Following anaesthetic assessment, patients were kept for surgery. All patients received same anaesthesia. Creation of CO2 pneumoperitoneum (upto 14 mm Hg of intra-abdominal pressure used) was achieved in all patients and laparoscopic cholecystectomy using the 4-port technique was performed. In bupivacaine group an 80mm x 50mm strip of absorbable gelatin sponge soaked in 0.5 % bupivacaine placed at the gall bladder bed, and members of saline group had a gelatin sponge soaked in normal saline placed at the gall bladder bed. Both groups received 0.5 % bupivacaine infiltration at the port sites after the procedure (to minimize the local pain). All the operations were performed by same team of surgeons. Both groups received similar postoperative analgesia (i.e. tramadol 100 mg at 8 h intervals) during the study period. Postoperatively, the character of pain was noted, and its relief was assessed with visual analog scale (VAS) scoring at 1, 2, 4, 8, 12 and 24 hours after the procedure.

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Data obtained was recorded in data collection sheet. Statistical analysis was done using spss software.

RESULTS

Total 60 patients were included in the study. Out of that 42 were female and 18 were male. Mean age in males was 35.5 years (range 30-46 years) while mean age in females was 28.8 years (range 23-60 years). All patients were divided in two groups; bupivacaine group (n=30) receiving bupivacaine soaked absorbable gelatin sponge in gallbladder bed and normal saline group (n=30) receiving normal saline soaked absorbable gelatin sponge in gallbladder bed. In NS group mean age of 30 patients was 33.2 years (standard dev. 4.83, range 23-42 years). Mean duration of surgery in this group was 61.3 minutes (standard dev. 22.10, range 30-120 minutes). In bupivacaine group 30 patients had mean age of 33.13 years (standard dev 7.80, range 23-60 years). Mean duration of surgery in this group was 57.83 minutes (standard dev 22.53, range 30-120 minutes).

Table 1. mean age and mean duration of surgery in both the study groups

	Normal saline group	Bupivacaine group
Age	33.2	33.13
Duration of surgery	61.30	57.83

Pain score (VAS) was recorded in both the groups postoperatively at 1hour, 2hours, 4 hours, 8 hours, 12 hours and 24 hours. Mean VAS score in both the groups is illustrated in the table below. It is noteworthy that pain score a 1st hour and 2nd hour in bupivacaine group was significantly lower than NS group. Although pain score was less in bupivacaine group compared to NS group on other times also but the difference was statistically not significant.

Table 2. pain score (VAS) in both the study groups at different times postoperatively. Their difference is assessed by student's t-test

	1 hour	2 hours	4 hours	8 hours	12 hours	24 hours
Normal Saline group	4.2	3.6	2.08	2.12	1.07	0.52
Bupivacaine group	2.1	1.8	2.06	2.08	1.04	0.44
Difference (p-value)	<0.0001	<0.0001	0.700	0.44	0.56	0.126

Mean hospital stay in NS group was 3.6 days and in bupivacaine group 3.4 days. The difference was statistically not significant

Table 3. mean hospital stay in both the groups. Difference in mean calculated by student's t-test

	Mean Hospital stay (in days)
Normal Saline group	3.6
Bupivacaine group	3.4
Difference (p-value)	0.700

DISCUSSION

The visual analogue scale (or VAS) is a psychometric response scale which can be used to quantify the amount of pain experienced by a patient (Cormack, 1988). Many methods have been tried to decrease the postoperative pain after

laparoscopic cholecystectomy, like low-pressure pneumoperitoneum, gasless technique, local anesthetic infiltration, saline washout and instillation of a local anesthetic agent in the subdiaphragmatic area (Bisgaard *et al.*, 1999; Wills, 2000). In study done by Gerardo Castillo-Garza *et al.*, it was found that irrigation with bupivacaine at the surgical bed during laparoscopic cholecystectomy will significantly lower the intensity of postoperative visceral pain (Gerardo *et al.*, 2012). In our research we have studied the effect of 0.5% bupivacaine soaked absorbable gelatin sponge in gallbladder bed, on postoperative pain. In our study bupivacaine was injected at the trocar insertion sites as a routine procedure in both the control and case cohorts. Patients in both the treatment groups were comparable in terms of distribution of age and sex. In terms of duration of surgery no significant difference was present in both the groups. This study demonstrates that in laparoscopic cholecystectomy, intraperitoneal administration of bupivacaine soaked gelatin sponge in gall bladder bed is effective in reducing pain in the early postoperative period. Despite the reduction in pain in the bupivacaine group there was no overall difference in and hospital stay.

Conclusion

Result from this study shows that placing a gelatin sponge soaked with bupivacaine at the gall bladder bed and infiltrating bupivacaine at the trocar insertion sites is a safe method and it helps in reduction of immediate postoperative pain after laparoscopic cholecystectomy. Use of this technique may help in carry out laparoscopic cholecystectomy as a day care surgery in our setup.

REFERENCES

- Adams WJ, Avramovic J, Barraclough BH. 1991. Wound infiltration with 0.25 % bupivacaine is not effective for postoperative analgesia after cholecystectomy. *Aust N Z J Surg.* 61:626-630. doi: 10.1111/j.1445-2197.1991.tb00304.x.
- Bisgaard T, Klarskov B, Kristiansen VB, Callesen T, Schulze S, Kehlet H, Rosenberg J. 1999. Multiregional local anesthetic infiltration during laparoscopic cholecystectomy in patients receiving prophylactic multimodal analgesia: a randomized, double-blind placebo-controlled study. *Anesth Analg.* 89:1017-1024.
- Boothe P, Finegan BA. 1998. Changing the admission process for elective surgery: an economic analysis. *Can J Anaesth.* 42:391-4.
- Fleisher LA, Yee K, Lillemoe KD, *et al.* 1999. Is outpatient laparoscopic cholecystectomy safe and cost effective? A model to study transition of care. *Anesthesiology.* 90:1746-55.
- Fleisher LA, Yee K, Lillemoe KD, Talamini MA, Yeo CJ, Heath R, Bass E. *et al.* 1999. Is outpatient laparoscopic cholecystectomy safe and cost-effective? A model to study transition of care. *Anesthesiology.* 90(6):1746-1755. doi: 10.1097/0000542-199906000-00033
- Gerardo Castillo-Garza, MD, José A. Díaz-Elizondo, MD, Carlos A. Cuello-García, MD, and Oscar Villegas-Cabello, MD. 2012. Irrigation with Bupivacaine at the Surgical Bed for Postoperative Pain Relief After Laparoscopic Cholecystectomy. *JLS.* Jan-Mar; 16(1): 105-111. doi: 10.4293/108680812X13291597716221 PMID: PMC3407430

- Joris J, Thiry E, Paris P, Weerts J, Lamy M. 1995. Pain after laparoscopic cholecystectomy: characteristics and effect of intraperitoneal bupivacaine. *Anesth Analg.*, 81(2):379–384.
- Mc Cormack HM, Horne DJ, Sheather S. 1988. Clinical applications of visual analogue scales: a critical review. *Psychol Med.*, 18:1007–19.
- Michaloliakou C, Chung F, Sharma S. 1996. Preoperative multimodal analgesia facilitates recovery after ambulatory laparoscopic cholecystectomy. *Anesth Analg.*, 82(1):44–51.
- Mouton WG, Bessel JR, Otten KT, Madden GJ. 1999. Pain after laparoscopy. *Surg Endosc.* 13:445–448. doi: 10.1007/s004649901011.
- Prasad A, Foley RJ. 1996. Day case laparoscopic cholecystectomy: a safe and cost effective procedure. *Eur J Surg.*, 162(1):43–46.
- Reddick EJ, Olsen DO. 1990. Outpatient laparoscopic laser cholecystectomy. *Am J Surg.*, 160(5):485–487. doi: 10.1016/S0002-9610(05)81009-8. discussion 488-489.
- Tan JT, Suyapto DR, Neo EL, Leong PS. 2006. Prospective audit of laparoscopic cholecystectomy experience at a secondary referral centre in South australia. *ANZ J Surg.*, 76(5):335–338. doi: 10.1111/j.1445-2197.2006.03721.x.
- Timoyiannis EC, Glantzounis G, Lakkas ET, Siakas P, Jabarin M, Tzourou H. 1998. Intraperitoneal normal saline and Bupivacaine infusion for reduction of postoperative pain after laparoscopic cholecystectomy. *Surg Laparosc Endosc.*, 8(6):416–420. doi: 10.1097/00019509-199812000-00003.
- Topal B, Peeters G, Verbert A, Penninckx F. 2007. Outpatient laparoscopic cholecystectomy: clinical pathway implementation is efficient and cost effective and increases hospital bed capacity. *Surg Endosc.* 21(7):1142–1146. doi: 10.1007/s00464-006-9083-x.
- Verma GR, Lyngdoh TS, Kaman L, Bala I. 2006. Placement of 0.5 % Bupivacaine soaked Srgicel in the gall bladder bed is effective for pain after laparoscopic cholecystectomy. *Surg Endosc.* 20(10):1560–4. doi: 10.1007/s00464-005-0284-5.
- Wills VL, Hunt DR. 2000. Pain after laparoscopic cholecystectomy. *Br J Surg.*, 87:273–284. doi: 10.1046/j.1365-2168.2000.01374.x.
- Zehetner J, Shamiyeh A, Wayand W. 2007. Lost gallstones in laparoscopic cholecystectomy: all possible complications. *Am J Surg.*, 193(1):73–78. doi: 10.1016/j.amjsurg.2006.05.015.