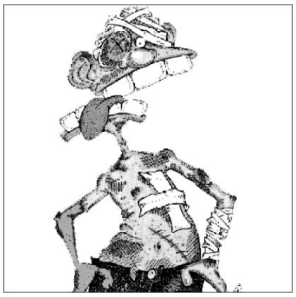
ORIGINAL **PROF-856**
(CLINICAL PRACTICE ARTICLE)

LOCAL ANAESTHETICS INFILTRATION IN WOUNDS



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ABSTRACT ... szhlib@hotmail.com. **Objective:** To compare the effects of analgesia with local infiltration of bupivacaine in postoperative wounds with control group, which had no infiltration. **Study Design:** Prospective comparative study. **Setting:** At surgical unit-1, Sheikh Zayed Medical College/Hospital Rahim Yar Khan. **Period:** From 1st July 2003 and 30th June 2004. **Material and Method:** Two groups of 100 patients each were formed to underwent abdominal surgery during the study. In study group, 0.25% bupivacaine was infiltrated in wound margins before applying skin stitches and results were compared with the control group in terms of post operative pain free interval, mobilization time, average hospital stay and complication rate. **Results:** In study group, post operative analgesic demand was delayed for 5.3 hours as compared to 2.7 hours in control group. 75mg of total analgesic was used as compared to 175mg in control group and the average mobilization time of patients in study group was 8 hours as compared to 14 hours after operation in control group. Average hospital stay and complication rate were less in study group with only 1% of patients in study group had transient CNS toxic symptoms due to bupivacaine. **Conclusions:** Wound infiltration with a local anaesthetic is a simple, safe and effective method to provide early post operative wound analgesia.

INTRODUCTION

Control of pain has always been a concern for surgeons particularly the incisional pain after abdominal operations[1]. The amount of pain may vary according to

the magnitude of operative trauma, duration of surgery and type of incision.

Gentle handling of tissues, expedient surgery and adequate muscle relaxation help lessen the severity of postoperative pain. The patient's personality affects pain perception and response to analgesic drugs. Although the patients vary in their threshold for pain, in about 75% of surgical patients postoperative incisional pain is sufficiently severe to warrant relief[2].

Primary objective of pain relief is humanitarian but simultaneously, a good pain relief has equally good psychological and physical outcome for patients. Such attempts are rewarded by better recovery from surgical procedure and early mobilization of patients to prevent complications like sputum retention, atelectasis, decreased cough and respiratory infections.

The release of catecholamines and other stress hormones by postoperative pain cause tachycardia and hypertension which can lead to myocardial ischemia. Reduced mobility on account of pain may increase the incidence of deep vein and pulmonary thromboembolism. Other complications include urinary retention, restlessness, anxiety, and impaired sleep.

The various approaches to pain management include use of oral and injectable NSAIDS, intra muscular opiods, intravenous infusion of opiods, patient controlled analgesia, spinal opiate analgesia, and local anaesthetic techniques including nerve block and wound infiltration.

Current study is to evaluate the postoperative pain management by local anaesthetic wound infiltration. This method was considered for clinical use after the success of surgery under local anaesthesia[3]. Whereas systemic analgesia can alleviate pain, local techniques can eliminate it[2]. Despite many workers have reported the efficacy of local infiltration of wounds[4,5], the technique has not yet been in common practice.

We have conducted a prospective clinical trial to evaluate the effects of bupivacaine (0.25%) infiltration into and around the wound in various abdominal surgical procedures.

MATERIAL AND METHODS

Study Design: Prospective comparative study.

Sample size: Two groups of 100 patients each.

Sampling Technique:
Random purposive sampling. Time Period and premises: At surgical unit-1, Sheikh Zayed Medical College / Hospital Rahim Yar Khan between 1st July 2003 and 30th June 2004.

Inclusion criteria:
Most of the cases that under went elective or emergency abdominal surgery during the aforesaid period were included in this study. Clean, clean contaminated, and contaminated operations were included.

Exclusion Criteria:
Dirty cases were excluded from the study. Any patient who denied informed consent was also excluded.

Procedure:
The patients were randomly placed in two groups depending on whether or not local anaesthetic was used for postoperative wound infiltration and no consideration was given to age, sex, and provisional diagnosis for inclusion of any patient to any group. In group 1 (Study Group) the wound and surrounding tissues were infiltrated with 20 ml of 0.5% bupivacaine, diluted with equal amount of normal saline reducing the concentration to 0.25%, before applying skin stitches.

All these patients were informed about the procedure to gain their confidence and consent. Every alternative patient was included in group II (Control Group), in which no bupivacaine infiltration was done.

A proforma was designed to collect the data in both groups. Assessment of pain was based on usual analogue scale. This is a 10 cm long paper strip, marked

"no pain" at one end and "worst pain I ever felt" on the other, and the patient is asked to mark on the strip according to intensity of pain he had been experiencing.

The patients were advised to ask for analgesics whenever he felt like, however a complaint of pain was scrutinized to evaluate whether the pain was from the incision or due to some other reason. Only the incisional pain was considered for the study. Requirement for analgesics after surgery was monitored in both groups. The analgesic used in all cases was injectable diclofenac sodium. Time of administration of first analgesic used was noted in all the cases.

Sex	Group-1	Group-11
Male	68	65
Female	32	35

RESULTS

Table-I. Age and sex distribution		
Age Limits	**Group-1**	**Group-11**
Minimum	15 Years	14 Years
Maximum	70 Years	62 Years
Average Age	32 Years	31 Years

Table-II. Types of operations performed during the study		
Procedure	**Group-1**	**Group-11**
Appendicectomy	39	36
Laparotomy	20	22
Cholecystectomy	16	20
Inguinal Herniorrhaphy	15	15
Mayo's Repair	04	03
Pyelolithotomy	06	04
Elective	47	48
Emergency	53	52

Patients' mobilization time was recorded. Average hospital stay of two groups was calculated. The incidence of relevant post-operative complication like wound infection, chest infection and CNS toxicity of local anaesthetics was recorded.

Table-III. Timing of first operative complaint of pain		
First post operative pain free Interval	**Group-1**	**Group-11**
Minimum	2.4 hours	20 minutes
Maximum	24 hours	20 hours
Average	5.3 hours	2.7 hours

Table-IV. Average Hospital stay		
Procedure	**group-1**	**Group-11**
Inguinal hernia repair	18 hours	24 hours
Appendicectomy	28 hours	40 hours
Mayo's Repair	36 hours	48 hours
Cholesystectomy	48 hours	60 hours
Laparotomy	120 hours	155 hours
Group Average	60 hours	85 hours

Table-V. Average dose of Analgesia		
Average dose	**Group-1**	**Group-11**
Analgesia in first 24 hrs	90 mg of Diclofenac Sodium	175 mg Diclofenac Sodium
Cases requiring no analgesia	08	Nil

Table-VI. Patient's mobilization time		
Mobilization time	**Group I**	**Group II**
Minimum	03 hours	5.5 hours
Maximum	40 hours	45 hours
Average	08 hours	14 hours

Table-VII. Incident of relevant complications		
Complications	**Group-1**	**Group-11**
Wound infection	06	07
Fever	05	04
Chest infection	02	06
CNS toxicity	01	Nil

DISCUSSION

As the art of surgery is progressing, there have been new developments in postoperative pain relief techniques. One of these developments is infiltration of wounds at the time of closure with locally acting anaesthetic agents[5]. It has also been noticed that with bupivacaine there is a period of analgesia that persists after the return of sensations during which need for strong analgesia is reduced[6].

Local infiltration of wounds does not prevent inflammatory response of clean surgery[7], so it has been widely employed in combination with general anaesthesia to control postoperative pain[8]. In a large series using bupivacaine infiltration after appendectomy, 23% patients needed no postoperative analgesia while 71% required only simple analgesic like paracetamol[9]. In an other study, the average dosage of post operative analgesic required was 66.6 mg of pethidine per patient in first 24 hours in patients with bupivacaine infiltration, compared with 163 mg/patient for those without any infiltration[10]. This compares well with our study where average dosage of analgesics was 75 mg/patient in the study group compared with 175 mg of Diclofenac Sodium in control group. After major abdominal surgery the demand of post operative analgesia is also delayed after local infiltration. In one report delay in the demand for post operative analgesia was 165-225 minutes after bupivacaine infiltration[10].

This is well reflected in our study where analgesia was required after 5.3 hours (mean duration) in the study group as compared to 2.7 hours in the control group. Similarly patients were mobilized much earlier than those on parenteral analgesia alone. In a report of C-Section, patients were sufficiently pain free to breast feed their babies[5].

This shows early return to normal activity and is also reflected in this study where the average mobilization time in the study group was 8 hours as compared to 14 hours in control group. Moreover average hospital stay of patients was also considerably reduced in our study with a difference of 24 hours between group averages of study and control groups.

CONCLUSION

This study has shown that wound infiltration with local anaesthesia is a simple, safe and effective method to provide extended post operative wound analgesia.

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