INTRAPERITONEAL INSTILLATION OF BUPIVACAINE FOR ANALGESIA AFTER LAPAROSCOPIC STERILISATION: A CASE CONTROL STUDY

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ABSTRACT

Efficacy of intraperitoneal instillation of bupivacaine at the time of laparoscopic sterilisation to provide postoperative analgesia was studied. In 40 patients undergoing laparoscopic sterilisation 0.75ml/kg of 0.125% bupivacaine was instilled in the peritoneal cavity (Group-I) and another 40 patients where the topical anaesthetic was not used served as controls (Group-II). Pain scores on Visual Analog Scale (VAS) were studied 1,2,4,6 and 24 hours after surgery in both groups. Mean VAS score was significantly lower in Group-I, 1,2 and 4 hours after surgery ($p<0.05$). Rescue analgesia was required in 20% patients of Group-I compared to 52.5% in Group-II which is definitely significant ($p<0.001$). No complications or side effects were noted in the bupivacaine treated group. This simple technique provides excellent analgesia in the immediate postoperative period following laparoscopic sterilisation which will go a long way in enhancing patient satisfaction and motivating other eligible clients to come forward for laparoscopic sterilisation.

MJAFI 1999; 55 : 291-292

KEYWORDS: Bupivacaine; Laparoscopic sterilisation; Postoperative analgesia.

Introduction

In a developing country where population control is a priority, every effort should be made to make the family planning methods more acceptable. In India laparoscopic sterilisation is a very popular method of family planning. In our hospital 122 laparoscopic sterilisations were performed in 1997 of a total of 569 gynaecological operations accounting for 21.4% of total surgical work load. Laparoscopic operations outnumbered postpartum sterilisations. Yet, the fear of operation and the pain associated with operative interference deters many eligible clients from undergoing sterilisation operations.

Traditionally, opioids or NSAIDs, in various combinations, have been used for postoperative analgesia after laparoscopic sterilisation [1]. For more than a decade, there has been world-wide interest in application of local anaesthetic to the tubes to reduce the postoperative pain. [2-5]. We decided to study the efficacy of intraperitoneal instillation of bupivacaine at the time of laparoscopic sterilisation by comparing with those where local anaesthetic was not used.

Material and Methods

The study was conducted at Military Hospital, Bareilly from January 1998 to November 1998. Eighty patients undergoing laparoscopic sterilisation were included in the study and were randomly assigned to two groups-Group I where bupivacaine instillation was done and Group II where the local anaesthetic was not used. The subjects in both groups were matched with respect to age, parity and socio-economic background. Women with pre-ex-

isting pelvic diseases were not included in the study.

All the patients were familiarised with 10 cm Continuous Visual Analogue Scale (VAS) for pain assessment during the preoperative workup. A standard anaesthesia technique was used. Inj Atropine 0.6 mg IV, Inj Ketamine 2mg/kg IV followed by Inj Diazepam 0.1 mg/kg were used in all patients. Karl Storz laparoscope with a channel for ring applicator was used. 0.125% solution of bupivacaine was prepared and kept ready before the operation.

Direct trocar entry through the umbilicus was followed by pneumoperitoneum with nitrous oxide, visualisation of pelvic organs and application of Silastic rings, one on each tube. The ring applicator was then withdrawn, pneumoperitoneum deflated and 0.75 ml/kg of 0.125% bupivacaine solution was instilled in the pelvis through the laparoscope. Then, the laparoscope was carefully withdrawn and the skin port closed with one stitch of No.2-0 silk. Duration of surgery was recorded in both groups. Pain perception was recorded 1,2,4,6 and 24 hours after the surgery. VAS scores were compared statistically using "Z" test. Number of patients requiring analgesia in the first two hours were compared by the X-square test. Rescue analgesia was administered to those with VAS >5.0, in the form of pentazocine 30 mg IM. NSAIDs were administered orally for mild pain.

Results

Patient characteristics, age and weight are compared in Table 1 and are found to be well matched. Duration of surgery was marginally shorter in the control group though it was not found to be statistically significant (Table 1).

TABLE 1
Patient characteristics and procedure time

Characteristic	Group I	Group II
Age (years)	28.1 (23-36)	28.5 (24-35)
Wt (kg)	49.5 (32-70)	46.8 (35-58)
Duration of surgery (min)	10.3 (06-17)	09.1 (05-15)

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TABLE 2
Distribution of pain score and mean pain score

Time after surgery (hours)	Group I			Meanpain score	Group II			Meanpain score
	Noofpatients with VAS score				Noofpatients with vas score			
	1-3	4-6	7-10		1-3	4-6	7-10	
1	30	09	01	3.7	16	15	09	5.8
2	29	09	02	3.8	16	14	10	6.1
4	35	05	—	2.8	19	18	03	5.1
6	38	02	—	2.7	26	13	01	3.8
24	40	—	—	1.5	39	01	—	1.9

Pain scores on VAS (Table 2) were significantly lower in bupivacaine treated group ($P<0.05$) till 4 hours after operation. At 6 hours, though the mean VAS score for group I patients appeared lower than group II, it was not statistically significant ($p=0.1$). 24 hours after the surgery, the VAS scores were almost similar in the two groups. Rescue analgesia within two hours of surgery was required in 8 patients (20%) in the study group as compared to 21 patients in the control group (52.5%). This was definitely significant (Table 3).

TABLE 3
Requirement of rescue analgesia within 2 hours

No of patients	Group I (n=40)	Group II (n=40)
Requiring analgesia	08	21
Not requiring analgesia	32	19

No adverse effects were noted in any case where bupivacaine was instilled. At the time of discharge, the patients of the bupivacaine treated group reflected greater degree of satisfaction with the procedure.

Discussion

Laparoscopic sterilisation is a commonplace procedure, often performed on day care basis. Though a short procedure, it is often associated with significant post-operative morbidity. Pain and nausea are the most common symptoms encountered in the immediate post-operative period. Factors which contribute to the development of pain include: irritation of the peritoneal surfaces with the residual gas, operative manipulation of the uterus, tubes and ovaries [6], tubal spasm due to application of rings and Trendelenberg position. Opioids and NSAIDs are routinely used to provide analgesia but the former may, in fact, worsen the nausea.

Search for effective analgesia following laparoscopic sterilisation has centred around the topical use of local anaesthetics which percolate around the pelvic organs and anaesthetise the subserosal sensory nerve endings. Smith et al [3] used infiltration of mesosalpinx with lignocaine which resulted in successful post-operative analgesia. However, the procedure carries

the risk of broad ligament hematoma formation. Hence, mesosalpinx block is likely to have its limitations. Wheatley et al [4] used concentrated bupivacaine around the tubes and achieved satisfactory post-operative analgesia. Kelly [5] used large volumes of diluted bupivacaine with modest analgesic effect in a double blind placebo controlled study, which reduced the opioid consumption in the treated group.

In our study, we have found excellent analgesia in the immediate postoperative period (upto 4 hours) using diluted bupivacaine. The need for the rescue analgesia with opioids in the first two hours decreased significantly and the overall patient satisfaction in the treated group was much higher.

The technique is inexpensive, simple, safe, not time consuming and reduces the work load of nursing staff in postoperative wards. This technique would prove useful in providing effective analgesia in the immediate postoperative period after laparoscopic sterilisations and make the procedure more attractive to the clientele.

REFERENCES

1. Edwards ND, Barclay K, Catling SJ, et al. Day care laparoscopy: a survey of postoperative pain and an assessment of the value of diclofenac sodium. *Anaesthesia* 1991;46:1077-80.
2. McKenzie R, Phitayakorn P, Uy NTL, et al. Topical etidocaine during laparoscopic tubal occlusion for postoperative pain relief. *Obstet Gynaecol* 1996;67:447-9.
3. Smith BE, Mc Pherson GH, De Jonge M, et al. Rectus sheath and mesosalpinx block for laparoscopic sterilisation. *Anaesthesia* 1991;46:875-7.
4. Wheatley SA, Millar JM, Jadad AR. Reduction of pain after laparoscopic sterilisation with local bupivacaine: a randomised, parallel, double blind trial. *Br J Obstet Gynaecol* 1994;101:443-6.
5. Kelly MC. An assessment of the value of intraperitoneal bupivacaine for analgesia after laparoscopic sterilisation. *Br J Obstet Gynaecol* 1996;103:837-9.
6. McKenzie R. Postoperative pain after laparoscopy. *Anaesthesia* 1989;44:450.