

# OUT PATIENT LAPAROSCOPY ANALGESIC EFFICACY OF BUPRENORPHINE

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## SUMMARY

100 cases were randomly allocated to two groups A & B, 50 cases in each group. Group "A" received 2 µg/kg of buprenorphine (Temgesic) I/V. While group "B" received 10 mg valium + 5 mg Haloparidol (Sereance) I/V. Both groups were given peri-umbilical block with 10ml of 2% Xylocaine. Analgesic efficacy and recovery profile of group "A" was compared with that of group "B". Group "A" showed statistically better results in terms of both intra-operative analgesia and degree to reflex rigidity of abdominal muscles as well as in post-operative grading to pain and recovery profile. None of the patients showed any sign or symptom suggestive of respiratory embarrassment.

## INTRODUCTION

Laparoscopy has established its place as a useful tool both for diagnostic and therapeutic purposes. The increasing popularity has added to the already overburdened workload which in addition to the economic constraints, staff and bed shortage has encouraged the concept of out patient laparoscopy.

An ideal anaesthetic for day surgery is yet to be discovered.<sup>1</sup> General anaesthesia with or without endotracheal intubation has its own hazards.<sup>2</sup> We have been doing laparoscopies under local peri-umbilical block and intravenous sedation both for diagnostic purpose as well as for tubal ligations. The pain relief especially during the procedure was not upto the mark and so was the patients co-operation, making the procedure difficult and at times dangerous.

The purpose of the present study was to find out the efficacy of buprenorphine, a strong narcotic analgesic, in providing pain relief during the operation or post-operatively. An attempt was made to compare

buprenorphine with the control group using Valium and Sereance intravenously.

## MATERIAL AND METHODS

This was a double blind, case control prospective study. 100 patients were randomly allocated to two groups. Group A received 2 µg/kg buprenorphine intravenously. Group B (control group) received 10 mg diazepam plus 5 mg haloparidol intravenously. Both the groups received peri-umbilical block with 10 ml of 2% xylocaine. None of them was given any pre-medication. A single puncture technique was used giving 1 cm incision just below the umbilicus 10-15 minutes after admission of analgesia. Pneumo-peritoneum was achieved with 2 litres carbon dioxide.

Patients selection criteria was strictly similar for both groups. All patients were admitted as day cases for diagnostic laparoscopy, chromopertubation and pre-menstrual biopsy for primary infertility. Any history of past hospitalization for medical or surgical ailment or history of any chronic medical problem was an indication for exclusion from the trial.

All the procedures were undertaken by the same surgeon and the post-operative assessment done by an independent observer, both being kept blind to the patients grouping. The patients were not aware of the drugs being given.

**Intra-Operative Assessment Comprised two Separate Parts**

- a. Pain assessment:
  - Grade-0: No pain,
  - Grade-1: Mild pain, patient screaming.
  - Grade-2: Moderate pain, patient crying.
  - Grade-3: Severe pain, patient struggling.
- b. Assessment of reflux rigidity of abdomen.
  - Grade-0: No reflux rigidity, trocar insertion easy.
  - Grade-1: Mild rigidity, insertion easy.
  - Grade-2: Moderate rigidity, insertion difficult.
  - Grade-3: Marked rigidity, insertion virtually impossible.

Post-operative assessment was made at 30 minutes, 60 minutes and 120 minutes and comprised of 3 separate parts.

- a. Pain assessment using coin scale.
  - 0/100: No pain.
  - 25/100: Mild pain.
  - 50/100: Moderate pain.
  - 75/100: Severe pain.
  - 100/100: Unbearable pain.

The pain was regionalized as pain in operating site, shoulder pain, pelvic pain, any other pain.

- b. Recovery from sedation using 4 points scale.

- 0 No sedation (alert).
  - 1 Mild (occasionally drowsy; easy to arouse).
  - 2 Moderate (frequently drowsy; easy to arouse).
  - 3 Severe (somnolent, difficult to arouse).
- c. Assessment of nausea/vomiting.
    - 0 None.
    - 1 Nauseated.
    - 2 Occasional vomiting.
    - 3 Frequent vomiting.

Timing of discharge was left to the observer, depending upon overall well-being of the patient. Pulse and respiratory rate and blood pressure measurements were made at regular intervals, till the time of discharge, minimum 2 hours post-operatively.

**RESULTS**

There was significant difference in the perception of pain intra-operatively between the two groups (Table-1). 38 out of 50 (76%) of the patients in group "A" had only mild pain while 40 out of 50 patients (80%) complained of moderate pain in group "B". Reflex rigidity of the abdominal wall (Table-2) was moderate in 47 out of 50 (94%) of group "B" with difficulty during insertion of trocar compared with 41 out of

**TABLE - 1**  
**INTRA-OPERATIVE PAIN**  
**ASSESSMENT**

Grade	A N = 50		B N = 50	
	No.	%	No.	%
0 No pain	2	4	0	0
1 Mild	38	76	2	4
2 Moderate	10	20	40	80
3 Severe	0	0	8	16

TABLE - 2  
REFLEX RIGIDITY OF ABDOMINAL  
WALL

Grade	A N = 50		B N = 50	
	No.	%	No.	%
0 None	8	16	0	0
1 Mild	41	82	1	1
2 Moderate	1	2	41	82
3 Marked	0	0	8	16

50 (82%) of group "A" patients who had only mild rigidity with easy insertion of trocar followed by good visualization of pelvic viscera and almost no interference by the patient. 8 of the group "B" patients felt severe pain during trocar insertion with marked reflex rigidity making the procedure very difficult.

The post-operative pain relief is also marked in case of group "A" as evident in Table-3. 37 out of 50 (74%) of group "B" patient however, still complained of moderate pain at the end of 120 minutes.

Majority of group "A" patients (86%) had grade-1 drowsiness compared to grade-2 drowsiness observed in 42 out of 50 (84%) of group "B" patients at the time of discharge (Table-4). However both the groups were easy to arouse and well oriented in time and space.

39 out of 50 (76%) of the patient in group "A" felt no nausea compared to 22 out of 50 (44%) in group "B". Only 2 out of 50 (4%) had occasional vomiting from group "A" compared to 4 out of 50 (8%) in group "B" (Table-5).

## DISCUSSION

Laparoscopy under local anaesthesia and intravenous sedation on out patient basis, though not very popular<sup>3</sup>, has still its proponents around the world.<sup>4</sup> Procedures like ZIFT (Zygot Intra Fallopiantube Transfer) have been undertaken laparoscopically under local anaesthesia augmented by intravenous analgesia, instead of intravenous sedation.<sup>5</sup>

In our own unit, we have been using laparoscope under local anaesthesia and intravenous sedation both for diagnostic purposes as well as for tubal ligation. Our own experience with this approach has been satisfactory in cases of laparoscopic tubal ligation where the patients are grand multiparas with thin abdominal wall, diverication of recti and thin rectus sheath thus offering negligible resistance to the trocar entry and the whole procedure requiring less than 5 minutes. This was however not the case with diagnostic laparoscopies for infertility. The patients with this problem are mostly nulligravidas with thick, muscular abdominal wall and tough rectus sheath. Making a trocar

TABLE - 3  
POST-OPERATIVE PAIN ASSESSMENT

Coin Scale	30 Minutes		80 Minutes		120 Minutes	
	A N = 50	B N = 50	A N = 50	B N = 50	A N = 50	B N = 50
0/100	5 (10%)	0 (0)	32 (64%)	0 (0)	43 (86%)	0 (0)
25/100	29 (58%)	3 (6%)	15 (30%)	9 (18%)	6 (12%)	11 (22%)
50/100	12 (24%)	36 (72%)	3 (6%)	39 (78%)	1 (2%)	37 (74%)
75/100	4 (8%)	10 (20%)	0 (0)	2 (4%)	0 (0)	2 (4%)
100/100	0 (0)	1 (4%)	0 (0)	0 (0)	0 (0)	0 (0)

TABLE - 4  
RECOVERY PROFILE FROM  
SEDATION

Grade	A N = 50		B N = 50	
	No.	%	No.	%
0 (Alert)	3	6	0	0
1 (Occasional drowsiness)	43	86	8	16
2 (Frequent drowsiness)	4	8	42	84
3 (Somnolent)	0	0	0	0

puncture in such cases without adequate analgesia, at times becomes impossible. Moreover complete inspection of pelvic viscera is time consuming and requires adequate analgesia. Using general or epidural anaesthesia especially for day cases is not practicable in our set up where there is scarcity of both trained personnel as well as facilities in face of heavy workload, mostly of emergency nature. The only practical alternative was to look for an effective systemic analgesic to augment local anaesthesia.

Buprenorphin (Temgesic) is one of the strongest narcotic analgesics that is easily available in the market, has a reasonable price and is safe when used in recommended dosage i.e, 2 µg/kg. The only draw back ascribed to this drug is its tendency to cause respiratory depression which when occurs,

TABLE -5  
POST-OPERATIVE NAUSEA/  
VOMITING

Grade	A N = 50		B N = 50	
	No.	%	No.	%
0	39	76	22	44
1	9	18	24	48
2	2	4	4	8
3	0	0	0	0

TABLE - 6  
RELATIVE COST/PATIENT

Valium 10 mg + Serenace 5 mg	Buprenorphine (Temgesic) 100-150 µg
Rs. 23	Rs. 10-15
Rs. 5	
Rs. 28	

is Naloxon resistant. We specifically looked for this side effect in our study and found no such incidence with the dose that we used. Respiratory depression may, however be seen in 0.5% of the cases on inhalational anaesthetics.<sup>6</sup>

### CONCLUSION

Buprenorphine (Temgesic) is an effective analgesic both for intra-operative as well as for post-operative pain relief. In recommended dosage i.e., 2 µg/kg, it is safe and also cost effective compared to the combination of valium (10 mg) + serenace (5 mg) especially for out patient laparoscopy.

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