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For further information about this article or if you need reprints, please contact:

Azar Danesh Shahraki
House No. 130, Tohid Street,
Near Day Laboratory, Isfahan,
Postal Code 8173714551,
Islamic Republic of Iran

The Effect of Premedication Oral Naproxen on Post Operative Pain in Diagnostic Laparoscopy

¹A.D. Shahraki, ²J.H. Akhtar, ³R. Talakob and ⁴E. Moazam

The goal of this study is to investigate the effect of preoperative Naproxen on prevention of postoperative pain and analgesic consumption in females undergoing diagnostic laparoscopy. This is a randomized, double-blinded clinical trial. One hundred females (ASA I and II, aged 16-45 years old) scheduled for elective diagnostic laparoscopy under general anesthesia were selected by using a computer generated random list patients and were allocated into two equal groups. The patients received either 1 g Naproxen orally or a placebo tablet 90 min prior to anesthesia. Pain scores were significantly lower in Naproxen group compared with the placebo group, during the first 6 h postoperatively. There was also a significant difference between two groups in the analgesic consumption during 24 h after operation ($p = 0.004$). Preoperative oral Naproxen in diagnostic laparoscopy is effective for post operative pain relief and reduction of analgesic consumption.

Key words: Pain measurement, post laparoscopy, naproxen, premedication, analgesia

¹Department of Obstetrics and Gynecology, Al Zahra General Hospital, Isfahan University of Medical Sciences, Isfahan, Iran

²Isfahan University of Medical Sciences, Isfahan, Iran

³Department of Anaesthesiology, Al Zahra General Hospital, Isfahan University of Medical Sciences, Isfahan, Iran

⁴Department of Community Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

INTRODUCTION

Laparoscopy is the standard method for the diagnosis of gynecological problems, because no other imaging technique provides the same degree of sensitivity and specificity (Malcolm *et al.*, 2000). Laparoscopic procedures offer the benefits of lower cost, faster recovery and less morbidity, but many women experience considerable pain and delay in return to regular activity (Malcolm *et al.*, 2000).

Pain is the most common complication of laparoscopy, therefore the reduction of it is considered as a major factor in this procedure (Namnoum and Murphy, 2003).

In an attempt to attenuate the pain after laparoscopic procedures, a number of therapeutic measures have been used with varying degrees of success e.g., Narcotics, NSAIDS (Alexander, 1997). Preoperative administration of NSAIDS may be helpful in reducing post operative pain and opiate requirement (Rasanayagam and Harrison, 1996).

Premedication should be adapted to the duration of the laparoscopy and to the necessity for quick recovery in the out patient setting.

In recent years, the effect of Naproxen has been studied on postoperative pain, but the results were different (Rasanayagam and Harrison, 1996; Jean and Joris, 2005; Dunn *et al.*, 1995; Limb *et al.*, 1995; Comfort *et al.*, 1992). Naproxen is a propionic and derivative that has anti-inflammatory, analgesic and antipyretic activities. It is used to relieve mild-to moderate post operative pain as well as postpartum pain, primary dysmenorrheal, orthopedic pain, headache and visceral pain associated with cancer. It appears to be absorbed completely from the GI after oral administration. Peak concentration in plasma occurs within 2 to 4 h after a 500 mg dose. More than 99% of this drug is bound to serum albumin and the mean plasma half-life is approximately 14 h (Van *et al.*, 1993).

Dunn *et al.* (1995) reported that the preoperative Naproxen did not significantly influence postoperative pain scores, but was associated with a reduction in parenteral opioid administration (Jean and Joris, 2005). While Van *et al.* (1993) concluded that preoperative Naproxen (500 mg) contributed to postoperative pain prevention, reduced hospital stay and consumption of analgesics and shortened the period of post-discharge abdominal discomfort (Comfort *et al.*, 1992).

Using Naproxen compared to alternatives can lead to reducing cost and adverse effects.

The goal of this study is to investigate the effect of preoperative oral Naproxen on postoperative pain prevention, analgesic consumption and recovery in females undergoing diagnostic laparoscopy.

MATERIALS AND METHODS

This is a prospective, randomized, double-blinded clinical trial study. Following institutional approval and informed patient consent, in Alzahra Hospital and Isfahan Infertility Center from Oct. 2006 till 2007, 100 females (ASA I and II, aged 16-45 years old) scheduled for elective diagnostic laparoscopy under general anaesthesia who had not any allergy to NSAIDS, sign of psychosomatic disorders, addiction to opioids, peptic ulcers or gastrointestinal bleeding were included.

By using a computer generated random list patients were allocated into two equal groups. Age was controlled between groups.

In the preoperative waiting room, 90 min prior to anaesthesia the patients received either 1 g Naproxen orally with 100 mL water (N group) or a placebo tablet with the same amount of water (P group).

The medications were given by a nurse blinded as to the premedication administered and so were all involved physicians and patients.

Anaesthesia was induced by fentanyl 2 mg kg⁻¹, thiopental sodium 5-7 mg kg⁻¹ and Atracurium 0.1 mg kg⁻¹ for tracheal intubation and was maintained with morphine 0.1 mg kg⁻¹, O₂ and isoflurane. Neuromuscular blocked was reversed with Neostigmine 2.5 mg and Atropine 1.25 mg by the attending anaesthesiologist. There after the patient was extubated. Two patient need to laparotomy and excluded from study.

Patients were transferred to the recovery area and were given morphine 2.5 mg IV if the nursing staff deemed it necessary. Repeated dose of 2.5 mg were given until the pain score with visual analogue scale (VAS) 1-10, was <4 or the patient was comfortable.

After 30-45 min patients were transferred to the ward. The total dose of morphine and the duration of stay in recovery were also recorded.

Pain scores were obtained every 2 h in the first 8 h and at 16 and 24 h postoperatively. According to pain severity (VAS_{≥3}). Patients were given NSAIDS (Ibuprofen tablet or Indomethacin suppository) as an analgesic and the total dose of analgesics were recorded. Patients were discharged after 24 h and the time interval to return to normal activity and the side effects of NSAIDS if any such as epigastric pain and GI bleeding were asked by calling or visiting them.

Statistical evaluations were performed using the SPSS statistical package program and by using t-test. Statistical significance was set at p<0.05.

RESULTS

Ninety eight patients completed the protocol and follow-up period. Clinical characteristics of patients in each group are presented in Table 1.

Table 1: The mean of age and weight of patients in two groups

Characteristics	Group N (n = 49)	Group P (n = 49)
Age (year)	32.11±3.16	31.19±4.04
Weight (kg)	62.09±9.00	60.04±9.00

Table 2: Visual Analogue Scales (VAS) at defined time points in two groups

Patients	Time (h)						
	0	2	4	6	8	16	24
Group N	6.20±1.116	6.50±2.39	5.25±2.16	6.42±2.11	5.62±2.11	4.65±1.11	3.11±1.16
Group P	6.97±1.310	6.86±3.11	6.63±1.96	6.61±3.11	5.81±3.11	6.61±1.64	3.16±1.11
p-value	0.041*	0.034*	0.031*	0.032*	0.082	0.36	0.54

Data are expressed as Mean±SD, *Significant difference, 0 h: Patient room or discharge from recovery room

Table 3: Comparison of the analgesic consumption 24 h after laparoscopy

Patients	1st 8 h (mg)		8-16 h (mg)		16-24 h (mg)	
	Indom	Ibopru	Indom	Ibopru	Indom	Ibopru
Group N	223	456	115	460	0	416
Group P	264	492	119	832	0	464

p = 0.0041 between groups

Table 4: Recovery duration, duration of bed rest and side effects

Characteristics	Group N	Group P
Duration of recovery (min)	54.16±11.19	55.12±16.11
Duration of bed rest (day)	2.12±0.94	2.20±0.970
Complications		
Nausea and vomiting	20.84%(5)	25.0%(6)
Epigastric pain	37.5%(9)	33.0%(6)
Constipation	37.5%(9)	45.83%(11)

p>0.05; Data are expressed as Mean±SD or number of patients and percentages

There were no significant differences in age, weight and height between group (Table 1).

Pain scores were significantly lower in Naproxen group compared with the placebo group, during the first 6 h postoperatively (Table 2).

Naproxen was effective in reducing pain scores in studied group. There was also a significant difference between two groups in the analgesic consumption during 24 h after operation and the p-value was 0.004.

Group N received 338 mg Indometacin and 1332 mg Ibuprofen versus group P received 383 mg Indomethacin and 1788 mg Ibuprofen. Naproxen was effective in reducing pain scores in studied group. Comparison of the analgesic consumption 24 h after laparoscopy shown in Table 3.

There were no significant differences in the mean duration of the recovery and the mean duration of bed rest after discharge between two groups (Table 4).

The incidence of nausea and vomiting, epigastric pain and constipation were similar in both groups (Table 4).

There was not any difference between two groups. No other adverse effects related to the naproxen were found.

DISCUSSION

Pain after diagnostic laparoscopy is complex and has distinct components, shoulder tip pain caused by diaphragmatic irritation or stretching following CO₂ insufflations and superficial wound pain as a result of skin incision (Alexander, 1997; Smith *et al.*, 1991).

We studied 1 g Naproxen given approximately 90 min before surgery to see if it would reduce pain after diagnostic laparoscopy. We found better pain scores in Naproxen group, during the first 6 h post operatively (but not after 6 h). This is consistent with Comfort *et al.* (1992) study which studied the effect of Naproxen premedication in post operative tubal ligation with laparoscopy (Comfort *et al.*, 1992). Naproxen premedication reduces postoperative tubal ligation pain.

But present result were different with Dunn *et al.* (1995) finding who didn't find better pain scores despite the large dose of Naproxen given at an appropriate time (Dunn *et al.*, 1995).

In present study Naproxen in addition to reduction of pain in the first 6 h, decrease the post operative analgesia requirements till 24 h after diagnostic laparoscopy. This would be beneficial to the nursing and medical staff in a busy day-unit as analgesic administration is time-consuming and also to the patients who may be ready for discharge earlier.

Recently, in three studies the analgesic effect of naproxen compared with the other analgesics.

Michael *et al.* (2006) showed that the new NSAID'S (Azd 3582) has a similar analgesic efficacy as equimolar doses of Naproxen in dental surgery.

In other study, Chan *et al.* (2005) also showed that Naproxen was superior in analgesic effect than Lumiracoxib in a fewearly time after total knee or hip arthroplasty.

Korpela *et al.* (2007) compared Naproxen and Paracetamol as a premedication in children,s adenoidectomy and they found that Naproxen reduces the need for rescue analgesia mor than Paracetamol.

CONCLUSION

This study focused on the role of preoperative oral Naproxen for post operative pain relief and reduction of analgesic consumption. It is concluded that Naproxen decrease the post operative laparoscopic pain and post operative analgesic requirements and no increased analgesic side effect, therefore we recommend the use of this premedication in out patient diagnostic laparoscopy.

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