



PONV;

DEXAMETHASONE EFFECT ON POST OPERATIVE NAUSEA AND VOMITING IN LAPAROSCOPIC CHOLECYSTECTOMY

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INTRODUCTION

Nausea and vomiting after operation has been reduced from 70% to 25% by using various pharmacological agent. This vomiting leads to serious problem such as aspiration, dehydration and above all incisional disruption. This experience some one regard as more distressing rather than operation itself⁶⁻⁹.

Nausea and vomiting is common among patient undergoing operation due to procedure itself, anaesthetic drugs, using morphine derivative for pain, hemodynamic un-stability and certain psychological problems. There are certain factor which predispose nausea and vomiting like children, female and people having history of nausea and vomiting during recovery.^{18,20}

The purpose of this study was to see the effect of dexamethasone before surgery on nausea and vomiting in patient having Laparoscopic cholecys-

ABSTRACT... Background: Postoperative nausea and vomiting is reduced if inj Dexamethasone is given preoperatively in patient undergoing Laparoscopic Cholecystectomy. The aim of this prospective randomized, controlled trial was to look into effectiveness of dexamethasone before surgery may improve nausea, vomiting after surgery in patients undergoing laparoscopic cholecystectomy. **Study Design:** Prospective randomized study. **Setting:** Department of Surgery, King Edward Medical University, Lahore - Pakistan. Period: Nov 2010 to April 2012. **Methods:** 138 Patients with Laparoscopic Cholecystectomy were randomized to receive 08 mg Dexamethasone (n=66) or placebo (n=72) intravenously before surgery. Seven patients were excluded on account of already on steroid treatment due to various reason. Vomiting and nausea were seen in next 24 hours after operation. Dexamethasone has minimal side effect after single dose administration. Six patients (12%) has nausea and vomiting in treatment group while 26 (47%) in the control group ($p<0.001$). Patient having dexamethasone, five (10%) need antiemetics as compare to 24 (44%) of those receiving placebo ($p<0.001$). **Conclusion:** Single dose of Inj Dexamethasone given preoperatively reduce nausea and vomiting markedly in Laparoscopic Cholecystectomy and may be routinely used in Laparoscopic procedure.

Key words: Dexamethasone, Vomiting, PONV

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tectomy

MATERIAL AND METHODS

Between Nov 2010 to April 2012, 138 patients with elective laparoscopic cholecystectomy were randomized in prospective study to see the effect of Dexamethasone versus placebo.

Patients excluded from the study with BMI > 30, Hepatic and endocrine problem, patients using psychiatric drugs and patient with empyema gall bladder.

Eight patients were excluded from the study due to reason mentioned above. About 138 patient (93.24) included in study were randomized into treatment group and control group having dexamethasone and saline respectively.

Regarding age, BMI, ASA and duration of operation, both group were comparable as shown in Table-I.

Group	Treatment Group n:66	Control Group n: 72
Age (years)	52.3 +/- (05) {mean}	49.6 +/- (06) {m}
Sex (male/female)	13/53	09/63
ASA (I-II)	61-5	67-05
BMI (Body Mass Index)	25.8 (7) {mean}	24.3 (8){mean}
Duration of Surgery (Mints)	48 (35 to 90)	45 (38 to 98)
Duration of Anaesthesia (Minutes)	75 (52 to 120)	77 (68 to 130)

Table-I. Patients Characteristics

Treatment and control group together having 22 male and 116 female. The BMI in both group was comparable about 25.8 in dexamethasone group and 24.3 in saline group. The operation time was 48 minutes and anaesthesia time was about 74 minutes.

As mentioned above in Table I, that patients characteristics in both group was quite comparable without any significant statistical difference. We used Hassan open technique for pneumoperitoneum with four port approach. Before insertion of ports we infiltrate 0.25% bupivacaine local anaesthetic agent at site of ports. At the end of procedure we make sure that all the gas from abdomen has been evacuated. We do not use nasogastric tube except 07 cases where stomach need to be deflated for better approach to Calot triangle.

Both group of patients have general anaesthesia inducted with thiopental and suxamethonium used to for intubation.

We give preoperative analgesia to all patient with inj. diclofenace sodium 75 mg deep intramuscular before half an hour shifting to operation theatre and 7.5 mg inj madazolam. Postoperatively patient were put on Tab. Paracetamole or inj Diclofenace sodium or both depending upon the severity of pain.

Patients kept in hospital for 24 hours until they are hemodynamically stable and vital signs within normal range. As per study patient were watch for nau-

sea and vomiting and requirement of antiemetic.

The nausea and vomiting was recorded at 2, 4, 12 and 24 hours after surgery. We use VAS (Visual analogue scale) system from zero to ten with no nausea to sever respectively. Pain was also recorded at the same period as for nausea and vomiting. Pain from incisional area, visceral or shoulder was included in record on VAS.

STATISTICAL ANALYSIS

A sample size of 140 patients was predetermined with an alpha error of 0.05 and a beta error of 0.95. The X², Student's t (two-tailed unpaired) and Mann Whitney tests were used to analyse proportions, parametric and nonparametric data, respectively. The absolute risk reduction and 95% confidence interval (C.I.) were estimated. p< 0.050 was considered statistically significant.

Results

In dexamethasone group, 09 patients (13.63%) and 33 (45%) in the saline group had nausea (p= 0.027) (Table-II); the mean (s.d.) VAS were 03 (1.3) and 3.8 (1.8), respectively (p=0.203).

In treatment group eight patients (12.12) had vomiting versus 34 (47.22) patients of placebo group. (p= 0.018).

Absolute Risk Reduction for both symptom (nausea and vomiting) was 0.18 (96% CI.0.03 to 0.34) When comparing treatment group. There was significant reduction of nausea and vomiting episode versus placebo group. As a whole eleven patients (16.66) of dexamethasone group has nausea and vomiting while 38 (52.77) patients in placebo group (p=0.001). The ARR for postoperative nausea and vomiting was 0.32 (95% CI 0.15 to 0.49

There was no difference in pain score between two groups at 1, 6, 12 and 24 hours' time. (Fig-1 and 2) About 32% from treatment group and 12% from placebo group required inject-able analgesia in hospital (p= 0.052). Eight patients (12.2%) from dexamethasone group and 34 patients (47.22%) from placebo group need antiemetic for control of vomiting. (p=0.001). ARR 0.34 (95% c.i).

Treatment Group		Placebo Group	
Nausea	09 (14)	33 (45)	0.028
Vomiting	08 (12)	34 (47)	0.028
Postoperative nausea and vomiting	11 (17)	38 (53)	0.001
Metoclopramide required	08 (12)	34 (47)	<0.001
Diclofenace Sodium required	21 (31)	07 (13)	0.058

Table-II. Effect of 8 mg dexamethasone given before surgery in patients undergoing laparoscopic cholecystectomy.
Values in parentheses are percentages.

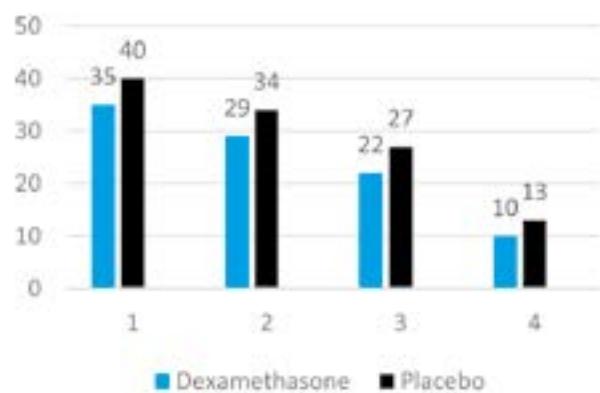


Figure-1: White column depict placebo and Black dexamethasone group wall of graph showed line to depict 0–10 VAS pain score

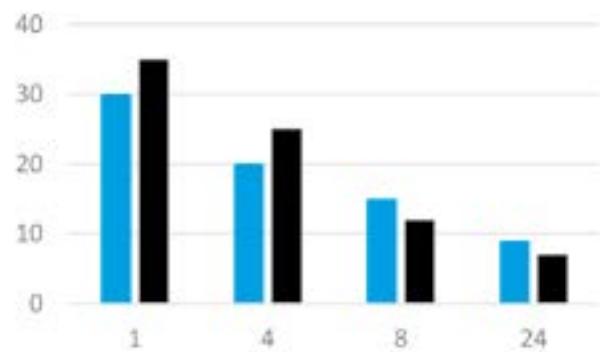


Figure-2: White column depict placebo and Black to dexamethasone group Wall of graph showed VRS pain score from 0–4.

The average hospital stay was about one day in both groups ($p=0.321$) and no untoward effect has been noted in patients given dexamethasone inj. In our study no conversion was made in either

group.

Only five patients in treatment group get bleeding per operative and control with packing while control group 7% gallbladder perforation took place. ($p=0.429$). Abdominal distension was noted in five cases of treatment group while only one patient got abdominal pain in placebo group. ($p=0.890$). About two patients from treatment group and four from placebo group readmitted to hospital for abdominal distension and symptomatic treatment was given and patients were discharge on very next day.

DISCUSSION

This randomized and prospective study shows that preoperatively given inj dexamethasone reduce the incidence of nausea and vomiting however, there is no significant difference in postoperative pain in either group.

Dexamethasone was used and reported its effectiveness in reducing nausea and vomiting in cancer chemotherapy in 1981.⁶⁻⁸ There are many study which showed glucocorticoids are better antiemetic than metoclopramide.⁵ Recently many studies showed that dexamethasone is effective in reducing nausea and vomiting in many open and laparoscopic abdominal procedure.^{4,5,10-12, 15}

Many studies have shown that dexamethasone alone^{7,8} or in combination with other drugs (granisetron, ondansetron, tropisetron, dolasetron)^{6,12,16-19} is effective in reducing postoperative nausea and vomiting and antiemetic requirement after laparoscopic cholecystectomy. The control of pain and use of analgesics following laparoscopic cholecystectomy are controversial.^{7,17} However, in this study it showed that severity of pain and its control does not have specific presentation. As Laparoscopic procedure is a gold standard for symptomatic gall stones however, postoperative nausea and vomiting has been reported with an incidence of 53 to 75 percent.⁷

The incidence of nausea and vomiting after laparoscopic cholecystectomy in present study is about 53% in placebo group versus 17% in treat-

ment group. Postoperative pain in both group was comparable as it has been seen in various clinical studies.⁷⁻¹⁷ However, in other clinical trial conflict has been noted.⁸ The anti-inflammatory effect of dexamethasone may have analgesic effect but masked due to use of different opioids drug during anaesthesia.

Steroids usually take two to three hours to take its action. Dexamethasone inj was given ninety minutes before the start of operation so that it takes its time to be effective after two hours. How dexamethasone decrease the incidence of nausea and vomiting is not very well defined. But speculation that effect may be by inhibition of prostaglandin synthesis and opioid release.²³

Postoperative nausea and vomiting in Laparoscopic cholecystectomy in not entirely clear; prolonged carbon dioxide insufflation,²⁴ use of nitrous oxide^{9,10,25,26} the utilization of slightly hypoxic mixtures during anaesthesia^{9,10} have been suggested as potential risk factors. Anaesthesia and its drug also increase the risk of nausea and vomiting as opioid use definitely do so.²⁷

No other complications like postoperative wound infection or impaired healing associated with use of dexamethasone in this trial. The results are similar as reported in literature.²⁸ Recent meta analysis on postoperative nausea and vomiting has shown no increase in infectious or other complication by using single dose of dexamethasone.²⁹ So using single dose of dexamethasone 8mg intravenously support the safety of patient.

SUMMARY

Dexamethasone improve the surgical outcome by reducing disabling symptoms of nausea and vomiting without apparent side-effects. However, there is no evidence in reduction of postoperative pain or analgesic requirements in this trial.

So preoperative dexamethasone may be used as a routine in patients undergoing elective laparoscopic cholecystectomy.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Zia Ullah	Data collection, Literature search	
3	Ahsan Naseem	Data analysis, critical revision, Literature search	