

Gender Difference And Quality Of Recovery After General Anaesthesia

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Citation

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Abstract

BACKGROUND: The influence of gender on post operative complications following anaesthesia has been of interest. The incidence of the various complications among gender may vary due to the differing hormonal and psychological makeup. This was our interest in this study. **METHOD:** We studied 380 adult patients ASA 1 and ASA 2 undergoing elective inpatient surgery. Post operative complications were assessed from the recovery room until the third day after surgery. Data were analysed using paired student t test. Associations were described using risk ratios and 95% confidence intervals. **RESULTS:** The results showed that women were more likely to have postoperative nausea and vomiting while being slower to return to baseline health status. **CONCLUSION:** We conclude that though women have a poorer quality of recovery than men following general anaesthesia.

INTRODUCTION

The potential for both the surgical procedure and anaesthesia to produce post-operative complications is well known. They may lead to patient distress, dissatisfaction and increased health care costs. There is a need then to define patient factors which may increase the likelihood of such complications. The current study was designed to examine the influence of gender on post operative outcomes in our environment.

METHODS

Following approval from the hospital ethics committee and informed consent, three hundred and eighty adult ASA 1 and 2 patients undergoing general surgical procedure using the general anaesthetic were recruited for the study (200 men and 180 women). Exclusion criteria were known psychiatric, neurological or liver disease, regular use of sedative medicants, alcohol/ drug abuse, malnutrition and obesity (BMI values <18 or >33), patients with impaired cardiac, renal, or hepatic function, chronic opioid use and women of postmenopausal age.

Standard monitoring was commenced on arrival to the theatre. Premedication consisted of glycopyrrolate (0.008mg/kg) and fentanyl 1-2 μ g/kg. The patients were induced with intravenous propofol, 1-2mg/kg over a period of 30 seconds till loss of eyelash reflex. Suxamethonium, 1.5-2mg/kg was used to facilitate orotracheal intubation and

anaesthesia was maintained with propofol infusion, (140 μ g/kg/min) and fentanyl (0.02 μ g/kg/min). Muscle relaxation was achieved with 0.1mg/kg pancuronium bromide. Anaesthesia was tailored downwards by 50% towards the end of the surgery and completely discontinued at the placement of the last suture. This was charted as the beginning of recovery. Recovery times were measured from the time of complete discontinuation of anaesthesia to eye opening. Eligibility for PACU discharge was met when the patient was awake and orientated, had stable vital signs, and pain and emesis were controlled. A modified Aldrete score ≥ 9 was used to define eligibility for PACU discharge. These times were recorded by PACU nursing staff unaware of the study. All patients were followed up for three days after the surgery by an experienced anaesthetist who was blind to the study. The postoperative variables studied include postoperative nausea and vomiting, headache, backache, and sore throat.

The data was entered in statistical package SPSS-17.0 for windows (SPSS Inc, Chicago, IL). Differences between women and men were examined using paired Student's t-test, or analysis of variance, as appropriate.

RESULTS

380 patients were enrolled and took part in the study. Most of the operations were upper and lower abdominal surgeries (Table 1). There was no difference between the

genders with regard to age, ASA classification, or drug dosages (Table 2). The results showed that postoperative complications occurred more significantly in the women than the men (Table 3). The women were more likely to have a history of postoperative nausea and vomiting from the recovery room up to the 3rd postoperative day (Risk ratio 1.48, 1.65, 1.94, 2.05 and p values 0.001, <0.001) (Table 3). The women also had a higher incidence of headache (Risk ratio 1.2, 1.51, 1.2 and p values 0.077, 0.003, 0.23) significant on the 2nd post operative day; as well as sore throat (Risk ratio 0.96, 0.99, 1.0 and p value 1.0, 0.7, 0.55 respectively) and back pain (Risk ratio 1.5, 1.2, 1.3 and p value 0.003, 0.43, 0.055 respectively).

Figure 1

TABLE 1

| SURGERY | | |
|------------------|------|--------|
| | MALE | FEMALE |
| UPPER ABDOMINALS | 71 | 50 |
| LOWER ABDOMINALS | 96 | 57 |
| BREAST | | 59 |
| LIMBS | 20 | 11 |
| OTHERS | 13 | 3 |

Figure 2

Table 2: DEMOGRAPHIC DATA

| | MALE | FEMALE | P VALUE |
|-------------------------------|----------------|----------------|---------|
| AGE | 35 | 36.5 | <0,05 |
| WEIGHT | 79 | 65 | <0.001 |
| FENTANYL LOAD | 150 | 150 | <0.05 |
| Fentanyl infusion (µg/kg/min) | 0.02 µg/kg/min | 0.02 µg/kg/min | 0.73 |
| PROPOFOL INFUSION | 140µg/kg/min | 140µg/kg/min | |
| TOTAL DOSE OF PROPOFOL(mg) | 900 | 870 | <0.001 |
| DURATION OF ANAESTHESIA(min) | 73 | 72 | <0.001 |

Figure 3

TABLE 3: POSTOPERATIVE COMPLICATIONS

| | MEN | WOMEN | RISK RATIO(95% CI) | P VALUE |
|------------------|-----|-------|--------------------|---------|
| PONV | | | | |
| In recovery room | 30 | 54 | 1.48 | 0.001 |
| Day 1 | 100 | 160 | 1.65 | <0.001 |
| Day 2 | 30 | 54 | 1.94 | <0.001 |
| Day 3 | 17 | 36 | 2.05 | <0.001 |
| HEADACHE | | | | |
| Day 1 | 60 | 63 | 1.2 | 0.077 |
| Day 2 | 30 | 45 | 1.51 | 0.003 |
| Day 3 | 17 | 27 | 1.2 | 0.23 |
| BACKACHE | | | | |
| Day 1 | 17 | 45 | 1.50 | 0.003 |
| Day 2 | 30 | 36 | 1.20 | 0.43 |
| Day 3 | 17 | 27 | 1.30 | 0.055 |
| SORE THROAT | | | | |
| Day 1 | 80 | 72 | 0.96 | 1.00 |
| Day 2 | 40 | 36 | 0.99 | 0.70 |
| Day 3 | 30 | 27 | 1.00 | 0.55 |

DISCUSSION

Ideally, recovery from anaesthesia should be a smooth, uneventful event. However, for a significant number of patients, this process can be complicated. These complications may be from respiratory, cardiovascular or neurological causes. We studied four common postoperative complications in our centre and found that the women in our study had more postoperative complications than the men.

Nausea and vomiting are among the most unpleasant experiences associated with surgery and one of the most common reasons for poor patient satisfaction rating in the postoperative period.¹ Postoperative nausea and vomiting (PONV) was noted to be significantly more common in the female gender at all times following surgery in our study. A validated predictive scoring system for PONV has identified four primary risk factors for PONV in patients receiving balanced anaesthesia among which is the female gender which agrees with our findings. A study by Stadler et al reported that female gender, non-smoking status, and general anaesthesia increase both PONV; whereas a history of migraine and the type of surgery tend to influence nausea only.²

Endotracheal intubation is a major cause of airway trauma, resulting in postoperative sore throat (POST) with reported incidence of 21–65%.^{3,4} In a study by Macario et al, POST was rated by patients as the eighth most adverse effect in the postoperative period.⁵ Aetiological factors proposed for POST include patient sex, age, gynaecological surgery, use of suxamethonium, large tracheal tube, cuff design, and intracuff pressure.^{6,7,8} In a study by Canbay et al, no correlation was observed between pain, age, gender, smoking habits, duration of surgery and intubation.⁹ We found no significant difference between males and females with respect to sore throat.

Our women had more postoperative backache which may be attributed to the increased lumbar lordosis in women.¹⁰ Women have a higher incidence of migraine and tension headaches generally which is a risk factor for postoperative headache.

These observed differences remain poorly understood in their underlying mechanisms. A possible role of sex hormones validated by studies correlating recovery times and overall quality of recovery with measurement of female sex hormone levels may be involved.

In conclusion, this study found that gender is an independent factor influencing quality of recovery from general

anesthesia: the women suffered more postoperative complications than the men.

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