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Spinal Anaesthesia VS General Anaesthesia for Gynecological Diagnostic Laparoscopy

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Abstract **Original Research Article**

Aim: we aimed to compare the Spinal anaesthesia and general anaesthesia for gynecological diagnostic laparoscopy. ***Material & Methods:*** In this prospective study, 60 patients who were participants for diagnostic laparoscopic surgery were divided into 2 groups: one group was administered GA and the other group was administered SA. This study was performed on female patients who were referred to the Gynecology Department of 250 bedded General Hospital, Pabna for elective diagnostic laparoscopy during the period from June 2016 to May 2018. A total of 60 female patients were randomly selected, 18 to above 61 years of age, undergoing elective diagnostic laparoscopic procedures. Patients having coagulopathy, infection, allergic to local anesthetic, refusal to give consent were excluded. ***Results:*** A total of 60 female patients had selected during the study period. Comprising the primary analysis study population 30 patients received general anesthesia and 30 patients received spinal anesthesia. The complications of the studied participants. In general anesthesia nausea and vomiting was seen in (23.33%), pain was (26.67%), damage of teeth was (6.67%), nerve injury ware (10.00%), backache was (6.67%), headache was (10.00%) in this study. In spinal anesthesia group spinal infection was (33.33%), anaphylaxis was (13.33%), urinary retention was (16.67%), hypothermia was (10.00%), nerve damage (6.67%), intrathecal bleed was (6.67%), and Post-Dural was (13.33%) found in this study. ***Conclusion*:** Administering SA for diagnostic laparoscopy in women is safe, having its personal assistances and adversative effects just like any other anesthesia technique.

Keywords: Laparoscopy, General Anesthesia, Spinal Anesthesia, Gynecology.

INTRODUCTION

Anesthesia for laparoscopy is complicated by pathophysiologic changes developed because of pneumoperitoneum and required positioning of the patient [1]. In addition, it is a definitive test to evaluate tubal factor. Laparoscopic surgery is usually performed under general anesthesia (GA) to maintain end-tidal carbon dioxide (ETCO2) at a normal range, which might increase due to abdominal insufflation. Initially general anaesthesia was gold standard for laparoscopy. However, GA is associated with risks including allergic reactions, delayed diagnosis of surgical complications, nausea and vomiting, need for pain management, and respiratory problems [2]. Laparoscopy in the field of surgery in the mid-1950s revolutionized surgical techniques due to reduction in overall medical costs reduced bleeding, less post-operative surgical and pulmonary complications, and early recovery. The gradual shift of laparoscopy to include more complicated surgical procedures resulted in modifications of existing anaesthetic techniques. The various effects of induction of pneumoperitoneum, an integral part of laparoscopy, can result in respiratory embarrassment and cardiovascular changes best managed by the use of general anaesthesia (GA)[3]. Use of GA is contraindicated in the presence of some diseases and conditions such as pulmonary diseases, chronic obstructive pulmonary disease, asthma, musculoskeletal disorders, and muscular disorders. On the other hand, spinal anesthesia (SA) has many advantages including appropriate muscle relaxation, reduced need of sedatives or narcotics, desired postoperative pain relief, and faster detection of intraoperative complications due to the patient consciousness and functional diaphragm and respiratory muscles [4]. A wide variety of anesthetic techniques have been used for laparoscopic procedures. General anesthesia with endotracheal intubation is most routinely used. It is considered to be the safest

anesthetic technique. Other techniques like local and regional anesthesia have also been used safely for laparoscopic surgeries [5]. Spinal and epidural anesthesia individually, and combination of the two, are suitable as anesthetic technique for laparoscopy [6]. Spinal anesthesia is a less invasive anesthetic technique. It has lower morbidity and mortality rates compared with general anesthesia. Spinal anesthesia has the advantage of providing analgesia and total muscle relaxation in a conscious and compliant patient. It also provides an uneventful postoperative recovery [6]. Therefore, SA has been regarded as a suitable alternative to GA in the recent years. This method has been used in many studies for patients under general anaesthesia. We explored the efficacy of this technique under regional anaesthesia.

OBJECTIVES

To compare Spinal anaesthesia and general anaesthesia for gynecological diagnostic laparoscopy:

METHODOLOGY AND MATERIALS

In this prospective study, 60 patients who were participants for diagnostic laparoscopic surgery were divided into 2 groups: one group was administered GA and the other group was administered SA. The study was conducted at the Department of Gynecology and obstetrics of 250 bedded General Hospital, Pabna for elective diagnostic laparoscopy during the period from June 2016 to May 2018. A total of 60 female patients were randomly selected, 18 to above 61 years of age, undergoing elective diagnostic laparoscopic procedures. Patients having coagulopathy, infection, allergic to local anesthetic, refusal to give consent were excluded.

Inclusion Criteria

Age

Complications like nausea and vomiting, headache or hypotension

Need for conversion to general anesthesia

Exclusion Criteria

The patients were randomly divided (using the randomized block method) into 2 groups of 30 individuals: group administered GA and group administered SA.

RESULTS

Sixty (60) female patients were selected for this study. For the study technique, 30 patients received general anesthesia and 30 patients received spinal anesthesia. (Table I) shows the age distribution of the studied participants majority (33.33%) were aged 51-60 years, (23.33%) were aged above 60, 41-50 were (23.33%), 31-40 were (13.33%) and 18-30 were (6.67%) in general anesthesia group. In spinal anesthesia group majority (30.00%) were aged above 60 years, (20.00%) were aged between 51-60, 41-50 were (23.33%), 31-40 were (16.67%) and 18-30 were (10.00%). (Table: II) shows the evaluation of hemodynamic and respiratory variables of the studied participants. In general anesthesia group arterial pressure were (16.67%), heart rate was (13.33%), respiratory rate was (23.33%), oxygen saturation was (20.00%) and carbon dioxide respiratory pressure was (26.67%). In spinal anesthesia group arterial pressure was (20.00%), heart rate was (10.00%), respiratory rate was (6.67%), oxygen saturation was (36.67%) and carbon dioxide respiratory pressure was (26.67%). (Table: III) shows the complications of the studied participants. In general anesthesia nausea and vomiting was seen in (23.33%), pain was (26.67%), damage of teeth was (6.67%), nerve injury ware (10.00%), backache was (6.67%), headache was (10.00%) in this study. In spinal anesthesia group spinal infection was (33.33%), anaphylaxis was (13.33%), urinary retention was (16.67%), hypothermia was (10.00%), nerve damage (6.67%), intrathecal bleed was (6.67%), and Post-Dural was (13.33%) found in this study. (Table: IV) shows the laparoscopy procedure of the studied population. In general anesthesia group normal findings was (53.33%), PCOS drilling was (20.00%), tubal cannulation was (6.67%), metroplasty was (3.33%), myomectomy was (3.33%), Adhesiolysis for per tubal adhesions was (6.67%) and septum resection was (3.33%). In spinal anesthesia group normal findings was (40.00%), PCOS drilling was (20.00%), tubal cannulation was (6.67%), metroplasty was (10.00%), myomectomy was (6.67%), Adhesiolysis for per tubal adhesions was (6.67%) and septum resection was (10.00%) found in this study.

Table-1: Shows the Age and Sex Distribution of the studied participants. (n=60)

Age (years)	General Anesthesia (n=30)	%	Spinal Anesthesia (n=30)	%
18-30	2	6.67	3	10.00
31-40	4	13.33	5	16.67
41-50	7	23.33	7	23.33
51-60	10	33.33	6	20.00
>61	7	23.33	9	30.00
Total	30	100	30	100

Table-2: Evaluation of Hemodynamic and Respiratory Variables of the studied participants. (n=60)

Variable	General Anesthesia (n=30)	%	Spinal Anesthesia (n=30)	%
Arterial Pressure	5	16.67	6	20.00
Heart Rate	4	13.33	3	10.00
Respiratory Rate	7	23.33	2	06.67
Oxygen Saturation	6	20.00	11	36.67
Carbon Dioxide Respiratory Pressure	8	26.67	8	26.67
Total	30	100	30	100

Table-3: Important complication of GA and SA in the study participants (n=60)

Variable	General Anesthesia (n=30)	%	Variable	Spinal Anesthesia (n=30)	%
Pain	8	26.67	Spinal Infection	10	33.33
Nausea and Vomiting	7	23.33	Anaphylaxis	4	13.33
Damage of teeth	2	6.67	Urinary retention	5	16.67
Hypothermia	5	16.67	Hypothermia	3	10.00
Nerve Injury	3	10.00	Nerve Damage	2	6.67
Backache	2	6.67	Intrathecal bleed	2	6.67
Headache	3	10.00	Post-Dural Headache	4	13.33
Total	30	100	Total	30	100

Table-4: Shows the Laparoscopic Procedure of the studied participants. (n=60)

Variable	General Anesthesia (n=30)	%	Spinal Anesthesia (n=30)	%
Normal findings	16	53.33	12	40.00
PCOS drilling	6	20.00	6	20.00
Tubal cannulation	2	6.67	2	6.67
Metroplasty	2	6.67	3	10.00
Myomectomy	1	3.33	2	6.67
Adhesiolysis for per tubal adhesions	2	6.67	2	6.67
Septum resection	1	3.33	3	10.00
Total	30	100	30	100

DISCUSSION

In our study, majority (33.33%) were aged 51-60 years, followed by 23.33% were aged above 60 years, 23.33% were aged between 41-50 years, 13.33% were aged between 31-40 years and 6.67% were aged between 18-30 years in general anesthesia group. In spinal anesthesia group majority (30.00%) were aged above 60 years, 20.00% were aged between 51-60 years, 23.33% were between 41-50 years, 16.67% were between 31-40 years and 10.00% were between 18-30 years. Moradan S *et al*. found that means for age of the spinal and general groups were 29.6 years respectively. The age sub groups frequency and percentages of the spinal and general groups were < 30 years old in 13 (43.3%) and 18 (60%), 30 - 39 years old in 14 (46.7%) and 7 (23.3%), ≥ 40 years old in 3 (10%), 5 (16.7%) respectively [8]. In our study, there are several complications seen in both groups of the studied participants. In general anesthesia group, nausea and vomiting was seen in 23.33%, pain was in 26.67%, damage of teeth was in 6.67%, nerve injury was in 10.00%, backache was in 6.67%, headache was in 10.00% of the total patients. Meanwhile, in spinal anesthesia group spinal infection was seen in 33.33%, anaphylaxis was in 13.33%, urinary retention was in 16.67%, hypothermia was in 10.00%, nerve damage in 6.67%, intrathecal bleed was in 6.67%, and Post-Dural was in 13.33% of the total patients found in this study. Kruschinski *et al.* [8] applied a combination of spinal and epidural anesthesia for hysterectomy and also for surgery of ovarian tumor, fibroid removal, and laparoscopy. All the patients underwent surgery without general anesthesia. There was no report of respiratory problems or nausea and vomiting. Moreover, slight postoperative shoulder and abdominal pain did not last more than 24 hours in their study. There were only 4 patients who required analgesics. Even, the most of their studied patients were satisfied with the selected

anesthetic technique [8]. However, in that study, laparoscopy was applied without gas inflation and epidural anesthesia was also applied parallelly with spinal anaesthesia. In terms of shoulder pain, our findings are in congruence with those mentioned in their study. Instead, the incidence rate of nausea during recovery was higher in the SA group, which could be due to inflation. In our study, shoulder pain severity was higher in the SA group at 2, 8, and 24 hours after the surgery. However, contrasting results were obtained in studies by Lennox *et al*. [9] Wang *et al*. [10] and Zirak *et al*. [2,4]. But, the anesthetic components used in the above-mentioned studies were different from those used in our study (they used lidocaine and sufentanil in SA and desflurane in GA). In a study, Liu *et al*. [11] compared SA and GA methods in laparoscopic cholecystectomy with low CO2 pressure. Shoulder and total pain scores were significantly lower in the SA group (6%), compared with the GA group (24%) mentioned in their study. Moreover, in terms of pain after 12 hours both the groups showed parallel results. So, their results of the study were not consistent the findings of present study. In this study, the laparoscopy procedure of the studied participants normal findings was (53.33%), PCOS drilling was (20.00%), tubal cannulation was (6.67%), metroplasty was (3.33%), myomectomy was (3.33%), Adhesiolysis for per tubal adhesions was (6.67%) and septum resection was (3.33%) in GA group. Meanwhile, normal findings were (40.00%), PCOS drilling was (20.00%), tubal cannulation was (6.67%), metroplasty was (10.00%), myomectomy was (6.67%), Adhesiolysis for per tubal adhesions was (6.67%) and septum resection was (10.00%) In SA group. Pusapati *et al*. [4] and Mane *et al.* [13] evaluated BP and its fluctuations during laparoscopy under SA. Among 8 patients, 2 required medication due to hypotension. On the other hand, Pusapati *et al*. [4] found no pathologic changes in the application of SA. Similarly, our findings were indicative of more changes in BP of the SA group.

LIMITATIONS OF THE STUDY

Owing to methodological limitations, circumstances of a few patients, and the impossibility of random selection and distribution of the patients to the 2 groups, accompanying a standard randomized controlled clinical experiment was not possible.

CONCLUSION AND RECOMMENDATIONS

Spinal anesthesia in laparoscopy for infertility is less time consuming, without many side effects and less complications. So, it is a safe and effective alternative to general anesthesia with endotracheal intubation. Due to the mentioned limitations of our study and some inconsistencies with other studies, it is recommended that standard clinical trials with appropriate sample size and longer follow-up be conducted.

REFERENCES

1. Gerges FJ, Kanazi GE, Jabbour-Khouri SI. Anesthesia for laparoscopy: a review. J Clin Anesth. 2006; 18:67-78.
2. Zirak N. Evaluation of the prevalence of shoulder pain after cesarean with general anesthesia. Iran J Obstet Gynecol Infertil. 2011; 14(3):8–12.
3. Gerges FJ, Kanazi GE, Jabbour-Khouri SI. Anesthesia for laparoscopy: A review. J Clin Anesth. 2006; 18:67–78
4. Zirak N. Evaluating the effect of regular-dose of bupivacain against its low-dose plus fentanyl in spinal anesthesia of elective cesarean section on term neonatal Apgar score and time of sensory-block regression. Iran J Obstet Gynecol Infertil. 2012; 15(20):12–18.
5. John H. Nguyen, MD, Pedro P. Tanaka, Anesthesia For Laparoscopic Surgery, Prevention and management of laparoscopic surgical complications, 3 rd edition
6. Collins M. Regional Anesthesia for Laparoscopy. Anesthesiology clinics of North America. 2001; 19:43-55.
7. Moradan S. General versus Spinal Anesthesia in Laparoscopic Ovarian Cystectomy, Zahedan J Res Med Sci. 2015; 17(4).
8. Kruschinski D, Homburg S. Lift (gasless) laparoscopic surgery under regional anesthesia. Surg Technol Int. 2005; 14:193–196.
9. Lennox PH. Small-dose selective spinal anesthesia for short-duration outpatient laparoscopy: recovery characteristics compared with desflurane anesthesia. Anesth Analg. 2002;94(2):346–350
10. Wang XX. Comparison of postoperative events between spinal anesthesia and general anesthesia in laparoscopic cholecystectomy: a systemic review and metaanalysis of randomized controlled trials. Bio Med Res Int. 2016; 2016:9480539.
11. Liu X. Retracted article: different anesthesia methods for laparoscopic cholecystectomy. Anaesthesist. 2011; 60(8): 723–728.
12. Pusapati RN, Sivashanmugam T, Ravishankar M. Respiratory changes during spinal anaesthesia for gynaecological laparoscopic surgery. J Anaesthesiol Clin Pharmacol. 2010; 26:475
13. Mane RS. Combined spinal epidural anesthesia for laparoscopic appendectomy in adults: a case series. Saudi J Anaesthesia. 2012;6(1):27–30.