Gynaecologic Laparoscopic Surgery Using Spinal Anaesthesia - A Retrospective Observational Study

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ABSTRACT

BACKGROUND
Laparoscopy is traditionally done under General Anaesthesia (GA) with endotracheal intubation. As the number of cases of laparoscopy increased over the years, regional anaesthesia has been quite frequently used for laparoscopy.

METHODS
A total of 495 cases of laparoscopic surgeries done in the age group 12 to 47 years during the period August 2015 till September 2019 was considered. Spinal anaesthesia was administered with 25G spinal Needle at L4-L5 intervertebral space with 3-4 ml bupivacaine (0.5%, heavy) and the surgeries were completed. The segmental level achieved was T6. Intra-abdominal pressure after CO2 insufflation for pneumoperitoneum was maintained at 10-12 mmHg. Post-operative monitoring was done.

RESULTS
Only 15 cases (3%) required midazolam. 2 patients stayed for >48 hrs post-surgery (0.4%). 4 GA cases required immediate analgesic infusion. In SA cases, analgesic was required almost 2-3 hours after the surgery was over. Onset of bowel sounds was early with SA cases. In the 4 GA cases (0.8%) PONV was noted. Two patients (0.4%) had spinal headache. 6 patients experienced post laparoscopic shoulder pain (1.21%).

CONCLUSIONS
Spinal Anaesthesia provides a good field for gynaecologic laparoscopic surgery with excellent muscle relaxation, decreased surgical bed oozing, and a rapid return of gut function, good post-operative analgesia, and decreased incidence of PONV than GA.

KEY WORDS
Laparoscopy, Gynaecology, Spinal Anaesthesia
Laparoscopy is traditionally done under general anaesthesia (GA) with endotracheal intubation. To provide a good operative field in laparoscopy, multiple ports need to be placed for adequately exposing the organs. This is augmented by correct positioning, decompression of the gastrointestinal tract (GI tract), adequate pneumoperitoneum and good muscle relaxation, for which traditionally general anaesthesia is preferred. Routinely most of the surgeries in Gynaecology are done under Spinal or Epidural anaesthesia. General Anaesthesia is used only when there is a specific indication for it or if the patient has asked for it specifically. Most of the surgeries done routinely in gynaecology are being changed from laparotomy to laparoscopy. In GA, an extra time for induction and reversal needs to be kept in mind while calculating the total time of the surgery. Also, Spinal anaesthesia (SA) is more economical than GA. Traditionally general anaesthesia is used with the apprehension that adequate relaxation may not be possible in spinal anaesthesia for laparoscopy. As the number of cases of laparoscopy increased over the years, regional anaesthesia has been quite frequently used for laparoscopy. There are various studies which have described the use of spinal anaesthesia for laparoscopic surgeries of Gall Bladder and Appendix.\(^{(1,2)}\) There are also studies which have stated that use of epidural or spinal anaesthesia is quite safe for laparoscopy in ASA grade I patients.\(^{(3)}\) With Spinal Anaesthesia, excellent muscle relaxation, decreased surgical bed oozing, and a rapid repeat of gut function, good post-operative analgesia, decreased incidence of PONV(post-operative nausea and vomiting) are seen compared to General Anaesthesia. Also, spinal anaesthesia is cost-effective and timesaving. There are studies to show efficacy of spinal anaesthesia for short duration gynaecological laparoscopy.\(^{(4)}\) The purpose of this retrospective study is to show that Spinal Anaesthesia is quite suitable for gynaecological laparoscopic surgery.

The present study is a retrospective observational study of patients having gynaecological laparoscopic surgery while under Spinal Anaesthesia (SA). The study was conducted after ethical clearance. The duration of the study was from August 2015 till September 2019 at a peripheral care centre. A total of 495 cases of laparoscopic surgeries were done in the age group 12 to 47 years during this period. Of these 491 were given SA. Only 4 cases were given GA as these four patients were opting for GA. Pre-operative evaluation was done with proper history, examination about MPC (Mallampati classification)\(^{(5)}\) and ASA (American Society of Anesthesiologists)\(^{(6)}\) assessment, regarding ease of giving GA if required. All the patients were counselled regarding Spinal Anaesthesia and 491 patients accepted the same willingly and informed consent taken according to the standard protocol. Standard operating procedures as per http://www.patientsconsent.com/ followed. The list of the surgeries performed is given in Table 1 and 2.

On the day of surgery, premedication with intramuscular Glycopyrrolate 30 mins before surgery was done. Preloading with Ringer lactate was done. In the Operation Theatre, Spinal anaesthesia was given with 25G spinal Needle at L4-L5 intervertebral space with 3–4 ml Bupivacaine (0.5%, heavy). Head down tilt of 10-20 degrees for fixation of the drug. Once the level was established, lithotomy position was given to the patient. The segmental level achieved was T-6. During surgery, Oxygen was administered at 3-4 litres per min. Preoperative patient was mildly sedated with IV Midazolam. Patients were monitored for pulse rate, blood pressure, saturation, ECG, ETCO\(_2\) (through oxygen mask). Intra operatively, the intra peritoneal pressure was kept between 10-12 mmHg. At the end of the surgery, the CO\(_2\) gas in the abdomen was completely removed and the incision sutured. Post operatively, patients were examined at 2 hrs, 6 hrs, 12 hrs and 24 hrs. and SOS if required, for pain (verbal numeric pain scale), incidence of nausea and vomiting, mobility, awareness and readiness for discharge. Patients were routinely followed up at one-month post-surgery.
was required to be administered 3-4 hours after induction, almost 2-3 hours after the surgery was over. Onset of bowel sounds was early with SA cases and pts. were started on orals by 6 hours after surgery. Only in the 4 GA cases (0.8%) PONV was noted. Two patients (0.4%) had Spinal headache for which stay was prolonged. Only 6 patients experienced post laparoscopic shoulder pain (1.21%)

**DISCUSSION**

All abdominal and vaginal surgeries in Gynaecology department are routinely carried out under Spinal or Epidural anaesthesia. General anaesthesia is used when there is contraindication for spinal anaesthesia or when the patient prefers it. For laparoscopic surgeries traditionally general anaesthesia is used with endotracheal intubation. Since the time required for open or laparoscopic surgery was almost equal it was decided to do the laparoscopic cases under Spinal anaesthesia. After first few being so successful, spinal anaesthesia for all the gynaecologic laparoscopic cases was opted for. As the patients were awake during surgery any complications could easily be picked up early as the patient herself would tell us the symptoms. All the potential ventilation induced problems including an increase in mechanical ventilation to achieve adequate ventilation pressure exists during General Anaesthesia. While in Spinal Anaesthesia this does not exist. Intra-abdominal pressure was maintained at 10-12 mmHg. The CO₂ insufflation while causing pneumoperitoneum can affect the cardiovascular system. This is mainly dependent on the intra-abdominal pressure. At lower intra-abdominal pressures of less than 15 mmHg, the venous return is augmented due to the emptying of splanchnic vessels, and thus cardiac output and blood pressure are not decreased. At higher intra-abdominal pressures of more than 15 mmHg, due to compression of inferior vena cava and other collaterals, the venous return is decreased, thus reducing cardiac output and blood pressure.⁷

Spinal anaesthesia produces a good field for gynaecologic laparoscopic surgery with excellent muscle relaxation, decreased surgical bed oozing, and a rapid return of gut function, good post-operative analgesia, and decreased incidence of PONV than GA.

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