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Case Study

Perspective of a Gynecologic Laparoscopic Surgeon During Covid Pandemic in India - A Comparative Retrospective Study of Patient Outcomes in a Tertiary Care Centre

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Abstract

Research Purpose: Due to the global Covid-19 crisis, the non-availability of outpatient services and the delay of elective surgery have led to an increase in emergencies. Reintroduction of out-patient services, semi-elective surgeries, selective fertility treatment procedures was a necessary step to reduce havoc among the population requiring these services. The objective of our study was to compare the intra-operative complications and short term post-operative outcomes among women who underwent surgical procedures during pre-covid and covid period.

Methods: It is a retrospective study, conducted at BEST training institute, Bangalore, during the period of 1st Sept 2019 to October 30, 2020 (Covid period - 25th march - 30 Oct 2020). Diagnosis of patients, procedures, intra-operative complications and post-operative outcomes, need of intensive care or blood transfusion were studied in detail.

Results: 240 women underwent gynecologic laparoscopy, hysteroscopy and combined hystero-laparoscopy procedures during the study period, 90 women during the Covid period and 150 during pre-covid period. The most common surgical indication during the Covid period was AUB-L. We found no significant difference in intra-operative complications and post-operative between both the groups

Conclusion: Non-availability of essential health care can significantly impact on the quality of life and mental status of the patients. Delay in elective services can lead to emergency and urgent cases which adversely affect the outcome. Hence, triage based on the requirements of medical or surgical care to be incorporated in formulating local protocols.

Keywords: SARS-CoV-2; COVID-19; CO_2

Introduction

COVID-19 is an infectious disease caused by corona virus (SARS-CoV-2). COVID-19 pandemic has perturbed not only the daily lives of people but also disrupted the existing medical ecosystem across the globe.. The pandemic has caused the entire medical community to face various obstacles and posed several challenges in the delivery of medical care [1].

The morbidity and mortality rate among the health care workers is higher due to repeated exposure to high viral load. Health and wellbeing of medical care workers is of paramount importance in such global crisis [2]. Surgeons of various disciplines, medical school students and all available health care personnels are transferred to various departments and hospitals for COVID care and to meet the rising demands [3]. Patient safety and health care workers' safety is of utmost importance [4].

Virus particles could spread in the form of air droplets from released CO_2 during laparoscopic surgery or within surgical smoke arising from hysteroscopic, laparoscopic or open surgery. Minimally invasive surgery and laparoscopy have become the standard surgical procedures for various gynecologic disorders [5]. In laparoscopic surgery, there have been concerns raised about the possible generation of aerosols contaminated with COVID-19 from leaked CO_2 and smoke generation after energy device use [6]. Whenever feasible, medical/conservative management must be emphasized as first line of treatment [7]. Although most of the elective procedures are delayed because of the Covid crisis, certain emergency and urgent surgical procedures have to be performed with adequate safety measures [8].

Patients and Methods

Objective of the study - To compare the intra-operative and short-term post-operative outcomes of gynecologic laparoscopic surgeries performed during Pre-Covid and Covid period.

The study was conducted in AV hospital, Bangalore, India. It is a centre of excellence and training institute for laparoscopic surgeries. A retrospective study comparing outcomes of the patients who underwent hysteroscopic, hystero-laparoscopic and laparoscopic procedures during the period of 14 months, from 1st sept to march 23rd, 2019 (pre-covid period) and march 24th to 30th Oct 2020 (Covid period).

Inclusion criteria

All women who underwent elective and emergency hysteroscopic, laparoscopic and combined hystero-laparoscopic procedures during the study period.

Exclusion criteria

- Open surgical procedures for gynecologic disorders.
- Laparoscopy converted to open procedures.

All women underwent routine pre-operative evaluation. Covid status (RT-PCR) was established and negative covid status (Covid-19 RT-PCR) was considered mandatory for elective procedures. Women tested Covid RT-PCR positive during screening were advised quarantine for a period of 14 days, re-evaluated and considered for surgery at a later date with no negative effect on the health of the woman. In women requiring emergency surgery, chest X-ray or CECT chest were performed when Covid-19 RT-PCR results were awaited. They underwent surgery without delay and all the necessary precautions were undertaken to prevent contamination and exposure to the operating team.

All operation theatre staff used PPE during the procedure, until the shift of the patient. All the healthcare personnels in the hospital were trained regarding proper usage of PPE and other safety measures. Entries of surgeons and other operating room staff was minimized. OT in our hospital setting has positive pressure ventilation, which was neutralised during Covid-period to prevent the spread of aerosols. Entry into operating room was allowed only after the intubation of the patient. Air conditioners were started after the induction of anesthesia. Practical measures for laparoscopy were followed as per SAGES and EAES recommendations [9]. Port site incisions were as small as possible to allow the passage of ports but not to allow leakage around them. CO_2 insufflation pressures were kept to a minimum (10-12 mmHg). The surgical smoke generated during the laparoscopic surgery was safely evacuated by suctioning (suction pipe connected to one of the secondary ports) and releasing in a closed system containing 1% sodium hypochlorite solution. All pneumoperitoneum was safely evacuated before specimen retrieval, removal of trocars and closure. Specimen retrieval in cases such as ectopic pregnancy, ovarian cystectomy were done through endo-bag. Abdomen was completed deflated before removing the bag from the abdomen. Specific care was taken during colpotomy and uterine specimen retrieval during a hysterectomy. The abdomen was completely deflated of the pneumoperitoneum using suction prior to the removal of the uterus, to prevent sudden loss of blood, gas and contamination.

Post-operatively, patients were shifted to recovery room in a different floor which was isolated from visitors. The nursing staff in the recovery used PPE during the care of patients and followed all the necessary measures to prevent contamination. Operative

theatre Personnels and hospital staff who were symptomatic or detected positive during screening were quarantined for a period of 14days and resumed to work after completing reassessment of health and negative RT-PCR report.

Data abstracted included - diagnosis, intra-operative and post-operative complications, requirement of intensive care treatment post-operatively, requirements of blood transfusion and short-term follow up and impact on operating team.

Results

Between September 2019 to October 2020, 240 women underwent gynecologic laparoscopic/hysteroscopic procedures. 150 women underwent surgical procedures during pre-covid period and 90 women underwent during Covid period. 66 women underwent hysteroscopy, among them 34 women underwent the procedure during pre-covid period and 32 women, during Covid period. 68 women underwent laparoscopic surgeries for various indications and 43 during covid period. 13 women underwent combined hystero-laproscopic procedures during Covid period and 47 women during pre-covid period (tabulated below). These women underwent procedures for various indications, including elective, urgent and emergency cases.

Procedure	COVID Group	Pre-COVID Group	Total
Hysteroscopy	32 (35.5%)	34 (22.6%)	66 (27.5%)
Laparoscopy	43 (47.7%)	64 (42.6%)	98 (40.8)%
Combined	25 (27.7%)	51 (34%)	76 (31.7%)
Total	90	150	240

Table 1: Procedure distribution of study participants.

Chi-Square = 3.542, p value - >0.05 (Not significant).

Chi Square test used.

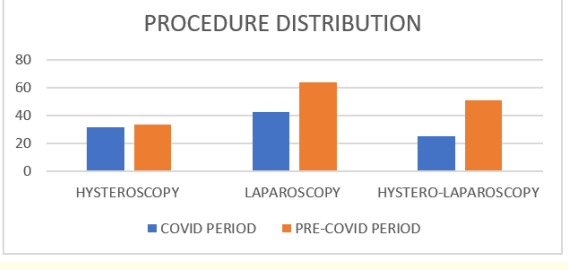

Figure 1

	Pre-covid period	Covid period
Hysteroscopy	34	32
AUB	22	18
Post-menopausal bleeding	08	04
Endometrial polypectomy	02	04
AUB+ LNG-IUS removal		01
Hysteroscopic myomectomy	01	
Infertility evaluation		05
Septal resection	01	
Laparoscopy	68	43
Total laparoscopic hysterectomy + bilateral salphingectomy/ salphingo-oophorectomy	30	16
• AUB	05	04
• Post-menopausal bleeding	-	-
• Endometrial Ca	02	02
Laparoscopic sterilization	-	04
TOP + lap sterilization		
Ovarian cystectomy	05	01
• Endometriotic cyst	07	08
• Complex ovarian cyst	03	01
• Dermoid cyst		
Endometriosis+ myomectomy		
Ectopic pregnancy	04	-
• Ruptured	03	01
• Unruptured		
Laparoscopic myomectomy	04	04
• AUB/dysmenorrhea	02	01
PID + tubo-ovarian abscess	01	-
Salphingectomy (chronic pelvic pain)		

Combined hysterolaparoscopy	47	13
Infertility evaluation	36	10
Lap myomectomy		
• Infertility	07	03
Endometriosis (infertility evaluation)	02	-
Salphingectomy (hydrosalphinx)	02	-

Table 2: Indications for the procedures.

There was significant reduction in number of elective cases due to fear of presenting to hospital during the Pandemic. Among the women who underwent hysteroscopy during Covid period, all of them failed to respond to medical management (for atleast a period of 4weeks) and hence surgical intervention was necessary. One woman with LNG-IUS in situ has severe bleeding with dysmenorrhoea, missing IUCD thread, not responding to analgesics, hence a decision for immediate removal of LNG-IUS under hysteroscopy guidance was made. Women with post-menopausal bleeding presented with a delay of about 1-2 months following initial symptoms, due to non-availability of OPD. One patient with HMB, not responding to hormonal therapy was found to have submucous fibroid, underwent operative hysteroscopy. She was significantly relieved of her symptoms post-procedure.

Among the 43 women who underwent laparoscopic surgery during Covid period, most common procedure performed was total laparoscopic hysterectomy for Abnormal uterine bleeding, attributable to leiomyoma. All women with AUB were initially treated conservatively (2-4weeks), but those who did not respond to medical therapy, those who suffered excessive blood loss and severe pain, were selected for surgical procedure following correction of anemia. Women were triaged based on the severity of their symptoms, for medical management and surgical intervention.

During Covid period, 2 patients with biopsy proven endometrial cancer (stage 1a by radiodiagnosis), underwent laparoscopic hysterectomy + Bilateral salphingo-oophorectomy. 4 women underwent laparoscopic sterilisation, who were not candidates for LARC. 8 women with diagnosis of endometriosis presented with severe dysmenorrhoea not responding to medical hormal therapy, required surgical intervention for relief of pain and sustained outcomes for the same. 2 cases of ruptured ectopic pregnancy, underwent emergency laparoscopic salphingectomy. 3 women underwent laparoscopic myomectomy for AUB-L with large fibroid uterus and one for pressure symptoms on ureter causing significant hydroureteronephrosis.

A young woman presented with pain abdomen and fever, diagnosed of tubo-ovarian abscess, not responding to intravenous antibiotics. She underwent laparoscopic surgery with drainage of pyosalphinx and adhesiolysis and bilateral salphingectomy. 10 women underwent diagnostic hystero-laparoscopic for fertility evaluation and chromopertubation. 3 women underwent hysteroscopy with laparoscopic myomectomy (myomectomy impairing fertility).

11 women required blood transfusion pre-/post-operatively during Covid period and 08 women during pre-covid period. None of the patients who underwent gynecologic laparoscopic surgery required intensive care treatment during their hospital stay, either during pre-covid and covid period.

	Intra-op Complications	**Blood transfusion**	**ICU care**
Covid period	03(2.3%)	11(12.2 %)	-
Pre-covid period	04(2.7%)	08(5.3%)	
	p-value >0.05	p-value >0.05	

Table 3: Procedures with intra-op and post-op outcomes.

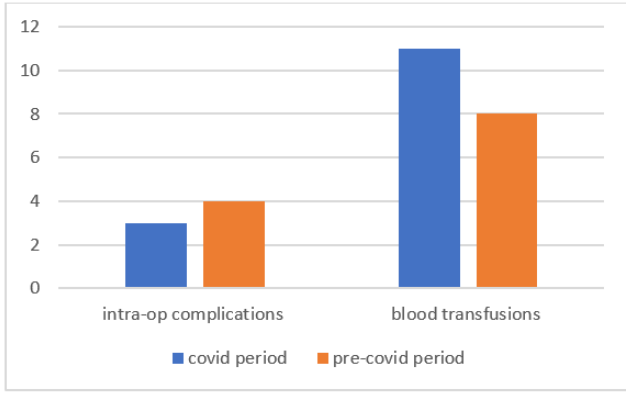

Figure 2

Intra-operative complications encountered are listed in table 4. There was no significant difference in the rate of complications between both study groups.

Complications	Covid Group	Pre-covid Group
Bladder Injury	01(1.1%)	01(0.7%)
Bowel Injury	01(1.1%)	02(1.3%)
Port site bleeding	01(1.1%)	0
Uterine perforation during tubal cannulation	0	01(0.7%)
Total	90	150

Table 4: Complications encountered intra-operatively.

Chi-Square = 5.269, p- value - >0.05 (not significant).

All women who underwent surgery, either hysteroscopy/ laparoscopy were followed up on outpatient basis at intervals of 1 week. Again at 6 weeks in women who underwent laparoscopic hysterectomy for vaginal vault examination. None of the women had any major post-operative complaints/complications. 3 women with AUB-A opted LNG-IUS insertion after hysteroscopy. One woman developed wound infection following TLH+BS, required regular wound dressing and healed by secondary intention.

Discussion

Such massive mortality and huge morbidity has affected all the countries across the globe. The COVID-19 pandemic has changed the paradigm of health care for women [1].

India announced the nationwide blockade as an important measure to downtrend the transmission of corona virus in our country [10]. Most tertiary medical centres have been transformed into dedicated Covid care centres. Availing treatment of non-Covid ailments was a major concern and caused unrest among the people. Non-availability of out patient services, basic, non-emergency medical care for chronic illnesses and uncertainty of resumption of surgical and fertility care has had an unexpected and huge impact on the quality of life of several individuals [1].

Several factors play an important role in selection of a patient for conservative management or surgical intervention. The possible outcomes of either treatment plans and benefit of timely intervention must considered during decision making for treatment plans. Delay in care of certain gynecologic disorders resulted in conditions requiring emergency/urgent care, which may pose a higher and significant risk.

Morris., *et al*. [11] have strongly opined that minimally invasive surgeries provide increased benefit to the patients and provide safety to the operating team by following certain modified operative techniques. Laparoscopy has advantage over open surgery by restricting the evacuation and controlled release of the surgical smoke, preventing spillage of bodily fluids, thereby preventing exposure to the entire operating team and their safety [12].

Withdrawal of fertility treatment and assisted reproductive services had a pessimistic effect on the mental wellbeing of couples seeking medical attention for the same. Suspension of these services has further delayed their journey towards a fruitful outcome [13].

In our study, we observed the reduction of cases during the lockdown period in our country, due to non-availability of out patient services and difficult logistics. Outpatient services with strict precautions of social distancing and emphasis on online consultation was re-introduced at out hospital after understanding the importance of urgent medical care in a certain subset of patients.

Emergency and urgent cases, women who failed to respond to medical therapy, some selective women undergoing fertility treatments were prioritized for surgical procedures. No significant differences in intra-operative complications, post-operative outcomes were observed among women who were operated during pre-covid and Covid period in our hospital setting. The operative theatre team was frequently screened for Covid by RT-PCR and evaluated for symptoms. An anesthesiologist was mildl symptomatic and tested RT-PCR positive for Covid-19, 3 OT team staff detected Covid-19 positive during screening, were asymptomatic. The staff were quarantined for a period of 28 days and their health strictly monitored. There was no morbidity noted among the operative team.

Timely intervention and availability of trained medical professionals can prove life-saving and can potentially improve the quality of life of subset of women who require medical care at a hospital setting during the crisis.

Conclusion

Delay in semi-elective and elective cases may cause more harm to the patient and adversely impacts the mental well being and quality of life. It is necessary to properly classify surgical cases and understand the patient's medical needs and logistics. Medical management needs to be emphasized whenever possible without a significant affect to the possible outcomes. Women requiring surgical care and fertility treatments do not need postponement in the face of the pandemic, but to be managed with all the safety precautions and strict protocols. Minimally invasive surgery provides a safe and easily accessible treatment for women who need surgical intervention. Larger study with long term results and further research in the matter is required. The development of local regulations to guide hospitals during such crises requires great attention.

Conflict of Interest

None declared.

Funding

Nil.

Ethical Approval

Nil.

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