

Conservative and Operative Diagnostic Management of Pelvic Organ Prolapse in COVID-19 Era

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Abstract: *Pelvic organ prolapse (POP) is a drop in one or more aspects of the vagina and uterus. This allows adjacent organs to herniated into vaginal space, which is often referred to as cystocele, rectocele, or enterocele. Risk factors of POP are parity, vaginal delivery, age, obesity, connective tissue disorders, menopausal status, and chronic constipation. Pelvic Organ Prolapse Quantification (POP-Q) is recommended before treatment for objective evaluation and documentation of prolapse rates. There are quite effective treatment options available including telemedicine and surgical options in COVID-19 Era.*

Keywords: POP, COVID-19

1. Introduction

COVID-19 has been declared a pandemic by the World Health Organization (WHO) when confirmed cases approached the number of 200,000 patients with 8000 deaths in more than 160 countries. After the initial pandemics occurred in Wuhan and China, Italy became the first in Europe and the impact was enormous. This virus spreads so fast that 2 weeks from the first case diagnosed 1000 patients tested positive. A week later, the number of positive cases exceeded 4,600, reaching a total of more than 30,000 patients and 2,500 deaths on March 18, 2020.¹ In February 2020, COVID-19, caused by the novel SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2), was declared a public health emergency which became international concern by WHO. Since it began in December 2019, the number of cases has exponentially increased worldwide. Because this is a new virus, the human population has no previous immunity to fight this disease, nor a vaccine or therapy available.² Latest data from WHO on July 20, 2020, reported that there are 14,348,858 confirmed cases of COVID-19 worldwide with a mortality rate of 603,691 people.³ In Indonesia, on July 20, 2020, the government reported 88,214 confirmed positive cases of COVID-19 and 4,239 deaths related to COVID-19.⁴

The coronavirus pandemic (COVID-19) has drastically changed how patients are evaluated and treated and how they access outpatient health care.⁵ One of which is pelvic organ prolapse (POP). Pelvic organ prolapse is a condition when 1 or more aspects of the vagina and uterus slip down: anterior vaginal wall, posterior vaginal wall, uterus (cervix), or vaginal crest (vaginal dome or cuff scars after hysterectomy). This allows adjacent organs to herniate into the vaginal space, which is often referred to as cystocele, rectocele, or enterocele. Risk factors of POP are parity, vaginal delivery, age, obesity, connective tissue disease, menopausal status, and chronic constipation.⁶ There are various treatment options for pelvic organ prolapse, including conservative management, pessarium, or surgical reconstruction.⁷

Centers for Disease Control and Prevention (CDC) has established recommendations to prevent infection in health care settings by reducing or eliminating non-urgent visits to health services. Telehealth refers to any health care process that occurs remotely, including provider training or team meetings, while telemedicine specifically explains the use of technology to connect patients to providers.⁵ AUGS guidelines, American College of Obstetricians and Gynecologists (ACOG) guidelines, American Society of Colon and Rectal Surgeons (ASCRS) clinical practice guidelines, and systematic reviews are summarized to guide the treatment of prolapse through telemedicine. Pelvic organ prolapse can be a challenge to be evaluated without physical examination. However, virtual visits provide an opportunity to counsel patients about the pathophysiology, possible treatment options, and techniques to prevent the expansion.⁸

2. Pelvic Organ Prolapse (POP)

Pelvic organ prolapse (POP) is a drop in one or more aspects of the vagina and uterus: the anterior vaginal wall, the posterior vaginal wall, uterus (cervix), or the vaginal crest (vaginal dome or cuff scars after hysterectomy). This allows adjacent organs to herniate into vaginal space, which is often referred to as cystocele, rectocele, or enterocele. Mild drop in pelvic organs is common and should not be considered pathological. Pelvic organ prolapse can only be considered a problem if it causes symptoms of prolapse (i.e. pressure with or without a bulge) or sexual dysfunction, or if it interferes lower urinary tract function or bowel function. Pelvic organ prolapse can be defined using the patient's reported symptoms or physical examination findings (i.e. vaginal bulge bulging into or outside the hymen). Most women experienced POP symptoms when the leading edge reaches 0.5 cm distal to the hymenal ring. Risk factors that can intensify POP symptoms are parity, vaginal delivery, age, obesity, connective tissue disorders, menopausal status, and chronic constipation.⁶

The initial evaluation recommended for a woman suspected of POP includes a thorough history, assessment of symptom's severity, physical examination, and objections for treatment. Assessment of symptoms is the most important part of an evaluation of a woman with POP.⁶

Physical examination should include stomach and pelvis examinations to get rid of the pelvic mass. External genitalia and vaginal epithelium must be evaluated for vaginal atrophy, skin irritation, or ulceration. Simply widened the labia while examining the patient in the supine position can help assessed the maximum heredity of prolapse. Detailed POP examination should be done with a split speculum (i.e., separate the bivalve speculum and use only the posterior knife to examine the apex and anterior vaginal wall and then turn the knife over and use it to hold the anterior wall while examining the postvaginal wall and perineum when the patient is maneuvering Valsalva, coughing repeatedly, or both). Performance of a Pelvic Organ Prolapse Quantification (POP-Q) is recommended before treatment for objective evaluation and documentation of prolapse rates. If the patient's symptoms of prolapse are not confirmed by the extent to which prolapse is observed during a supine pelvic examination, repeating the pelvic examination in a standing position can be done to see a dropping in POP.⁶

Evaluation and documentation of the extent of prolapse is important before treatment so that the surgeon has a preoperative comparison used to measure the success of postoperative anatomy. The POP-Q system is the only validated method for objective measurement of prolapse in 3 pelvic compartments: (1) anterior, (2) apical, and (3) posterior. The POP-Q system is recommended by major national and international urogynecological health organizations, including the American Urogynecologic Society, the Society of Gynecologic Surgeons, and the International Continence Society. Also, POP-Q is used in most scientific publications about POP. Although the Baden-Walker system clinically describes the findings of prolapse, the POP-Q system is more precise and can be reproduced.⁶

The POP-Q system does not use the cystocele and rectocele terms but uses the term for each prolapsed segment because the right organ located behind the prolapsed vaginal epithelium may not be apparent from clinical examination. This includes measurements of vaginal length, genital hiatus, and perineal portions. POP-Q measurements can be converted to stages based on the most severe vaginal segment prolapse.⁶

Validated examinations allow consistency in reporting and facilitate communication between gynecological service providers. It is important if the patient has recurrent prolapse, because it will allow new gynecological care providers to understand the patient's POP history. Results can be evaluated only if POP pre-treatment measurements are accurately recorded. For patients who demand for management of pregnancy, documentation of prolapse with POP-Q allows objective, valid basic measurements that can be referred if symptoms change over time. Although recording a POP-Q examination is not required for these patients, it may be helpful to determine whether there is an anatomic change over time.⁶

3. Pelvic Organ Prolapse Management in COVID-19 Era

The virus that causes COVID-19 is transmitted through droplets of various sizes and through fomites. Transmission through air is also a mode, in which the presence of microbes in the droplet core, generally considered as a particle with less than 5 µm diameter, can remain in the air for a long time and is transmitted to others at a distance of more than 1 m. Airborne transmission is possible under certain conditions which produce aerosols, such as endotracheal intubation, airway manipulation, and possibly, surgery.⁸

Traditionally, the priority of surgical procedures depends on the acuity of the disease and the availability of resources after joint decision making with patients. During emergencies, such as the COVID-19 pandemic, decisions must consider new influences on the safety of benign gynecological procedures. At the peak of the infectious curve, all operations except those which are life-threatening or limbs are canceled, because the risk for individuals who come out of self-isolation is high and can overwhelm health care resources.⁹

Global, national and local health responses to the new coronavirus 2019 (COVID-19) provide an opportunity to share best practices for managing surgical services during health-related crises. Responses to any health emergencies must be adjusted to specific threats, whether they are contagious (such as COVID-19 or influenza), natural weather events, or bioterrorism. The role of surgical services in health-related emergencies is important and has the potential of having modifiable components related to the delivery of health services. Decisions about cancellations, delays and prioritizing surgical services are often determined by specific threats, but the timing of making changes can present the most difficult challenges.¹⁰

In infected patients, COVID-19 is in the body cavity and during surgery, it can be nebulated in sprays produced by surgical instruments. Aerosols produced in the operating room during surgery can contain viruses or their parts, and some concluded that the virus stays alive on aerosol for at least 3 hours. The European Society for Gynecological Endoscopy (ESGE) and the American Association of Gynecologic Laparoscopists (AAGL) have issued recommendations to continue minimal invasive surgery by using certain precautionary measures, such as reducing operating time, leaking carbon dioxide from any trocar (check for any seal or use disposable trocar), aerosol plume production, and spray or spread of blood / liquid drops.⁵

COVID-19 test before elective surgery is very important (nasopharyngeal or serological tests) to protect patients and health care providers. The type of screening will depend on the availability and priority of the health care system and of an institution. Identification of patients who have mild or asymptomatic symptoms is very important to reduce the spread of the virus in the hospital. However, a false negative rate of around 20% with nasopharyngeal swabs must be considered.⁵

All members of the surgical team must be trained in the proper use of personal protective equipment (PPE). It is recommended that anyone who works in the operating room use a full PPE, which includes shoe coverings, waterproof dresses, surgical masks or FFP2 / 3, headcap, gloves, and eye protection. It is also important to limit the number of people in the operating room as much as possible and to reduce movement in and out.⁵

Table 1: Perioperative considerations: non-elective cases⁸

State of Surgery	Recommendations
Preoperative	<ul style="list-style-type: none"> Screen all patients for symptoms when they arrive at the health care center; triage for symptoms-based testing Consider universal testing after the availability of COVID-19 kits increases Consider using chest X-ray as a screening tool because it can be obtained faster than the confirmation test
Intraoperative	<p>For COVID-19-positive cases:</p> <ul style="list-style-type: none"> Operating room staff must have complete personal protective equipment, and only important personnel present Limit the movement of personnel in and out of the OR especially during airway management given the increased risk of aerosolization of virus particles Consider laparotomy vs laparoscopy by balancing the risk of surgical morbidity to patients with the risk of transmission of the virus to the provider Limit the use of electrocautery unless absolutely necessary for patient safety. If used, the electrocautery device must be used at the lowest effective setting and along with intentional smoke suction with filters when energy is used Insufflation during laparoscopic cases must be kept to a minimum and fully evacuated through a filtration system before trocar venting or removal
Postoperative	<ul style="list-style-type: none"> Discharging on the same day should be encouraged to avoid prolonged hospitalization and reduce hospital load For COVID-19-positive cases: Consider prophylaxis or the dose of anticoagulant therapy because COVID-19 infection can produce a hypercoagulable state

Guidelines for pelvic organ prolapse management during the COVID-19 pandemic include:¹¹

1) Initial Assessments

- Women with prolapse must initially be managed by remote communication.
- If possible, it may be useful to obtain a history before the hospital visit using a structured general history questionnaire with a validated specific questionnaire returned via secure email access or an Electronic Personal Assessment Questionnaire such as the EPAQ-pelvic floor. Patients who do not understand how to use a computer can be asked by telephone or sent documents via post with a return address stamp.
- Facilities for virtual communication may vary, includes telephone / video conference
- Relevant clinical history must be taken to explain the severity of symptoms.

- Reassure the patient that prolapse is harmless and not cancerous.
- If the prolapse is mild, the patient should be advised to do pelvic floor muscle training
- If there any large bulge that affect the bladder and intestinal emptying and / or the presence of ulceration, face to face meeting will be required.

2) Pessarium Management

- Those who have existing pesari will need a virtual consultation. If they experience bleeding or pain, there must be a face-to-face consultation.
- An alternative strategy is to send a letter saying that they cannot be seen at this time but will immediately contact the department if they have symptoms such as bleeding. A recent randomized study showed that women with a treatment of pesari who used a ring, Gellhorn, or incontinence dish pessary, were routinely followed every 24 weeks.
- Although the most popular practice is to replace the pesari every 6 months, it would make sense to postpone this tool for the next 3 months and review.

3) Follow-up on postoperative cases

- Some women may have had operations before the crisis and may have their appointments canceled or postponed.
- Follow-up appointments can be done virtually using telephone or video conference
- If the reason for seeing a patient is identified, face-to-face appointments may be the only option. If so it is recommended to use PPE.

Telemedicine

The AUGS Guidelines, the American College of Obstetricians and Gynecologists (ACOG) guidelines, the American Society of Colon and Rectal Surgeons (ASCRS) clinical practice guidelines, and systematic reviews are summarized to guide the treatment of prolapse through telemedicine. Pelvic organ prolapse can be a challenge to be evaluated without physical examination. However, virtual visits provide an opportunity to advise patients about the pathophysiology, possible treatment options, and techniques to prevent development.⁸

In this case, one of the more interesting problems is the increased interest in telehealth. Telehealth refers to health care activities carried out by telecommunications. Current Telehealth practices have evolved beyond traditional diagnostic and monitoring activities to include consumer and professional education. This includes different application domains, including live video conference, asynchronous data transmission, remote patient monitoring and cellular health. Available literature data seem to indicate that telehealth has been successfully applied in several general clinical scenarios, including follow-up care after surgical treatment of pelvic organ prolapse.¹²

An important element of the transition to telemedicine is maintaining a unique element of trust, privacy and information sharing that occurs between providers and patients. A study comparing screen-to-screen interactions and face-to-face interactions between Female Pelvic

Medicine and Reconstructive Surgery (FPMRS) and patients with pelvic organ prolapse highlight three main communicative functions of medical interactions: (1) information exchange, (2) relationship building, and (3) perceived joint decision making. The authors concluded that virtual visits can provide similar patient satisfaction by building strong therapeutic relationships with patients through education, active listening, and joint decision making.⁸

Telemedicine can be used effectively to provide initial assessment of new patients and to assist in the follow-up of uncomplicated stable patients. Besides physical distancing needed for community-based COVID-19 management, virtual visits can help reduce the carbon footprint and reduce the disruption of the vocational activities of patients and family members. Those who experience symptomatic prolapse will most likely request treatment in the form of a dancer or surgery, and those who choose pelvic floor physical therapy can receive guidance on anticipated effectiveness based on the severity of their prolapse.³ Telemedicine for women with urogynecological problems can be performed in cases of urinary incontinence or defactory, urinary dysfunction or urinary defector, pelvic organ prolapse, and UTI.⁸

1) Urinary incontinence

A systematic review was recently published on treatment options for women with urinary incontinence. This systematic review focuses on studies on adult women with stress urinary incontinence (SUI), urgency urinary incontinence (UUI), or mixed urinary incontinence (MUI); women are excluded if they are pregnant or hospitalized. We update this review with additional studies published since August 2018.⁸ Based on this latest systematic review, six additional studies, and expert consensus:⁸

- SUI, UUI, and MUI can be discussed and treated with telemedicine (EC).
- Behavioral therapy including bladder training, pelvic floor physical therapy or Kegel exercises, weight loss, and yoga have shown significant improvement and / or complete resolution of SUI and UUI symptoms.
- Patients currently treated with third-line treatment for UUI such as intradetrusor onabotulinum toxin A or percutaneous tibial nerve stimulation can return to behavior modification and drugs (anticholinergic or β -adrenoceptor agonists) until they can return for in-personal visits (EC).
- Smartphone application can be used to help teach and track Kegel exercises.

2) Pelvic organ prolapse, defecation dysfunction, faecal incontinence

Pelvic organ prolapse can be a challenge to be evaluated without physical examination. However, virtual visits provide an opportunity to advise patients about the pathophysiology, possible treatment options, and techniques to prevent development. Similarly, for bowel dysfunction and faecal incontinence, conservative steps can be initiated to help relieve the symptoms of the patient. It is important to note that changes in bowel habits, weight loss, and rectal bleeding may require referral to a gastroenterologist or colorectal surgeon to rule out colorectal cancer. It should be

noted, if a patient reports new onset faecal incontinence or worsening acute fecal incontinence, she must be screened for other symptoms of COVID-19 and then referred for appropriate treatment, because diarrhea is a possible symptom of COVID-19.⁸

a) Pelvic organ prolapse

- Only 10-20% of women will experience an increase in the stage of prolapse for 2 years; therefore, most patients can be convinced of the delay in surgical or pessary management
- Weight loss, reduced activity that suppresses the pelvic floor, stop smoking, and avoid constipation can improve symptoms and reduce the progression of prolapse
- Pelvic floor exercises and muscle exercises can reduce prolapse in some patients. For pelvic muscle training, providers can suggest online instructions. Home biofeedback devices can be used, such as Leva®, which is a pelvic floor muscle trainer equipped with FDA visualization technology, smartphone applications, vaginal ballast, virtual pelvic floor therapy appointments, or internet pelvic floor training
- Encouraging the patient to splint or insert a large tampon can help relieve symptoms in cases of prolapse that causes incomplete emptying of the bladder.⁸

b) Defecation dysfunction

- Changes in diet and fiber supplementation (insoluble fiber) can increase faecal consistency and help faecal evacuation
- Osmotic laxatives or stimulants can help with bowel dysfunction and postoperative constipation.
- Changes in position during bowel movements or potty can increase bowel movements.
- Splinting through the vagina or in the perineum can help women with incomplete evacuation of the rectocele.⁸

c) Fecal Incontinence

- Protective devices can be utilized. This includes adult sanitary napkins or diapers, adhesive patches (eg, butterfly pads), and skin care with protective zinc-based ointments.
- Food diary can be used to identify avoided triggers. Triggers associated with loose stool can include sugar, caffeine, and lactose replacement.
- Medications that can cause loose stool should be avoided. Some common medications that cause diarrhea include: antacid, proton pump inhibitor, antibiotic, SSRI, beta blocker, ACE inhibitor, metformin, and cholestyramine.
- Dietary fiber (soluble) with increased fluid intake can deliver more impurities to the stool and help achieve ideal stool consistency.
- Consider medications to treat loose stool and help fecal incontinence.
- Intestinal schedules, tap water enemas, glycerin, or bisacodyl suppositories can help patients evacuate the rectum.⁸

Stratification of Urogynecological Operations

The American College of Surgeons (ACS) developed several tiered ranking systems to prioritize operations. The first scale outlines how an institution should prioritize staffing and resource utilization and ranges from Standby "to Zero Conditions" based on the number of patients with COVID-19 who are hospitalized. The second scale is the "Elective Surgical Acuity Scale". This is a tiered scale ranging from 1-3; the first level is elective surgery, the middle level is urgent surgery, and the third level is emergency surgery. Each level is further divided into patients with and without significant comorbidities. Similar to the ACS tiered response, Goldberg et al. described a tiered system ranging from "0", emergency operations and outpatient procedures that must be performed at the top of the curve to "4", non-essential operations that can be delayed until the threat of infection has subsided for urological procedures. Moreover, there have been publications by Weber LeBrun et al. which outlined the

initial response to the COVID pandemic, but did not follow the ACS level system.⁹

We have adapted the ACS tiered ranking list to develop guidelines for benign gynecologic and gynecologic surgeons. (Table 2) This system is intended to help surgeons, and their health care system decides who should go to the operating room when the pandemic is open and does not list all elective operations at each level. This guide is not intended as a substitute for the clinical judgment of an individual surgeon and the joint decision-making process with the patient. This is important for women with medical comorbidities in which exposure escalation towards infected people outside the home is more important than the urgency of their gynecological condition. Continue using telemedicine to overcome symptom management while surgery is delayed may be beneficial.⁹

Table 2: Modified elective surgery acuity scale (mESAS) for benign gynecological indications and operations⁹

Tier	Definition	Examples of benign gynecological cases	Examples of urogynecological cases	Suggested location
Tier 1a	- Low acuity surgery/healthy patient - Outpatient surgery - Not a life-threatening disease	- Benign adnexal mass, asymptomatic - Hysterectomy, without anemia, stable symptoms - Myomectomy, asymptomatic - Hysteroscopic Metroplasty - Endometriosis, stable symptoms - Chronic pelvic pain that requires diagnosis (diagnostic laparoscopy) diagnosis (ie diagnostic / operative hysteroscopy) - consistent PMB, low suspicion (EMB neg)	- Urinary incontinence surgery - Transvaginal tissue prolapse surgery - Laparoscopic prolapse repair, sacrocolpopexy - Asymptomatic mesh exposure - Neuromodulation for urinary incontinence, faecal retention or incontinence – Diverticulectomy	Outpatient surgery center or hospital
Tier 1b	Low acuity surgery / patient is unhealthy based on the ASA or Charlson comorbidity index			Outpatient surgery center or hospital
Tier 2a	- Medium acuity surgery / healthy patient - Non life threatening but in the near future has the potential for morbidity or mortality	- AUB with secondary anemia, stable - AUB aged > 50 years with the inability to sample in hospital - Endometriosis, uncontrolled pain or desired fertility, low AMH / ovarian reserve - Age of endometrial polyps > 50 years - Symptomatic ovarian cysts - Myomectomy, symptomatic fibroid	- Fistula Repair - Mesh-related complications (infection or severe pain)	Outpatient or overnight inpatient surgery center or hospital
Tier 2b	Medium acuity surgery / unhealthy patient			Outpatient surgery center or hospital
Tier 3a	High acuity surgery / healthy patient	- Endometrial hyperplasia, very suspicious for atypia / malignancy - Adnexal mass, complex, suspicious for malignancy - AUB, secondary anemia, bleeding which getting worse - Endometriosis infiltration with severe bowel / bladder symptoms - Treatment of CIN II, CIN III - Symptomatic ovarian cysts, unbearable pain, severe - Large fibroids, with hydronephrosis, debilitating pain, mass symptoms or urinary retention - Malignant cases of other potential gynecological malignancies - Sterilization procedures for women who are not LARC candidates	- Mesh in the viscus - Advanced prolapse with evidence of upper channel obstruction and unable to maintain the pessary - Obstruction after confined MUS-prolapse	Outpatient hospital with pathology Outpatient surgery centers are rare but possible
Tier 3b	High acuity surgery/unhealthy patient			Inpatient in hospital

Tier 4a	Emergency surgery/healthy patient	- Ectopic rupture with hemodynamic instability - Bleeding from SAB, incomplete - TOA rupture - Ovarian Torque - Viscous perforation or complete bowel obstruction - Surgery after bleeding surgery - Termination of Pregnancy	Outpatient surgery center or hospital
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4. Conclusion

COVID-19 pandemic significantly modifies health systems throughout the world with substantial implications also for medical disciplines that are not primarily involved in the management of COVID-19 patients. In particular, the need to adhere quarantine strategies in order to reduce virus diffusion and protect patients and doctors, has increased new interest in telehealth interventions which can make it possible to carry out many clinical activities safely and effectively. The decision to delay elective surgery for benign asymptomatic gynecological diseases is determined by the important need to reduce viral circulation among populations and the importance of focusing health resources on COVID-19 and operations for diseases that cannot be deferred.

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