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The Importance of Vaginal Natural Orifice Surgeries in the Era of COVID-19 Pandemic



To the Editor:

Coronavirus disease (COVID-19) is a contagious disease caused by the novel severe acute respiratory syndrome coronavirus 2, which spread to approximately 200 countries with 5 451 532 confirmed cases and 345 752 confirmed deaths as of May 27, 2020 [1]. The virus spreads among individuals through respiratory droplets. In regard to surgery, aerosols, feces, blood, and peritoneal fluid have also been reported as potential vectors for virus transmission [2].

It has been suggested that minimally invasive surgeries other than emergency and cancer cases should be postponed because of the risk of virus spread and that laparotomy should be preferred to reduce the possibility of increased virus transmission through the plumes of aerosolized smoke and contamination by body fluids, during tissue extraction through small incisions [3].

In regard to these concerns, leading societies have published recommendations including triage testing, reducing the number of medical staff in the operating room, reducing incisions, lowering electrosurgery power settings, and suctioning the aerosolized smoke or steam plumes with a closed filtration system [3].

A recent study has reported that vaginal fluid is negative for the COVID-19 virus [4]. This environment has highlighted the importance of conventional vaginal surgeries (VS) and vaginal natural orifice transluminal endoscopic surgery (vNOTES), which eliminate the possible risk of aerosol- and tissue extraction-associated transmission that could be observed in conventional laparoscopy. vNOTES is a promising “rescue” approach for conventional VS, especially in the management of large adnexal masses [5]. It allows masses to be extracted through a large colpotomy incision. In addition, both conventional VS and vNOTES have a shorter duration of surgery, a shorter hospital stay, and a better postoperative pain score than conventional laparoscopy [5].

In conclusion, in the COVID-19 pandemic period, conventional VS or vNOTES can be considered safe alternatives to traditional laparoscopy and laparotomy to reduce potential surgery-related risks of infection.

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Patient-Centered, Gynecology-Specific Prioritization of Nonurgent Surgeries during the COVID-19 Pandemic: Proposal of a Novel Scoring System



To the Editor:

Obstetric and gynecologic procedures compose more than a quarter of all surgeries performed in adult US women [1]. Approximately 4 million gynecologic surgeries are performed in the United States annually [1–3], with nearly 1.5 million performed in the inpatient setting [3]. However, in response to the coronavirus disease (COVID-19) pandemic of 2020, most US healthcare institutions postponed nonurgent, essential (i.e., “elective”) procedures, including most gynecologic procedures [4–11]. During this time, surgery has been among the most disrupted aspects of gynecologic care. The degree of limitation on gynecologic procedures has varied considerably depending on COVID-19 prevalence, case mix, hospital type, and available resources.

The COVID-19 pandemic has evolved over time, and several states have lifted restrictions on essential, nonurgent procedures, and case resumption is underway [11,12]. Hospitals have approached this in different ways, but some have taken a department-focused approach. Specifically, as essential, nonurgent surgeries resume, surgical departments prioritize/rank their respective delayed subspecialty cases and are granted a proportion of hospital operating room time to perform these procedures. With the anticipated reintroduction of gynecologic surgeries, there is an urgent need for a systematic approach to manage the procedural backlog and prioritize these cases. One approach to managing the nationwide surgical backlog is to classify procedures by priority. Surgical prioritization refers to ranking cases on the basis of various criteria [4–7].

Almost every surgical professional society has issued subspecialty guidelines for the prioritization of essential, nonurgent procedures [4,6–10]. Both the American College of Surgeons (ACS) and joint statements from 8 professional gynecologic societies, including the American Association of Gynecologic Laparoscopists (AAGL), have outlined excellent initial strategies for this process in gynecology [4,7]. The guidelines are based on modifications of the ACS Elective Surgery Acuity scale [4], and recommend

procedural prioritization using a tiered approach: tier 1 (can be delayed >3 months), tier 2 (delayed <3 months), tier 3 (delay <1 month), and tier 4 (emergent and should be performed immediately). However, although existing professional society guidelines offer an excellent blueprint for surgical triage considerations, the recommendations are limited to prioritizing cases solely on the basis of surgical indication and urgency [4,6–12].

We read with great interest the article by Paraiso et al [12] and the AAGL Reactivation of Surgery Task Force, “Surgical and Clinical Reactivation for Elective Procedures during the COVID Era: A Global Perspective.” This guideline provides a comprehensive and forward-looking road map for gynecologists as they consider reintegrating essential, nonurgent surgeries. We commend the authors, and the AAGL, for their guidance and contributions to the gynecologic surgery literature during the COVID-19 pandemic. The Task Force recommends that gynecologists consider using the University of Chicago’s Medically Necessary, Time-Sensitive (MeNTS) tool [8]. This system stands out for its innovation and comprehensiveness, especially when compared with the aforementioned professional society guidelines [4,6,7]. The MeNTS tool is one of the only published algorithms that allows surgeons to score each case numerically by surgical priority on the basis of several criteria: procedure factors, disease factors, and patient factors [8]. Higher cumulative scores are associated with lower surgical priority.

Although MeNTS provides an excellent framework for surgical prioritization during the pandemic, it is not substantiated yet by face and construct validity. We believe, respectfully, that it may not be ideal for use in gynecology because of its complex, specialty-agnostic design and arbitrary question and answer stems. For instance, queries regarding “Intubation Probability” and “Risk of Postoperative Intensive Care Unit Admission” contain answer stems that are either challenging to quantify (i.e., <1%, 1%–5%, 5%–10%, 10%–25%, >25% risk), or may be more applicable to general surgery than to nonurgent, essential gynecology cases. A question about “Exposure to Known COVID-19 Positive Person in the Last 14 Days” may be also difficult to respond to, given the vague answer stem options (i.e., No, Probably Not, Possibly, Probably, Yes). In addition, questions about COVID-19 contacts may be less relevant now, given that the virus prevalence varies by geographic location, and many centers are offering preoperative COVID-19 testing. Furthermore, the tool does not include patient-centered or specialty-specific criteria, such as how a patient’s socioeconomic considerations, quality of life, psychosocial factors, or gynecologic condition contributes to procedural prioritization. Thus, there is an unmet need for a comprehensive and pragmatic gynecology-specific algorithm/scoring tool.

Women with gynecologic surgical conditions have unique, distressing symptomatology, including abnormal vaginal bleeding, pelvic pain/pressure, and genital discomfort, which

may impact both health and quality of life. Furthermore, some women may require a time-sensitive reproductive or gynecologic procedure. Although these surgical indications are not always life-threatening, they are often debilitating and potentially life-altering [1,3]. Our team, the Gynecologic Surgery Task Force at the Johns Hopkins Hospital, Department of Gynecology and Obstetrics, was appointed to oversee surgical operations, quality, and safety. This task force consists of diverse faculty and fellow representation from general gynecology, minimally invasive gynecologic surgery, reproductive endocrinology and infertility, gynecologic oncology, and female pelvic medicine and reconstructive surgery. During the COVID-19 pandemic, we were charged with triaging delayed, essential, nonurgent gynecologic surgical cases for the department and overseeing the reintegration of suspended procedures.

Development of a Novel Gynecology-Specific Surgical Prioritization Tool

After reviewing the existing medical professional society guidelines and surgical prioritization systems employed during the COVID-19 pandemic and other crisis states [4,6–12], we developed the Johns Hopkins Gynecologic Prioritization System (JH-GPS; Table 1). The JH-GPS was designed to apply broadly to any essential, nonurgent gynecologic procedure with either a benign indication or suspicion of gynecologic cancer. Emergent cases (i.e., ruptured ectopic pregnancy, ovarian torsion, and so on) and procedures performed for known gynecologic cancer were excluded, given their more urgent nature.

The JH-GPS tool includes standard surgical prioritization criteria, such as hospital resource use, surgical acuity, and case complexity factors, as well as novel patient-centered criteria, including gynecology-specific factors, socioeconomic considerations, quality of life, and patient preferences (Table 1). Ultimately, 20 unique elements were identified; each was scored on a simple, 3-point scale (i.e., 0, 1, and 2) and stratified into 3 sections: Resource Utilization, Case Acuity/Complexity, and Patient-Centered Criteria. These sections carry a separate point total that are summed to create a cumulative JH-GPS score. Higher scores correlate with higher surgical priority. A description and rationale for the system components are detailed below.

Resource Utilization Criteria

During a period of potential resource scarcity, predicted perioperative use of critical resources is essential to consider. We included 4 resource-based elements in the JH-GPS: intraoperative ventilation, intra/postoperative blood product transfusion, intensive care unit admission, and estimated hospital length of stay (Table 1). We omitted personal protective equipment as a category, given that all procedures require this (and in the event that supplies are low, it is assumed that nonurgent cases will be curtailed). A higher score for each element

Table 1

The Johns Hopkins Gynecologic Prioritization System

Prioritization criteria	0	1	2	Assigned score*
Resource utilization criteria				
Intubation requirement	Planned	Possible	Unlikely	
Blood transfusion requirement	Planned	Possible	Unlikely	
Intensive care unit requirement	Planned	Possible	Unlikely	
Postoperative disposition	Inpatient admission	<23 h observation	Outpatient	
Resource utilization score [†]				
Acuity/complexity criteria				
Surgical priority [‡]	>12 wk	4–12 wk	<4 wk	
Days since case posted	<28	29–60	>60	
Procedure time (in min)	>180	60–179	<60	
ASA class [§]	≥3	2	1	
Preoperative hemoglobin (g/dL)	>10	7.0–10.0	<7	
Number of surgical specialties required	1	2	≥3	
Acuity/complexity score				
Patient-centered criteria				
Procedure for suspicion or risk-reduction of cancer	No		Yes	
Pregnancy termination	No		Yes	
Clearance for nongynecologic or organ transplant surgery [¶]	No		Yes	
Infertility patient who requires a timed procedure	No		Yes	
Impact on patient's comfort or daily function	No	Yes		
Requires escalating pain medications	No	Yes		
Mental health condition/psychiatric diagnosis exacerbated by procedure delay [#]	No	Yes		
Impending loss of insurance coverage	No	Yes		
Available effective medical treatment option	Yes	No		
Patient's preference to delay surgery ^{**}	Yes	No		
Patient-centered score				
Cumulative score				

ASA = American Society of Anesthesiologists.

* Assigned score: Increasing score correlates with increasing case priority.

† Resource utilization score: This captures data regarding cases that may require significant hospital resources. It is a separate score that is calculated and can either be added to, or omitted from, the cumulative JH-GPS score, depending on institutional resource scarcity and priorities.

‡ Surgical priority is defined as cases that can be delayed >12 weeks, 4 to 12 weeks, or <4 weeks.

§ American Society of Anesthesiologists Physical Status classification system.

|| A procedure for suspicion of cancer is defined as evaluation ± treatment of postmenopausal bleeding, an abnormal Pap smear or cervical/vagina/vulvar biopsy or lesion, or a finding on imaging concerning for a gynecologic malignancy (i.e., complex-appearing adnexal mass).

¶ Gynecologic clearance for a nongynecologic (i.e., bariatric) or organ transplant procedure may include prior gynecologic evaluation required for the procedure (e.g., workup for a concerning adnexal cyst or vulvar mass, cervical dysplasia, and so on).

Impact on mental health is defined as an adverse effect on pre-existing mental/psychiatric health (e.g., a mood disorder is exacerbated by surgical delay when gynecologic cancer is suspected, and so on).

** Patient-preference-to-delay-surgery score: If a patient elects to defer her surgery (i.e., "Yes"), then the procedure is automatically postponed, irrespective of the cumulative JH-GPS score.

correlates with higher case prioritization owing to lower hospital resource use; thus, outpatient procedures (i.e., minor and minimally invasive surgeries) are prioritized. Because each JH-GPS section is scored and tallied separately, if the tool is employed during a resource-rich time period, the Resource Utilization Criteria section can be omitted.

Acuity/Complexity Criteria

This section contains a tiered surgical acuity category modified from the ACS Elective Surgery Acuity scale [4]. Five additional elements were incorporated: case duration, need for multiple subspecialty surgeons, patient preoperative

hemoglobin level, patient American Society of Anesthesiologists Physical Status classification [13], and the case postponement interval. Many diagnostic and hysterectomy procedures will be performed for abnormal uterine bleeding; surgical priority is given to those patients with lower hemoglobin levels (which correlates with potential gynecologic disease severity and the need for impending blood product transfusion). Furthermore, American Society of Anesthesiologists classification predicts the severity of systemic disease and is a surrogate for patient comorbidities and the likelihood of tolerating surgery [13]. Those with lower scores—and thus healthier conditions—should be prioritized, when possible. Multispecialty cases are also prioritized because they are challenging to coordinate and often performed when more

severe disease is anticipated. In addition, it is equitable to consider giving at least some priority to patients with longer waiting times, so that these cases are not perpetually “bumped” by an influx of more urgent cases.

Notably, we excluded patient age as a consideration. Although elderly patients have higher perioperative morbidity and mortality than their younger counterparts [3], the mean age of women undergoing gynecologic procedures is 39 years, with more than 85% under the age of 60 years [1,2]. In addition, increasing evidence suggests that ageism contributes to poorer health outcomes [3], and it is more likely that the comorbidities that accompany aging are more predictive of health outcomes.

Patient-Centered Criteria

Finally, we included gynecology-specific criteria and patient-centered considerations, including the following: with suspicion of (or hereditary risk for) gynecologic malignancy, requiring pregnancy termination, time-sensitive infertility procedures, or gynecologic surgeries before nongynecologic procedures. In addition, socioeconomic and psychosocial criteria that are notably absent from all published algorithms were included in the JH-GPS. Priority was given to patients with impending loss of insurance [14], declining physical function/quality of life, exacerbated psychiatric conditions, those for whom medical treatment alternatives are not available, and patients preferring to delay their surgeries (i.e., those fearing the potential for hospital-based COVID-19 exposure more than surgical delay).

Summary

To our knowledge, the JH-GPS is among the first surgical prioritization tools with inclusion of gynecologic specificity, patient-centered considerations, and a numeric scoring system to help surgeons and hospital systems rank medically indicated, nonurgent procedures. Compared with existing systems, including the MeNTS tool [8], the JH-GPS offers a more comprehensive array of prioritization criteria (Table 2) that may be more relevant to gynecologic surgery patients and their providers. Although the JH-GPS contains both evidence-based and common sense surgical prioritization elements that may already be in use, in part, by obstetrics and gynecology departments, the systematization of these elements allows for a more objective prioritization process that may help prevent disputes or avoid competition for resources among surgical services. In addition, it is the only tool incorporating the patient’s perspective in the delay and rescheduling process, emphasizing the importance of shared decision-making between a patient and her physician. Furthermore, it also incorporates timely socioeconomic patient considerations. Given the rapid rise in US unemployment rates during the pandemic [14], the loss of insurance benefits may be a legitimate concern for patients.

Table 2

Comparison of the Medically Necessary, Time-Sensitive tool and Johns Hopkins Gynecologic Prioritization System in the coronavirus disease era

Prioritization criteria	MeNTS 2020 ⁹	JH-GPS 2020
Specialty	Agnostic	Gynecology
Surgery acuity tiers	Yes	Yes
Resource utilization	Yes	Yes
Gynecology-specific criteria	—	Yes
Psychosocial/socioeconomic considerations	—	Yes
Patient comorbidities	Yes	Yes
COVID-19 status and/or risk	Yes	—
Numeric scoring system	Yes	Yes

COVID-19 = coronavirus disease; GI = gastrointestinal; JH-GPS = Johns Hopkins Gynecologic Prioritization System; MeNTS = Medically Necessary, Time-Sensitive tool.

A limitation of the JH-GPS is that it is not yet validated; however, this is the case for all existing prioritization systems, including the MeNTS tool [8]. Studies regarding JH-GPS face and construct validity, as well as the tool’s performance in prioritizing more than 500 delayed gynecologic surgeries within Johns Hopkins Hospital, are underway.

The JH-GPS may be used by gynecologic surgeons and obstetrics and gynecology departments to help navigate surgical case prioritization during the current pandemic and beyond. It is meant to be a dynamic tool. For patients whose surgeries have been delayed, it is important to perform interval assessments of their health status and potentially rescore their case-priority level if their clinical condition, case acuity, or other needs change. The tool is also intended for potential use across varied hospital settings and geographic locations; although it was developed with the COVID-19 pandemic in mind, it may be versatile enough for potential use in other crisis states. We thank Paraiso et al [12] for their leadership and recommendations put forth in “Surgical and Clinical Reactivation for Elective Procedures during the COVID Era: A Global Perspective” and hope our gynecology colleagues consider the JH-GPS as an alternative surgical prioritization tool for their surgical patients.

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Implementing Emergency Gynecologic Surgery Guidelines during COVID-19



To the Editor:

New York City, the world's coronavirus disease epicenter, reached its peak of coronavirus disease 2019 (COVID-19) new cases and deaths in mid-April [1]. During the evolution of this crisis, New York City institutions collaborated

to address the challenges facing their healthcare systems. The results of such informal and formal meetings to focus on the pandemic resulted in the establishment of universal testing protocols for patients who are pregnant, the suspension of all nonurgent surgeries, and the conversion of operative units to intensive care units (ICUs). In this letter, we share the protocol for the care of patients in need of emergent gynecologic surgery.

All patients are tested for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) when a decision for emergency surgery is made. Patients with pending SARS-CoV-2 results are considered as persons under investigation (PUIs) and are treated as COVID-19 positive. A PUI must wear a surgical mask, and all personnel in contact with the PUI require personal protective equipment (PPE). This PPE includes an N95 mask underneath a surgical mask, a face shield or eye goggles, a gown, double gloves, head covering, and shoe covers. There are designated PPE coordinators in each unit to ensure the proper distribution of supplies for the safety of the staff.

The patient is taken directly from the emergency department to the operating room (OR) because our preoperative hold areas are serving as ICUs. Our institution has 2 ORs assigned for PUI and patients who are COVID-19 positive; these rooms are large and well ventilated. Once the patient is in the OR, only the anesthesia team remains in the room for anesthesia induction. Intubations are performed with the assistance of a video laryngoscope while the patient is placed under a clear plastic sheet to reduce viral spread. After intubation, the surgical team returns to the room, which is then deemed a restricted zone to minimize all traffic in and out (Fig. 1).

During the surgery, we follow the gynecology surgical COVID-19 joint statement by the American Association of Gynecologic Laparoscopists, American Urogynecologic Society, International Gynecologic Cancer Society, Society of Gynecologic Oncology, Society of Gynecologic Surgeons, and the Canadian Society for the Advancement of Gynecologic Excellence, which recommends low carbon dioxide insufflation pressures between 10 and 12 mm Hg with the use of smoke evacuator systems and gentle release of pneumoperitoneum at the completion of the procedure during laparoscopy to reduce aerosolization of possible peritoneal SARS-CoV-2 [2]. This joint statement also addresses laparotomy and other gynecologic procedures.

Extubation is performed while the patient remains sedated to reduce his or her cough reflex. At the conclusion of the procedure, the nursing and anesthesia teams leave owing to staff shortage and redeployment to coronavirus disease units as also experienced by other institutions. Because our postanesthesia care units are also currently ICUs, the patient completes postoperative recovery in the OR while being monitored by the surgical team. On meeting milestones for discharge, he or she is escorted from the OR to the hospital exit by the surgical team to reduce patient exposure to the SARS-CoV-2 virus (Fig. 1).