Responsible Return to Essential and Non-Essential Surgery During the COVID-19 Pandemic

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Abstract

Non-essential surgery had largely been suspended during the COVID-19 Pandemic. Enormous amounts of resources were utilized to shift surgical practices to a “disaster footing” with most elective surgeons assuming new roles to offset the anticipated burden from surgical and medical personnel delivering acute care. As the number of COVID-19-infected patients began to plateau in the state of Ohio, a four-phase “Responsible Return to Surgery” approach was adopted in concert with the Ohio Department of Health and the Ohio Hospital Association. This approach was adopted understanding that a simple return to the status quo prior to the COVID-19 pandemic might be harmful to patients, providers, and staff. The discrete phases undertaken at our quaternary care institution for a responsible return to non-essential surgery are outlined with the goal of ensuring timely care, minimizing community transmission, and preserving personal protective equipment. Operationalizing these phases relied upon the widespread use of telehealth, systematic COVID-19 testing, and real-time monitoring of hospital and personal protective equipment resources.

Keywords COVID-19 · Elective surgery

On March 18, 2020, the Centers for Medicare and Medicaid Services published recommendations to postpone non-essential surgery and other procedures in an effort to marshal local resources and combat the spread of COVID-19.¹ Most states, including the state of Ohio, followed suit with a massive re-tooling of surgical practices and schedules by permitting only “essential” surgery to be performed. Essential

surgery was defined as any surgical procedure that, if postponed, would result in at least one of the following clinical situations²:

- Threat to the patient’s life if surgery or procedure is not performed

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- Threat of permanent dysfunction of an extremity or organ system
- Risk of metastasis or progression of staging
- Risk of rapidly worsening to severe symptoms

This “phase 0” directive, in addition to several other institutional and community-wide efforts, contributed to a plateau of COVID-19-infected patients within Ohio. In collaboration with the Ohio Hospital Association (OHA), a gubernatorial order was issued to resume non-essential surgery on May 1, 2020. Recognizing that a simple “return to doing business” would be harmful to patients, providers, and staff, a phased “Responsible Return to Essential and Non-essential Surgery” framework was adopted by our institution (Fig. 1). The key principles, based on guidance provided by the OHA, that were undertaken at our institution included:

- Ensuring timely care by maximizing telehealth opportunities
- Minimizing community transmission through systematic testing
- Preserving hospital and personal protective equipment (PPE) resources through real-time monitoring

Ensuring the timely care of surgical patients whose operations were postponed by the COVID-19 crisis included a system-wide coordination of resources and personnel to operationalize phase 1 (return to ambulatory non-essential surgery not anticipated to require overnight stay or admission) and prepare for phase 2 (return to limited extended recovery and inpatient non-essential surgery). With the start of phase 1 on May 1, 2020, patients were placed into three groups to facilitate outpatient contact:

- Patients previously scheduled but postponed due to COVID-19
- Patients currently scheduled for surgery on or after May 1, 2020

- New patients to be scheduled for surgery on or after May 1, 2020

Telehealth options were emphasized with video visits and telephone visits utilized to increase efficiency and minimize disease transmission. These telehealth visits focused on confirming the indications for the original surgery, evaluation of health status changes, discussion of increased risks imparted by the COVID-19 pandemic, and information regarding COVID-19 testing. A specific “Additional Covid-19 Informed Consent for Surgeries and Procedures” was developed to better inform patients of the risks of contracting COVID-19 with their procedure and the potential impact on their recovery. This informed consent discussion, along with the informed consent discussion and documentation for the procedure, was required for all patients. Each patient was assigned an Elective Procedure Stoplight Flag in the electronic medical record (EMR) which was then used to facilitate identification for surgery scheduling:

- Red light—The patient does not want to pursue rescheduling the operation and does not want us to initiate further contact about the operation.
- Yellow light—The patient is unsure about rescheduling the operation at this time and needs repeat contact at a later date.
- Green light—the patient would like to proceed with rescheduling the operation.

In addition, each provider also completed a disease factor information table via EMR to assist with scheduling priority, mainly for phase 2 (Table 1). This table was based on the medically necessary, time-sensitive (MeNTS) score as described by Prachand et al.³ Scores ranged from 5 (low disease factor score) to 25 (high disease factor score). Once patients completed their telehealth visit, all “green light” patients undergoing ambulatory surgery in phase 1 were scheduled for operation, prioritizing those individuals who had been

Fig. 1 Phased approach for a Responsible Return to Essential and Non-Essential Surgery: Each subsequent phase is inclusive of operations performed in the previous phase. Essential surgery is defined as any surgical procedure that, if postponed, would result in at least a threat to the

patient’s life if surgery or procedure is not performed, a threat of permanent dysfunction of an extremity or organ system, a risk of metastasis or progression of staging, or a risk of rapidly worsening to severe symptoms

Table 1 Disease Factor Score (adapted from Prachand et al.³)

Disease factors	5	4	3	2	1
Impact of 2-week delay in DISEASE outcome	Significantly worse	Moderately worse	Slightly worse	Unchanged	Improved
Impact of 2-week delay in SURGICAL difficulty/risk	Significantly worse	Moderately worse	Slightly worse	Unchanged	Improved
Impact of 6-week delay in DISEASE outcome	Significantly worse	Moderately worse	Slightly worse	Unchanged	Improved
Impact of 6-week delay in SURGICAL difficulty/risk	Significantly worse	Moderately worse	Slightly worse	Unchanged	Improved
Progression of symptoms since cancellation	Significantly worse	Moderately worse	Slightly worse	Unchanged	Improved

postponed the longest. Scheduling of phase 2 patients will include consideration of the disease factor score, prioritizing those patients with a higher disease factor score.

Minimizing community transmission relies on a robust means of systematic testing of patients planned to undergo surgical intervention, given asymptomatic SARS-CoV-2 carrier rates of at least 30%.⁴ Given the scale involved, a rational approach to testing all asymptomatic patients undergoing non-essential operations, endoscopic procedures, or interventional radiologic procedures was developed. Mandatory polymerase chain reaction testing was instituted for patients undergoing high-risk aerosol-generating procedures, with the option of testing other patients at the request of the provider. Dedicated teams based on procedural location and a “COVID call center” were created to facilitate system-wide scheduling, screening, testing, and result management.

Real-time monitoring to maintain hospital resources and preserve PPE involved creation of high-level dashboards integrating information from multiple information technology sources. Hospital metrics included percent hospital occupancy, operating room capacity, staff availability, intensive care unit beds (total, available, and occupied), COVID-19 population (confirmed, rule-out, admissions, discharges), and COVID-19 patients on mechanical ventilation. PPE metrics included average daily use of critical PPE items including isolation masks, N95 masks (surgical and non-surgical), powered air-purifying respirator hoods, gowns (isolation and surgical), gloves, hand sanitizer, eye protection, dry swabs, lab reagents, and viral transport medium kits calculated as a rolling average of the most recent 7 days. This average daily use is used to predict “days on hand” of critical PPE items based on current inventory. We have partnered with Battelle, Inc. and developed a system of N95 recycling which has enabled further preservation of this critical resource. These metrics are monitored on a daily basis to inform leadership regarding the volume of patients acceptable for phase 2 and subsequent phases to ensure adequate capacity given the demand incurred by other patient populations.

This phased approach for a “Responsible Return to Essential and Non-Essential Surgery” serves as a roadmap that can be adopted by hospitals and practices in the recovery

phase of disaster planning, including the current pandemic. A clear plan enacted by effective leaders and motivated faculty and staff will ensure timely care, minimize transmission of disease, and preserve critical resources.

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Compliance with Ethical Standards

Conflict of Interest Benjamin Poulou, MD, MPH, has received research support from Bard-Davol and Advanced Medical Solutions; he receives salary from the American Hernia Society Quality Collaborative (AHSQC) as the AHSQC Director of Quality and Outcomes. Laura Phieffer, MD, reports no conflicts. Joel Mayerson, MD, serves as a consultant for ONKOS Surgical. Daniel Like, MHA, reports no conflicts. L. Arick Forest, MD, reports no conflicts. Armin Rahmadian, MHA, reports no conflicts. Brooke Bellamy, MBOE, reports no conflicts. Michael Guertin, MD, MBA, serves as a consultant for Merck. Timothy Pawlik, MD, MPH, MTS, PhD, reports no conflicts.

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