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Approaching “Elective” Surgery in the Era of COVID-19

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The coronavirus disease 2019 pandemic created unprecedented challenges for the health care system. To meet capacity demands, hospitals around the world suspended surgeries deemed to be elective. In hand surgery, numerous pathologies are treated on an elective basis, but a delay or absence of care may result in poorer outcomes. Here, we present an ethical framework for prioritizing elective surgery during a period of resource scarcity. Instead of using the term “elective,” we define procedures that can be safely delayed on the basis of 3 considerations. First, a safe delay is possible only if deferral will not result in permanent injury. Second, a delay in care will come with tolerable costs and impositions that can be appropriately managed in the future. Third, a safe delay will preserve the bioethical principle of patient autonomy. In considering these criteria, 3 case examples are discussed considering individual patient characteristics and the pathophysiology of the condition. This framework design is applicable to ambulatory surgery in any period of crisis that may strain resources, but further considerations may be important if an operation requires hospital admission. (*J Hand Surg Am.* 2021;46(1):60–64. Copyright © 2021 by the American Society for Surgery of the Hand. All rights reserved.)

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THE CORONAVIRUS DISEASE 2019 (COVID-19) pandemic resulted in unprecedented challenges for our health care system. Many hospital systems shifted to a model of crisis standards of care that set standards for the optimal level of care that can be delivered during a catastrophic event,

requiring substantial change in usual health care operations. In an effort to conserve resources for treating expected surges of COVID-19 patients and reduce the risk for exposure to COVID-19 between patients and providers, hospitals canceled procedures determined to be elective. In the federal- and state-level guidance, however, the definition of elective procedures was less specific and left many judgments to regional public health officials and local practitioners. Conditions that are life- or limb-threatening, or a delay in surgery that will negatively affect outcome are treated as nonelective cases, but this definition is subject to interpretation and abuse. Many hospitals implemented sweeping halts on elective surgeries, raising concerns about how long a case should be delayed before there is a serious risk for harm. Uncertainty regarding the length of delay owing to the pandemic raised unprecedented challenges in how to triage and schedule cases that were postponed. We propose using “safely delayed” as the

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preferred term for identifying procedures in hand surgery that can be deferred in a way that does not negatively affect clinical outcome and that avoids suboptimal results or even permanent injury. We propose a medical and bioethical framework for judging these conditions that can guide case-by-case decisions in the context of an individual patient's disability, local medical resource scarcity and case density, and the success of surgery in providing relief. A safe delay is possible when 3 fundamental bioethics principles, tailored to the specific situation in hand surgery, are satisfied¹:

1. Principle of nonmaleficence: Surgical deferral may be safely delayed only when the time duration of the delay will not cause permanent harm or irreparability.
2. Principle of beneficence: A safe delay will benefit the patient with the same or similar clinical outcome, imposing only tolerable impositions that can be appropriately managed, such as pain and short-term functional limitations.
3. Principle of justice: A safe delay will balance physician-guided patient autonomy and decision-making with the public health need to preserve scarce resources, in a way that minimizes unjust or privileged distribution of medical resources.

Using this framework, we can consider a spectrum of scenarios in which surgeries are classified as safely delayed or not.

Discussion of the Proposed Framework

We propose a medical and moral framework for identifying urgent or necessary (as opposed to safely delayed) surgeries that can be derived from the principles of respect for autonomy, nonmaleficence, beneficence, and justice.²

When considering whether a surgical procedure can be safely delayed, a primary consideration is the principle of nonmaleficence, which requires that caregivers not intentionally create harm or injury to the patient by either direct action or omission of an action. A delay of a surgical procedure that results in a clinical outcome different from an undelayed procedure, such as permanent or irreparable damage, would likely violate this principle. This consideration is both medical and moral in nature. As a medical consideration, evidence-based judgments about the risks of the delay and costs to a successful surgical outcome will factor into whether the delay can be considered safe. The moral consideration builds on the medical judgment: If long-term outcomes are diminished or put at considerable risk owing to the

possible delay, the moral principle is violated because harm ensues and the surgery ought not to be delayed. The principle of nonmaleficence also requires the clinician to consider the risk for severe illness or death related to COVID-19. In some patients, particularly those with underlying medical conditions or advanced age, the potential for a suboptimal clinical outcome resulting from delay must be weighed against the risks to a patient's overall health. Therefore, to truly minimize the chances of harm, surgeons must determine the balance of risks based on a patient's specific circumstances and the burden of infection within the region.

The principle of beneficence, which is at the heart of medical care, sets a duty to provide care for the benefit of the patient and to remove harm when possible (this principle works in tandem with the principle of nonmaleficence). At the same time, beneficence requires a holistic and systemic approach; public health is the aggregate health of all patients (this principle works in tandem with the principle of justice). A single patient's needs do not necessarily outbalance those of the public, especially during a pandemic. A safely delayed surgical procedure could be permissible under this principle if the action would provide for the same benefit to the patient, even if the intervention occurs over a longer period, while allowing mitigation of scarcity and reductions in potential disease transmission. Assuming pain management and other measures would allow for tolerable discomfort with similar clinical outcomes, a public health-induced delay could be an appropriate and morally justifiable imposition on a patient. Nevertheless, the duty to provide care for the benefit of the individual patient may require the clinician to serve as an advocate. When the public health metrics within the region no longer require the deferment of cases to conserve resources, it becomes the responsibility of the surgeon to ensure that the individual patient receives the care needed in a timely manner. Therefore, patient advocacy in these circumstances fulfills the principle of beneficence to the individual.

The principle of respect for autonomy underlies much bioethical decision-making and envisions the patient as a rational actor who is capable of providing voluntary and informed consent to medical care and procedures. Intrinsic to the principle of autonomy is the self-determination to care for one's needs and, specific to this issue, receive treatment that will allow for future flourishing. The principle of justice requires the fair and proportionate treatment of each patient; it is typically concerned with the distribution of goods

and services to each individual of a group.³ Preserving autonomy is an important, but not absolute, duty when treatment requires scarce resources. The allocation of scarce resources requires balancing the autonomy of each against preserving treatment capacity for critically ill patients in an impending crisis. Any judgment about whether to delay a surgical case requires balancing the patient's individual needs and imperatives with the overall societal situation, urgent medical need, and resource availability.

The principle of justice interweaves with the principle of nonmaleficence in another way. Justice demands careful attention to the needs of the most vulnerable population.⁴ For example, the risks of delay with some reduction in functionality may be satisfactory for some professional classes. For others, such as laborers and skilled workers, a reduction in successful outcome may mean the end of the ability to earn a living. Patient and physician determination of the inherent risks and costs of a delay should be the primary consideration in whether the procedure should be considered essential or safely delayed.

APPLICATION: CASE EXAMPLES

The management of fractures serves as an example for which multiple ethical principles are considered during a period of resource scarcity. Distal radius fractures in elderly patients are successfully managed non-operatively; several studies demonstrate equivalent clinical outcomes compared with surgery.⁵⁻⁷ Alternatively, the development of malunion in a young adult may have lasting consequences because of the change in mechanical loading.⁸ The risk of posttraumatic arthritis and limited range of motion also increase with the degree of malunion, making younger patients susceptible to a lifetime of disability.^{9,10} It is therefore unsurprising that the operative management of distal radius fractures remains controversial, requiring surgeons to consider age, occupation, and handedness when approaching treatment.¹¹ In addition, those with a symptomatic malunion may require a corrective osteotomy, which has a reported complication rate of 50% and is associated with significant morbidity.^{12,13} This example demonstrates the potential dilemma in approaching treatment at a time when non-surgical management may be incentivized.

The operative treatment of distal radius fractures must be weighed in the context of public health during a pandemic. The outcomes of a young patient with a distal radius malunion are far different from those of elderly individuals, and each case must be

approached on an individual basis. The risks for long-term disability and the morbidity of salvage options necessitate early intervention in patients with significant functional demand. Failure to do so violates the principles of both nonmaleficence and beneficence, because it would place the patient at risk for long-term harm and prevent early functionality. Conversely, the risks of exposing older or more medically vulnerable patients to disease with operative care may encourage non-operative treatment given the support of the literature. Exposing this patient population to the hospital environment during a pandemic with only limited evidence of benefit after surgery would violate the principle of nonmaleficence. In cases of severe injury that may necessitate more than standard non-surgical treatment, the surgeon could use a less invasive technique such as closed reduction and percutaneous fixation under regional anesthesia to help conserve resources. Ultimately, the individual injury and patient characteristics must be considered on a case-by-case basis.

Carpal tunnel syndrome is a condition that can progress to the point where a delay in surgical management may affect outcome. Under normal physiologic conditions, the blood-nerve barrier maintains a stable environment for fibers of the median nerve. With chronic compression, however, breakdown of the barrier and the loss of tight junctions between endothelial cells occur.¹⁴ An inflammatory cascade develops, resulting in scar formation and hypertrophy of synovial tissue, which slows conduction velocity and interferes with oxygen supply to the median nerve.^{15,16} The extent of nerve damage is related to the duration and severity of compression, which makes expedient treatment important for successful recovery.¹⁷ These findings demonstrate that carpal tunnel syndrome is not simply a pain generator; it can have sequelae that affect long-term function and quality of life.

Carpal tunnel syndrome represents a condition that can progress beyond the point of safely delayed operative management. Although it is conceivable that a carpal tunnel release may be considered elective, it is important to consider the patient's condition and the chronicity of disease. The potential for permanent functional loss and pain mandates intervention in patients approaching the point of permanent functional loss. Delay beyond this critical threshold would render irreparable harm and violate the principles of nonmaleficence and beneficence.

Another example of a pathology that, if left untreated, might result in a diminished outcome is

injury to the scapholunate (SL) ligament. Treatment modalities are generally determined by classification of injury, and outcomes are heavily influenced by time to treatment, because chronic carpal instability results in arthritic changes of the joint.¹⁸ After injury, the basic pathophysiology develops from an attenuation and ultimately elongation of the secondary restraints. This instability creates greater stress and altered kinematics within the SL joint.¹⁹ The end result of an untreated SL ligament injury is dorsal intercalated segment instability and degenerative arthritis of the wrist.^{20,21} Scapholunate ligament injury should be managed quickly, generally within 4 to 6 weeks after trauma, to prevent attenuation of the secondary stabilizers and further degeneration of the ligament itself.¹⁸ Primary repair becomes difficult or nearly impossible after this time frame, making salvage procedures with limited success the only options available for these patients.²² The moral principles strongly press against delay in treatment that would result in a notable change in the approach to care or lead to poorer outcomes.

CONCLUSION

A medical and bioethical framework for judging those conditions that can be safely delayed requires a careful understanding of the pathophysiology and clinical outcome data when dealing with various hand injuries. The surgeon, and hospital policy, must also consider when the region or hospital is anticipating a peak in the use of resources that necessitate preservation for pandemic patients. These medical considerations can then be evaluated in light of the fundamental principles of bioethics employed here, especially maleficence, beneficence, and justice. Taking each of these variables together will guide judgment about scheduling the procedure for the appropriate time. For example, if the hospital is anticipating a peak in infection cases in 1 to 2 weeks, it might be appropriate for the surgeon to take the patient to the operating room immediately upon diagnosis. Alternatively, diagnosing the condition during or just before the surge in cases may require a delay in treatment until after the plateau is reached. Each of these examples highlights the importance for surgeons to maintain up-to-date information on the incidence of infections in their communities. This information will help the physician conserve necessary resources and keep patients informed about their plan of care.

The COVID-19 pandemic brought unprecedented challenges to health care fields. The presence of

disease in our communities does not eliminate the surgical needs seen in emergency rooms and clinics each and every day. Although surgeons must certainly be available to help in the direct care of COVID-19 patients or those affected by future pandemics, it is equally important that we treat patients who require surgical intervention. This task is challenging because it requires each patient to be considered on a case-by-case basis in the context of the availability of resources in the community and the prevalence of disease.

Given the growth in globalization and dependence on international trade, we can expect that this pandemic is unlikely to be the last. The framework outlined here can be applied under similar circumstances of resource scarcity. One limitation of this discussion is that we consider strictly outpatient procedures, but cases that require hospital admission (eg, spine surgery, adult reconstruction, bariatric surgery) face additional challenges. Given the amount of resources and potential for prolonged inpatient stays, it may be that these types of procedures require different criteria to be considered when determining the period of delay.

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