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Reflections on unnecessary surgery

Abstract

Surgery is a noble profession whose purpose is to cure disease by removing its source, repairing damage, alleviating suffering, and providing meaningful benefit to the patient. Yet, because but it entails inherent risks, surgery is justified only when those risks are outweighed by the expected benefit and when no superior alternative exists. Consequently, every surgical intervention must ethically and clinically be justified as necessary. Throughout history, however, certain procedures have been regarded as inappropriate or unnecessary. This is a reflection on what may be considered as unnecessary surgery, exploring its potential causes and discusses strategies that may help to reduce its occurrence.

Keywords: unnecessary surgery, ethics, philosophical reflection

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Alejandro Weber-Sánchez
Department of Surgery, Ángeles Lomas Hospital, Mexico

Correspondence: Alejandro Weber Sánchez MD, Vialidad de la Barranca s/n consul 410, Valle de las Palmas Huixquilucan, 52763, Estado de México, México, Tel +52 5552469527, Email awebersanchez@gmail.com

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Introduction

For thousands of years ago, since humans learned how to make and handle tools, they use some of these instruments to develop surgical techniques to save lives. When a surgeon operates, an extraordinary medical act takes place: he enters the body's cavities, manipulates the its structures with the noble aim to cure disease, removing its source, repairing damage, alleviating suffering, providing a clear benefit to the patient, with the conviction that surgery is the best therapeutic option.

Due to its inherently invasive nature, every surgical procedure involves risks and potential complications. These may include severe bleeding, infections, injury to adjacent organs and tissues, and adverse effects, including those related to anesthesia, in addition to those inherent to procedure-specific risks and those arising from the patient's own condition. Nevertheless, these risks are accepted because they are outweighed by the benefit to the patient. Therefore, every surgical intervention must be ethically and clinically justified as necessary.

Regardless of their area of specialization, surgeons are physicians trained to care for the whole patient, diagnosing and managing medical conditions before, during and after the surgical event, often as leaders of the multidisciplinary teams.[1]

Beyond extensive scientific knowledge and technical skill, surgeons are expected to exercise sound clinical judgment, guided by prudence and humanity to determine when an operation is truly indicated.[2] He cares for the patients who have entrusted their lives to them, applying their hard-earned abilities while consistently prioritizing patient's wellfare. Their vocation is to heal, through surgery or, when cure is not possible to meaningfully improve health- when no alternative treatment offers comparable effectiveness.

As Leape observed, "no ethical surgeon wishes to operate if he will not be able help the patient, and certainly not if the operation may endanger the patient's life".[3] Because surgery, is an invasive act, when it fails to offer benefit, it becomes a form of iatrogenic harm-, one that affects not only the person and also the health care system.

Discussion

Background

Throughout history, certain surgical procedures have been viewed as inappropriate or unnecessary. The Hippocratic Oath, foundational to ethical medical practice, cautioned against interventions considered dangerous or of doubtful benefit in its time, such as lithotomy.4 Surgery has evolved dramatically since then, particularly in the last century; however, the ethical imperative to avoid unjustified operations remain unchanged.

Nearly a century ago, the American College of Surgeons Board of Regents identified "four evils" that threatened the integrity of surgical practice: unjustified surgery, ghost surgery, fee-splitting, and exorbitant fees. They defined an unjustified operation as one performed with inadequate indications or contrary to generally accepted practice".[5]

USA Today published in 2013 an investigative article, reporting that in less than ten years more than 1,000 doctors made payments to settle or close malpractice claims in surgical cases that involved allegations of unnecessary or inappropriate procedures, according to the government's National Practitioner Data Bank public use file, which tracks the suits.[6] Some estimations suggested that unnecessary operations may represent 10% - 20% of procedures in certain specialties. Other authors as Tayade and Dalvi, reported in a 2016 review that the global prevalence could range from 30% to 70%.[7]

More recently Albarquoni et al. conducted a systematic review identifying substantial overuse of surgical procedures in low- and middle- income countries, leading to avoidable harm and waste of scarce resources; most cases involved cesarean deliveries without clear indication.[8]

A search for *unnecessary surgery* yields approximately 813,000 results in Google Scholar, 6,922 in MEDLINE, and 4,103 in PubMed reflecting increasing attention in recent decades. A broader Google search produces more than 69 million results. Unnecessary surgery has become a contemporary issue with profound ethical implications. Several factors contribute to this concern: rising numbers of procedures with questionable benefits reported in audits, increasing patient dissatisfaction, and growing numbers of complaints of malpractice claims worldwide. As early as 1974, the U.S. Subcommittee on Oversight and Investigations reported 2.4 million unnecessary surgeries, costing $4 billion and an estimate causing 11,900 preventable deaths.[9]

McCarthy and Widmer published one of the first assessments of second-opinion program, reporting that proposed operations were not confirmed as necessary in 16.4% general surgery cases; 31.4% in gynecology, 40.3% in orthopedics; and 16.3% in otolaryngology- an average of 24%.[10] In some regions, discussions about unnecessary

surgery focus predominantly on financial impact, overlooking the human consequences morbidity, mortality, pain disability and suffering.[11]

Concept of unnecessary surgery

Something deemed *unnecessary* is, by definition not required, not obligatory and ultimately undesirable.[12] Yet no universal definition of unnecessary surgery exists. Terms such as *inappropriate, unjustified, useless, questionable, wrong, low-value or poor cost-benefit,* are used interchangeably. While the notion of "unnecessary" may seem straightforward when applied to material objects, in surgery the implications are far more serious, exposing the patient to harm, risk, and potential loss of health or life.

A surgical procedure may be considered unnecessary for multiple reasons: an incorrect diagnosis, the use of outdated or obsolete techniques; the availability of superior non-surgical treatments; ambiguous clinical judgement; an unfavorable cost-benefit balance; legal disputes; or differing opinions of patients or families, tissue committees, or other surgeons.[13] For these reasons, determining whether a procedure was unnecessary should be entrusted to qualified and ethical surgeons with expertise in the relevant field, as superficial or retrospective judgments may be misleading.

From an institutional perspective, the U.S. Committee on Surgical Services identified fifty years ago, six categories of interventions that could be considered, *a priori* unnecessary: procedures with questionable indications; operations aimed at relieving tolerable or non-disabling symptoms; interventions for asymptomatic or non-threatening conditions; obsolete or discredited procedures; and those lacking adequate clinical or diagnostic justification.[14]

However, the concept of unnecessary surgery cannot be interpreted in isolation. It must be contextualized within its historical period, prevailing surgical traditions, level of scientific knowledge, cultural norms, available resources, prevailing social or religious beliefs and even considering the circumstances in which the decision was taken. In this regard, the Health Services Utilization Study, defined a necessary surgical intervention as one in which expected benefits -such as increased survival, pain relief, and improved functional capacity- clearly outweigh the negative consequences of surgery, including morbidity, mortality, anxiety, postoperative pain and loss of productivity.[15]

Although unnecessary surgery may be broadly defined as any intervention that fails to provide benefit to the patient, the notion of *benefit* itself is inherently variable. What appears unnecessary to one clinician, institution, or health system may be regarded as appropriate by another. Moreover, a limited or modest benefit does not automatically imply an inappropriate decision, nor does it necessarily reflect negligence or malice on the part of the surgeon.[16]

Finally, unnecessary surgery must not be confused with surgical complications, which may occur in any properly indicated and well-executed operation, nor with preventable errors such as *wrong patient, wrong procedure, wrong-site surgery*. These events, addressed through safety protocols, differ fundamentally from ethical and clinical debates regarding surgical appropriateness or necessity.[17–19]

Causes of unnecessary surgery

Unnecessary surgery arises from diverse and multifactorial causes -cultural, social, institutional, and economic, that offer no real benefit and instead impose risk, and burden to the patient. Tradition and customary practice may influence surgical decision-making, as seen in cesarean sections performed because of social pressure, scheduling convenience, or patient preference rather than medical indication, or tonsillectomies in children without established criteria for recurrent infections. Popular trends may also promote procedures with unproven efficacy or unrealistic expectations, as has historically occurred with certain bariatric or cosmetic surgeries. Some practices, such as female genital mutilation, constitute violations of human rights and must be categorically condemned.

In certain medical communities, particularly in high-pressure or critical situations, surgery is often perceived as the most definitive solution. This may stem from mistrust in conservative or non-surgical treatments, or from patient and family demands for rapid and decisive intervention. Examples include spinal surgery for chronic low back pain that could be effectively managed with physical therapy or pharmacologic treatment.[20]

Surgery may also be undertaken to convey the impression that "everything possible has been done" even when evidence indicates futility, such as in terminal malignancy where surgery does not alter prognosis (with the exception of appropriately indicated palliative procedures).

Additional causes relate to professional shortcomings of the surgeon, including lack of updated training and continuing education leading to poor clinical judgement and the use of obsolete procedures; recklessness in patient assessment; arrogance or overconfidence; or pride that prevents acceptance of peer advice or multidisciplinary discussion.21 Other ethically unacceptable motivations include productive pressure, financial incentives, pursuit of prestige, or displays of power. Defensive medicine, driven by fear of litigation, also contributes significantly to the performance of unnecessary procedures.

Importantly however, not all situations can be judged in absolute terms. In many cases, the distinction between necessary and unnecessary surgery resides primarily in the clinician's judgment, which must integrate not only the pathology itself but also the individual characteristics of the patient. Conditions such as asymptomatic gallbladder lithiasis or asymptomatic hernias illustrate this complexity well. While these entities may not require surgical intervention in certain patients, surgery may be justified in others based on age, comorbidities, occupational demands, access to medical care risk of complications, or anticipated impact on quality of life. In such contexts, the decision to operate cannot be reduced to a binary classification but instead reflects a nuanced, patient-centered evaluation. In light of this complexity, the question of whether a surgical intervention was unnecessary often emerges retrospectively and demands a careful examination of the evidence, the clinical context, and the reasoning that guided the surgeon's decision at the time.

What evidence is needed to classify a surgery as unnecessary?

In certain circumstances, such as the use of clearly obsolete procedures or interventions performed without any reasonable indication, there is little doubt that the surgery should be considered unnecessary. However, in many cases, this assessment is far more complex and cannot be reduced to outcomes alone. The fact that a surgical intervention failed to achieve the expected result, despite being appropriately indicated and technically well executed, does not in itself justify labeling it as unnecessary.

Importantly, the primary and most legitimate evaluation of whether a surgical evaluation was unnecessary should reside with the surgeon who indicated and performed the procedure. This assessment must be based on honest self-reflection, critical analysis of the available evidence at the time of decision-making, and a careful review of the clinical reasoning that supported the indication. Such professional self-judgment is not intended to exclude external review, but rather to establish an ethical foundation grounded in responsibility, integrity, and continuous learning to benefit the patients.

Second opinions, although valuable, should be interpreted with caution. An opinion issued retrospectively, without full access to the clinical context or a comprehensive analysis of the patient's condition and circumstances at the time of surgery, cannot automatically be considered superior to the original judgement.[22,23] Similarly, the role of tissue committees or peer review bodies should be understood as complementary and educational rather than purely punitive. The absence of demonstrable pathology in resected tissue does not necessarily imply that the procedure was unjustified. For instance, a microscopically normal appendix removed in the setting of an acute abdomen does not, by itself, indicate an unnecessary operation as surgical decisions are frequently made under conditions of diagnostic uncertainty and time pressure. As William Osler's famously stated, "medicine is the science of uncertainty and the art of probability" a principle that remains central to surgical practice. Decisions are often taken based on the best available evidence and clinical judgement at a given moment, rather than on absolute certainty obtained retrospectively. Osler's observation captures the essence of surgical decision-making, which sometimes occurs under incomplete information.[24]

How can unnecessary surgery be reduced?

Several strategies have been proposed to mitigate unnecessary surgery. Raising awareness though medical education and postgraduate training is essential. Evidence-based guidelines, consensus statements, and hospital clinical conferences help refine criteria and reduce ambiguity. Collaborative decision-making and teamwork strengthen clinical reasoning and improve patient outcomes. Internal hospital monitoring, research initiatives, and campaigns such as Choosing Wisely® contribute to identifying and reducing low-value surgical care.[25–27] Informed consent -understood as an ongoing dialogue that fosters shared decision-making rather than merely the singing of a document – is essential in building a therapeutic alliance aimed at the patient's comprehensive well-being. In the next future, advances in artificial intelligence may enhance diagnostic precision, improve case-specific analyses, and support surgeons in making more accurate decisions, potentially reducing unnecessary interventions.

Strong professional training grounded in technical, ethical and deontological principles remains the most effective safeguard against performing operations that fail to provide meaningful benefit in relation to the patient's multidimensional humanity.[28]

Conclusion

Unnecessary surgery represents a complex and multifaceted challenge that lies at the intersection of clinical judgment, ethical responsibility, and health system dynamics. The determination of whether a surgical intervention necessary cannot be reduced to rigid definitions, isolated outcomes, or retrospective assessments detached form clinical context. The surgeon's professional responsibility to avoid unnecessary surgery should encompasses not only scientific knowledge and technical proficiency aligned with the lex artis, but also ethical integrity and patient-centered compassion.

Use of Artificial Intelligence

Artificial intelligence-assisted tools were used solely for language and stilistic refinement. The intellectual content and authorship of the manuscript remains entirely the author's responsibility.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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