



Contents lists available at ScienceDirect

Annals of Medicine and Surgery

journal homepage: www.elsevier.com/locate/amsu

Perspective



Major and minor surgery: Terms used for hundreds of years that have yet to be defined

The terms ‘major’ and ‘minor’ surgery are widely used to describe procedures. The phrases are commonly used to explain procedures to patients and their families. The terms have even been ingrained into medical education, with the skill of surgical residents being evaluated based on completion of major surgical procedures [1]. It is remarkable that the distinction between major and minor surgeries remains unclear.

In 1917 Dr. Earl requested clarification due to state law prohibiting osteopaths from performing major surgery [2]. He received a response listing the following criteria for major surgery: procedures that require general anesthetic, involve opening great body cavities, have risk of severe hemorrhage, put the patient’s life at stake, or require special anatomical knowledge and manipulative skills. These broad and vague criteria did not create a clear differentiation for what procedures are classified as minor or major surgery. Additionally, several of the criteria were largely subjective and depended on both the skill of the surgeon and the condition of the patient. For example, Johns Hopkins Medicine lists the dilation and curettage procedure as a minor surgery, yet there is a possible risk of hemorrhage and requires special anatomical knowledge [3].

In 1965, Small et al. conducted a survey of American surgeons on their professional opinion of what criteria classify a procedure into major or minor surgery [1]. Twelve common variables were identified, including mortality rate, amount of trauma, extent of dissection, condition of patient preoperatively, potential functional or cosmetic loss, usual duration of operation, space requirements, equipment required, anesthesia use, number of assistants required, difficulties assessed preoperatively, and special training required. The criteria were poorly suited for categorizing procedures preoperatively because a surgical case may appear to be minor on outset but prove to be major during the course of the operation. Additionally, the criteria did not consider conditions that would increase the risk of complications preoperatively such as pre-existing conditions. The study also inherently could not account for the advances in technology that have changed the speed, invasiveness, and use of anesthesia in procedures, limiting the generalizability to modern surgery.

In 2020 Martin et al. attempted to reach a consensus on the definitions by surveying a panel of expert surgeons [4]. The study identified many of the same preoperative, procedure related, and postoperative criteria that were highlighted in the previous definitions, but also identified patient specific factors such as nutritional status and comorbidities.

Despite the past and recent attempts to establish a delineation between minor and major surgeries, the terms still have no official definition. There are thousands of published papers on PubMed alone that describe surgical procedures using these undefined terms, which may have direct implications on interpretation of the research, and clinical practices or outcomes. Considering the exact and specific nature of research, it is concerning that use of these undefined terms is still so widespread.

The lack of a definition even has implications for surgical residency training, as residents are evaluated on their ability to perform major surgery. Many residency handbooks and evaluation reports list competency to perform major surgical procedures as a criterion for progression through the program. The Accreditation Council for Graduate Medical Education (ACGME) provides an extensive list of cases categorized into major and minor surgery but does not provide the criteria used to classify procedures into either group [5]. The ACGME website also hosts an application that categorizes procedures as major or minor based on Common Procedural Terminology (CPT) codes for resident documentation [5]. The existence of such a program would indicate that there is an established definition of major and minor surgery used to classify procedures, but ACGME provides no explanation for either designation.

Considering the variable definitions for major and minor surgery, why is the nomenclature still in use? They are simple terms that easily convey the complexity of a procedure. Patients and their families are unlikely to possess the medical literacy to understand the risks of a surgery but understand the implied connotation of a minor or major surgery. Obviously, physicians have the responsibility to communicate the pertinent details about a procedure to their patients, but the terms “minor” or “major” set the tone for their expectations.

The issues with the nomenclature arise mainly when used to describe a borderline procedure or a procedure that may depend greatly on the condition of the patient. For example, many procedures may be classified as minor surgery for the general population but may be considered major surgery for a patient with hemophilia [6]. However, a recent review of the literature found that there is a lack of consensus on the classification of procedures into the two categories [7]. Regardless, it is impossible to create clear definitions for these niche cases when scientific community has failed to even reach a consensus on the classification for the general public.

With the nomenclature so ingrained into medicine it begs the question: what should we do to correct this issue? Some surgeons avoid the terms altogether, but they are undeniably universally understood and effective at communicating the severity of a procedure to the general public. However, this utility needs to be weighed against the potential complications caused by inappropriate use in scientific literature and medical education.

Major and minor surgery may continue to prove useful nomenclature for generalizing the severity of procedures, but should be avoided in scientific writing unless accompanied by a thorough explanation of the included or excluded procedures for each. Whenever the terms are used it should be noted that any minor surgery can occasionally have major consequences.

<https://doi.org/10.1016/j.amsu.2021.102409>

Received 15 May 2021; Accepted 16 May 2021

Available online 25 May 2021

2049-0801/© 2021 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Ethical approval

Not applicable.

Research registration unique identifying number (UIN)

1. Name of the registry:
2. Unique Identifying number or registration ID:
3. Hyperlink to the registration (must be publicly accessible):

Author contribution

Study design and conception: AE, Data collection, interpretation and analysis: KN, AE, MM, Manuscript preparation: KN, AE, MM, Critical revision of manuscript: AE, KN, MM. All authors read and approved the final manuscript.

Guarantor

Adel Elkbuli.

Funding

None.

Declaration of competing interest

Authors disclose no competing interest.

References

- [1] R.G. Small, R.E. Witt, Major and minor surgery, *J. Am. Med. Assoc.* 191 (1965 Jan 18) 180–182, <https://doi.org/10.1001/jama.1965.03080030024005>. PMID: 14233251.
- [2] R. Earl, Definition OF major and minor surgery: a question and an answer, *Ann. Surg.* 65 (6) (1917 Jun) 799, <https://doi.org/10.1097/0000658-191706000-00014>. PMID: 17863736; PMCID: PMC1426523.
- [3] Dilation and Curettage (D and C) Johns Hopkins medicine. <https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/dilation-and-curettage-d-and-c>. (Accessed 2 May 2021).
- [4] D. Martin, S. Mantziari, N. Demartines, M. Hübner, ESA Study Group, Defining major surgery: a delphi consensus among European surgical association (ESA) members, *World J. Surg.* 44 (7) (2020 Jul) 2211–2219, <https://doi.org/10.1007/s00268-020-05476-4>. PMID: 32172309.
- [5] The Accreditation Council for Graduate Medical Education (ACGME), Common program requirements, Tracked codes, <file:///C:/Users/ijw7298/AppData/Local/Microsoft/Windows/INetCache/Content.Outlook/Z6R98FQ2/AvailableCodesByAreaAndType.pdf>, 2021.
- [6] E. Santagostino, S.R. Lentz, M. Misgav, B. Brand, P. Chowdary, A. Savic, Y. Kilinc, Y. Amit, A. Amendola, L.P. Solimeno, T. Saugstrup, I. Matytsina, Safety and efficacy of turoctocog alfa (NovoEight®) during surgery in patients with haemophilia A: results from the multinational guardian™ clinical trials, *Haemophilia* 21 (1) (2015 Jan) 34–40, <https://doi.org/10.1111/hae.12518>. Epub.
- [7] L.P. Solimeno, M.A. Escobar, S. Krassova, S. Seremetis, Major and minor classifications for surgery in people with hemophilia: a literature review, *Clin. Appl. Thromb. Hemost.* 24 (4) (2018 May) 549–559, <https://doi.org/10.1177/1076029617715117>. Epub 2017 Jul 6. PMID: 28681633; PMCID: PMC6714696.

Kevin Newsome

Department of Surgery, Division of Trauma and Surgical Critical Care, Kendall Regional Medical Center, Miami, FL, USA

Mark McKenny

Department of Surgery, Division of Trauma and Surgical Critical Care, Kendall Regional Medical Center, Miami, FL, USA

Department of Surgery, University of South Florida, Tampa, FL, USA

Adel Elkbuli*

Department of Surgery, Division of Trauma and Surgical Critical Care, Kendall Regional Medical Center, Miami, FL, USA

* Corresponding author. Department of Surgery, Kendall Regional Medical Center, 11750 Bird Road. Miami, FL, 33175, USA.

E-mail address: adel.elkbuli@hcahealthcare.com (A. Elkbuli).