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Commentary: Nomograms—or as Yogi Berra said, "It's tough to make predictions, especially about the future"

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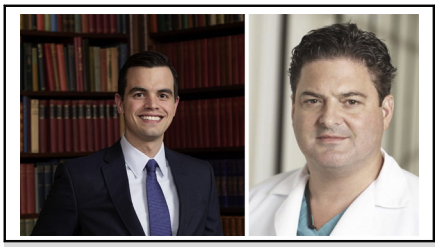

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CENTRAL MESSAGE

Nomograms can provide the postoperative roadmap for common and possibly preventable complications for surgeons because imaging and planning are the roadmap in the operating room.

Wei and colleagues[1] describe a validated nomogram used to predict postoperative urinary retention (POUR) in patients after general thoracic surgical procedures. In their cohort, nearly 20% of patients undergoing major general thoracic surgical procedures experienced POUR and their validated nomogram can help predict which patients are at greatest risk.[1] Identification of at-risk patients allows surgical teams to initiate prophylactic therapy as indicated and potentially mitigate the occurrence and/or sequelae from POUR.

Nomograms represent some of the most accurate decision-making tools available in clinical medicine. Nomograms are visual diagrams. They synthesize biologic and clinical variables, both categorical and continuous, into a graphical tool designed to approximate complicated calculations quickly and without a computer or calculator.[2-4] Their purpose is to "help with clinical decisions."[2] Ideally, nomograms are used to help us predict the future, but we know that is not possible. We tell patients their risk profiles for and likelihoods of certain outcomes and complications to assuage their concerns more than our own because we know that in surgery the chances of having something not go according to plan is generally 0% or 100%—we will either convert to open to perform a safe surgery for our patient, or we will stay minimally invasive and resect the tumor because it does not come with any undue risk to our patient.

Preoperative planning is the closest thing surgeons have to trying to control the future. Our best chance of controlling outcomes and having operative success comes with a critical understanding of operative anatomy that results in a straightforward procedure. We routinely plan using radiographic data to provide a roadmap before incision with the goal of a better operation and thus a better outcome. The evolution from radiograph to computed tomography scan, and the transition from 2-dimensional to 3-dimensional reconstructed imaging and models has been invaluable and provides a better map for planning complex procedures, again with the goal of having the best outcome.

We have excellent resources at our disposal to try to control operation as described above, but the fundamental value of a surgeon to a patient is not only performing an excellent operation but managing the perioperative course as well. Complications either occur or they do not. Managing complications and minimizing their influence on patient outcomes is part of the art of medicine. Mitigating risk of surgery in the operating room requires knowledge, judgment, and a team with a common purpose and shared vision to optimize outcomes. Some medical complications, like POUR, may be more difficult to predict and prevent than others. A seemingly small complication can be morbid

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and lead to other complications; the hospital course, after a safe operation, can be derailed due to minor postoperative issues. Nomograms can provide the postoperative roadmap for common and possibly preventable complications for surgeons because imaging and planning are the roadmap in the operating room. As Wei and colleagues[1] state in their article, nomograms can help us treat these potential problems preoperatively.

Let's embrace nomograms because as Yogi Berra once said, "It's tough to make predictions, especially about the future." Knowledge, judgment and intervention as part of preoperative planning and preparation can help us shape the future for our patients and their outcomes.

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