Reflect and Remember: The Ethics of Complications in Interventional Radiology

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Abstract

Keywords

- ethics
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Clinicians, particularly those in procedural specialties, tend to feel personally responsible when complications occur. Medical errors among surgeons have been studied and provide an insightful window into the ethics of complications. Ethically we must consider what we owe patient and families, ourselves, and our colleagues. To some degree, the answers are similar: *reflection*, *confession*, and *resolution*. We owe patients and families an explanation and lack of abandonment; we owe ourselves thoughtful reflection on what caused the complication and how we can learn from it; and we owe our colleagues assistance managing our complications and a chance to learn from our mistakes. As a specialty that prides itself on innovation and novel therapies, interventional radiology has a unique relationship with complications that has not been well developed. As the specialty grows, it will be important to provide forums for further understanding the ethical challenges in interventional radiology.

Errors versus Complications

The last two decades have featured an encouraging rise in attention to medical errors and patient safety in healthcare.¹ We are now empowered with a wide array of terminology from “adverse events” to “near-misses.”² Some authors make a distinction between “errors” and “complications” in that error implies a mistake has been made, whereas complications occur even when everything is done correctly.³ This distinction is important from an operations and systems perspective, but these events do not feel very different individually or ethically.

Despite the prevalence of medical errors, control and perfection are central themes of medical culture. Medicine attracts type-A personalities that are placed in the pressure cooker of medical education for years, fostering a need for control and tendency for rigid self-critique.⁴ When things do not go as expected, whether an “error” or “complication,” clinicians are conditioned to look for answers and question “*what if I had....*” Furthermore, when attempts to heal someone harm him or her, it contradicts a foundational assumption made by patients, families, and clinicians themselves: doctors heal people. When things do not go as planned, we

are left to rewrite the next part of our narratives and justify the contradiction.⁵ Sometimes, only the next paragraph needs to be rewritten, whereas other times our patients must rewrite whole chapters and endings of their lives. With this in mind, complications and medical errors feel similar to the conscientious clinician, so this article will not differentiate them. Instead, this article will explore the ethics of when procedures do not go as planned and harm a patient.

Taxonomy of Errors

One of the most famous studies of how failures (and complications) are handled in medical culture was performed by Charles Bosk in the 1970s.⁶ He spent 18 months observing and interviewing members of an academic surgical training program, and many of his observations readily translate into interventional radiology (IR) today. Complications feel more personal in fields like IR where procedures are performed to heal. Bosk noted that when a patient dies on a medicine service, people ask “*what happened*,” but when a patient dies on a surgical service, people ask “*what did you do?*”

Bosk’s central thesis involved the characterization of four types of errors, two of which were forgivable and two of

Table 1 IR examples of Bosk's classification of medical errors

Type of error	Example in IR
Technical	Performing many hepatic punctures for a TIPS causing capsular puncture and hemorrhage
Judgment	Choosing to attempt to embolize a high-flow AVM leading to nontarget embolization
Normative	Failing to check on a patient after a tenuous procedure who bleeds all night and is found hemodynamically unstable
Quasi-normative	Using a protocol from a previous institution after being asked to use one's current practice's protocol

Abbreviations: AVM, arteriovenous malformation; IR, interventional radiology; TIPS, transjugular intrahepatic portosystemic shunt.

which were not.⁶ These are summarized with IR examples in ► **Table 1**, and the distinction is immortalized by the axiom in medicine: forgive and remember (also the title of Bosk's book). The first type of error is a technical one. This occurs when one is performing the job conscientiously, but skills fall short. The second is an error of clinical judgment where the wrong treatment course is chosen. These are both forgivable errors in Bosk's paradigm so long as they are infrequent and not continuously repeated. Such repeat errors would raise question of whether a normative error is present, a lapse in professional character, like failing to answer an urgent page that leads to a patient death, falsifying documents, or lying about seeing a patient. The final type of error seems exclusive to trainees called quasi-normative errors. This is not so much a lapse in character but failing to adhere to the procedures of one's team: for example, following an acceptable uterine fibroid embolization (UFE) protocol but not that used by one's attending after being asked to do so. These latter two categories are less forgivable according to Bosk.

Of course, complications also occur due to forces outside of the procedure performer. These exogenous sources of error include failure due to the nature of disease, patient noncompliance, staff error/noncompliance, and device/machine malfunction.⁶ However, we tend to leave these as diagnoses of exclusion, especially in field where we are quick to question "what did I do?"

What We Owe Our Stakeholders

This sociological observation of how we handle medical errors is an ideal window through which to explore the ethics of complications. It is clear that as procedure performers we place greater responsibilities on ourselves when things go wrong. Of course, we must be careful not to let our past mistakes paralyze us or drive us toward mental illness—a major problem facing healthcare.⁷ Nevertheless, we should be wary to too quickly absolve ourselves and consider complications merely something that happens. Given the moral weight of what we do, treating human beings, we must defend against emotional numbing and complacency.

When errors occur, we must answer ethically what we owe patients and families, ourselves, and our colleagues. To some degree, the answers are similar: *reflection*, *confession*, and *resolution*. Truth-telling and trustworthiness have long been virtues of the medical profession.⁸ Patients trust that healthcare professionals have their best interests in mind, and it is that trust that allows healthcare providers to manipulate patients' bodies in ways that would be considered assault and battery in any other context. Complications can weaken that trust, not only in that episode of care, but in healthcare in general. This is why we owe it to our patients, selves, and colleagues to rebuild that trust by re-conveying truthfulness and trustworthiness.

For patients and families, we can rebuild trust by providing an explanation and lack of abandonment. Long before the emergence of malpractice jurisprudence, communities felt that doctors owed patients reparations when procedures went awry. A famous (and extreme) example comes from the Babylonian Hammurabi's Code that dictated that if a doctor performed an operation on a nobleman and the patient died, his hands were amputated. Today, fear of malpractice claims may make us reluctant to discuss complications with patients, but physicians who spend more time talking to patients and providing support tend to get sued less frequently.⁹ We owe it to patients and families to acknowledge their frustrations and concerns and continue caring for them—a sincere "I'm sorry this happened" and moments of silent presence can go a long way. Rather than viewing the case as a failure and walking away, IRs can become co-narrators, helping that patient and family members write the next chapter that has suddenly changed.⁵

Beyond our patients, we also owe ourselves honest reflection, perhaps even before engaging with patients and families. Another central virtue of the medical profession is intellectual honesty, knowing what you know, and the limits of your abilities.^{8,10} Before attributing a complication to an exogenous force, we should question whether it was a technical, judgmental, or normative error. If it was caused by a lapse in technical skill or clinical judgment, we owe it to our future patients to reflect upon this, seek additional education, and attempt to reduce similar errors in the future. If normative in nature, we should take a step back and again question why? Is the physician burnt out, or overwhelmed by other factors in life? If there is no answer other than apathy, it might be time to reconsider careers, both for future patients and oneself. We all make mistakes, and to err is human, but we should reflect upon our mistakes, remember, and resolve them as best we can. Above all, we should care.

Finally, we should consider what we owe our colleagues. They may not have been directly affected by the complication, or even aware of it, but as a medical community (and humans) we learn most from our mistakes. One forum where this has been taken to heart is morbidity and mortality (M&M) conferences. Much like one's self-critique, these are ideally constructive and not whipping posts for subordinates' embarrassment. It would be ideal if, both in conferences and journals, complications are shared at all levels to remind us

that medicine is an imperfect science performed by imperfect beings no matter the experience. However, M&M conferences and journals are often specialty specific, and medicine is a multidisciplinary specialty. Much like our patients, other providers involved in patients' care deserve an explanation and support in dealing with our complications.

Ethics of Interventional Radiology, Looking Forward

Although the earlier discussion is applicable to IR as a procedural specialty, it is not specific to our specialty, so it is worth considering some unique aspects of our professional culture related to complications. IR is more unbridled than many medical specialties. As a younger specialty with less data behind what we do, we are often operating at the edge of medical knowledge. We have long prided ourselves as innovators, constantly pushing the boundaries of technology, which is well reflected in our celebration of "Extreme IR" cases in our conferences and journals. To some degree, we celebrate cases that could easily end up in M&M conferences of other specialties, creating a uniquely complex relationship with complications.

There are classification systems for IR complications, like other specialties, but meaningful research on ethics in IR is nearly nonexistent. We devote time and effort to pushing the envelope and measuring our complications but not reflecting upon the deeper meaning and impact of those complications and how they are related to our drive toward innovation. Furthermore, discussions of complications in IR (and other procedural fields) tend to be limited to more tangible events directly related to procedures (e.g., bleeding or infection). We do not currently have a forum for less-tangible issues such as those related to consent, goals of care, conflicts of interest, or tribalism. As IR grows as a distinct specialty, we should incorporate more forums for the development of ethics in IR, the collective values that reflect our professional culture.

An important first step in developing the ethics of IR is using a common language. There are a variety of ethical theories that have been applied to healthcare,¹¹ some of which have been incorporated into the discussion earlier. Perhaps the most common is principlism. Ethical dilemmas are discussed and resolved by considering four core principles that come in conflict: autonomy, beneficence, nonmaleficence, and justice. Other important approaches include narrative ethics, virtue ethics, and casuistry. ▶ **Table 2** lists some common ethical theories used in healthcare with examples applied to complications. Ultimately, further discussion will be necessary to understand which ethical language best resonates within our specialty. However, after studying IR culture over the years, it seems that the ethics discussions tend to gravitate toward casuistry and virtue ethics: IRs emphasize comparing their current case to past cases (casuistry) and thinking about the values behind or reflected in their actions (virtue ethics) to understand how to approach an ethically challenging case. Perhaps an ideal next

Table 2 Comparison of ethical theories applied to complications

Ethical theory	Example
Principlism	Considering which 2 of 4 core principles are in conflict and which should take priority when a complication occurs, e.g., the patient's autonomy to follow a certain course of action and nonmaleficence, our commitment to first do no harm
Narrative ethics	Considering how a complication has affected the patient's illness narrative and how to best support the patient based on how the complication is contextualized within their life story
Casuistry	Comparing the current case to previous similar cases to understand how best to respond to a given complication
Virtue ethics	Considering the core values of one's specialty and patient to understand which actions best align with those collective values
Deontology	Deciding on a best course of action based on certain hard truths, e.g., the patient should be told X when complication Y occurs
Utilitarianism	Choosing how to respond to a complication based on which course of action will maximize the greatest good for the greatest number
Social contract theory	Considering what is socially expected when a complication occurs, i.e., reflecting upon and respecting explicit and implicit social contracts of one's society

step for developing ethics in IR would be to incorporate a space in our journals and conferences for presenting and discussing difficult ethical cases as well as technical ones. After all, we all have complications, but it is up to us to understand and reflect upon their meaning for our patients, ourselves, and our colleagues.

Conclusions

In summary, procedural specialists tend to feel more personal responsibility when complications occur. Ethically, we should consider what we owe patients and families, ourselves, and our colleagues, and strive to rebuild trust and foster professional growth in the face of medical mishaps. The ethics of complications is IR relatively undeveloped and complicated by our commitment to innovation and extreme case lore. To balance this and grow as a specialty, we should incorporate forums to discuss challenging ethical issues and cases.

Conflicts of Interest

The author does not have any conflicts of interest related to the content of this article.

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