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“Are You Going to Be in the Surgery?” How Residents Can Respond to Concerned Patients Based on “The Impact of Different Postgraduate Year Training in Neurosurgery Residency on 30-Day Outcomes” Studies

Mohamed Macki, Victor Chang, Beverly C. Walters

The year 2015 saw the publication of 2 landmark studies on neurosurgical education from the American College of Surgeons National Surgical Quality Improvement Program. Bydon et al.¹ reviewed the data from 16,098 patients undergoing neurosurgical procedures beginning in 2006, and Lim et al.² surveyed 8748 patients undergoing neurosurgical procedures in 2011. Using multivariable logistical regression, both investigator groups demonstrated that surgeries with resident participation compared with a cohort of attendings operating without a resident did not significantly predict for overall complications, 30-day morbidity, or 30-day mortality. Although neurosurgical residents rejoiced that the reported data substantiated their safe involvement in the operating room, further questions remained: Are all postgraduate years (PGYs) equal? In response to questions on PGY equality, Macki et al.³ reported “The Impact of Different Postgraduate Year Training in Neurosurgery Residency on 30-Day Postoperative Outcomes: A National Surgical Quality Improvement Program Study.” In this National Surgical Quality Improvement Program query of 10,200 neurosurgical cases that had included assisting residents, the level of training in neurosurgery was divided among junior residents (PGY 1 to PGY3), midlevel residents (PGY4 and PGY5), and senior residents (PGY6 and PGY7). The PGY did not predict for any of the 3 primary outcome measures in a multivariable regression analysis: wound disruptions (surgical site infections and/or wound dehiscence), Clavien-Dindo grade IV (life-threatening) complications, and death. In the follow-up study, “The Impact of Different Postgraduate Year Training in Neurosurgery Residency on 30-Day Return to Operating Room: A National Surgical Quality Improvement Program Study,” the level of neurosurgery training did not increase the risk of a 30-day return to the operating room.⁴

Because the Accreditation Council for Graduate Medical Education introduced a hypervigilant era of regulations protecting resident safety,⁵ both publications on the effect of different PGY training in neurosurgery residency are timely and necessary in surgical education. Neurosurgery residency, in particular, has developed features of both apprenticeship and academic paradigms, in which learners have increasing responsibility during operative procedures throughout their 7 years of postgraduate training. This has translated into the precedent of a chief resident’s “right of first refusal” for operating room cases that might actually serve to protect more junior residents, who might be subsequently assigned to cases more suitable for their technical level. Opponents of this hierarchal approach in neurosurgery might argue that assigning cases solely by the year of training overlooks the individual dexterity of the resident. However, surely, even the best hands of a junior resident will still lack the fund of knowledge and wisdom necessary for

tackling potential complications in a complex surgery assisted by, at best, a mediocre senior resident. Plus, most errors in neurosurgery occur at the hands of well-trained, well-motivated residents or attendings, whose greatest crime is perfecting their technique.

Communicating these same ideas to patients, however, requires a fair amount of care. A patient would never be told, “Your bread-and-butter operation is so routine that a beginner-level surgeon will be helping...but don’t worry, studies have validated the safety of these assistants.” In many cases, the true prognosticator of adverse outcomes lies with the actual patient for several reasons. First, English psychologist James Reason argues that a “name, blame, and shame” culture for medical misadventure must be abolished.^{6,7} Mishaps might reflect the consequences of a larger failure in the system, not just a cause of a surgeon’s shortcomings. Thus, in the unfortunate circumstance of an unintended outcome, the system should deter patients from singularly reprimanding any given physician.

Second, the role of effective communication cannot be overstated. A comprehensive understanding of not only the patient’s pathology but also the medical history and physical examination would prime any resident, regardless of confidence level, for a trusting physician–patient relationship. In a survey of 231 patients who sought treatment by 1 spine surgeon, 61% reported no preference for the level of resident training.⁸ Instead, factors focusing on bedside manner scored far higher in influencing patient choice. One key example included the demeanor of the resident. In a randomized clinical trial of 120 adult postoperative patients admitted for elective spine surgery, patients perceived a longer communication time at the bedside when the physician sat compared with standing, although the duration was equivalent.⁹

Third, consent discussions should remind patients that their health status will influence their outcomes above-and-beyond the training level of a participating resident. Both studies on the impact of different postgraduate year training in neurosurgery residency demonstrated that patient characteristics, rather than resident participation, were the strongest effectors of complications using adjusted odds ratios (OR_{adj}).^{3,4} Wound class III, contaminated (OR_{adj}, 4.81), followed by morbid obesity (OR_{adj}, 3.29) represented the greatest predictors of surgical site infections. Similar results were found for the modified Frailty Index (OR_{adj}, 98.67) and wound class 4, dirty/infected (OR_{adj}, 3.11) with Clavien-Dindo grade IV complications; modified Frailty Index (OR_{adj}, 82.91) and American Society of Anesthesiologists class (OR_{adj}, 3.37) with death; and modified Frailty Index (OR_{adj}, 5.18) and functional operations (OR_{adj}, 2.65) with a return to the operating room.

In conclusion, wound class >1 and American Society of Anesthesiologists class signified the only 2 variables that statistically significantly increased the odds of all four 30-day outcome measures. Thus, if residents, regardless of the training level, truly have a vested interest in the best postoperative outcomes, the most

valuable assistance to their attending might not occur only in the operating room, but also—statistically speaking—might be best served by overall pre- and postoperative medical and wound optimization. This speaks to the best residents who can act as both surgeons and clinicians.

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