Developmental stages in the career of an academic neurosurgeon

Ralph G. Dacey Jr., MD

Department of Neurological Surgery, Washington University School of Medicine, St. Louis, Missouri

There is value in examining and describing the developmental stages in the career of an academic neurosurgeon.

This developmental evolution can be considered across three domains: clinical neurosurgery, research, and leadership. Academic neurosurgeons must educate successive generations, and I will discuss the importance of teaching for each domain. Personal and family development and concerns are probably the most important for all of us as we progress through our lives, but these are so individual that I will not consider them as a separate domain. This is not a discussion of retirement or end-of-career issues because that is a separate topic in and of itself.

We can consider the developmental progress that occurs as the neurosurgeon evolves from resident to assistant professor to associate professor to full professor. The matrix of developmental stages in the clinical, research, and leadership domains is shown in Fig. 1, and the stages are described in further detail below. The relative importance of the various domains changes over the stages of an academic neurosurgeon’s career (Fig. 2). For example, when a neurosurgeon is an assistant professor, research may take up more of his or her time and interest, but with the transition to the associate professor and professor levels, clinical practice may become much more prominent for some individuals. For others, clinical practice is the dominant aspect of their neurosurgical career from the outset, but a part of their career that itself undergoes a natural evolution over time—from establishing local technical expertise to advancing the field through surgical innovation to attaining a regional/national reputation as a master technical surgeon. For many neurosurgeons, a role as local, regional, and/or national leader also evolves as their career progresses (Fig. 3). Between the developmental stages there are predictable times of turbulence and challenge that could be described as developmental counter-currents. The degree to which individual neurosurgeons focus their efforts on clinical neurosurgery or on research varies significantly, and many academic neurosurgeons conduct successful careers concentrating on one of these two domains.

In this paper, I will try to describe the common distinctive characteristics of the stages in development. I will discuss conflicts and tensions that often come up during transitions between developmental stages.

Development in the Clinical Domain

The most important aspect of career development for an academic neurosurgeon usually occurs in the clinical domain. Initially—usually in PGY 1 through PGY 4—the neurosurgery resident is in a phase of adaptive enculturation. During this phase, the resident watches how neurosurgical care is delivered and procedures are conducted and imitates the activities of his/her mentors and teachers. He or she learns the rules and norms of our specialty and begins the assimilation of basic knowledge about anatomy, surgical care, neurology, and the fundamental characteristics of clinical neurosurgical disease. The resident must adapt personally to the culture of neurosurgery, and sometimes this is difficult and challenging. During this phase of adaptive enculturation, the neurosurgical resident, although becoming progressively more autonomous, is not independent for most important clinical decision-making.

During the next phase of clinical career development, usually occurring from PGY 5 through PGY 7, the resident enters a phase of autonomous integration into our specialty. The resident at this stage begins to “own” the patient and enjoys the successes of satisfactory treatment and feels the failure of complications when they occur. During this stage, the resident becomes broadly competent and relatively autonomous. He or she experiences the value of the cross-pollination of various neurosurgical subspecialties (vascular, tumor, spine, etc.) and a rapid acceleration of clinical expertise. Residents must also progressively
develop physical stamina to perform long operative procedures and emotional resilience to deal with very sick patients under pressure. Almost all residents develop a great sense of pride, confidence, and accomplishment during this stage of autonomous integration.

As the neurosurgical resident goes through this progression from enculturation to autonomy, it can be difficult to simultaneously maintain adherence to our specialty’s strict expectations and norms in terms of quality and independence. Some residents are slow to become autonomous, and their autonomous performance of neurosurgical duties (especially in the operating room) needs to be tempered by judgment and social proprioception. As a result of the expectations of patients, payers, and hospital administrators, our training paradigms in the United States do not always foster independence. However, the development of autonomy is fundamental to achieving that level of confidence that we all recognize as essential for a successful transition from senior resident to independent neurosurgical practitioner. It is a difficult and challenging progression, and it is often associated with significant pressure on the individual and tension in his or her interactions with coworkers and supervisors.

At the next stage within the clinical domain, the neurosurgeon becomes an assistant professor. They begin to explore their own limits and define a clinical interest. This is the phase of initial mastery. They accept challenges, they develop tolerance for risk, and they define their own clinical style. Usually, this phase is characterized by progressively increasing surgical volume, which in turn generates more volume and practice opportunities. Also at this time, it is difficult to establish work/life balance, as personal and family issues often peak as the neurosurgeon enters his or her late 30s. The importance of self-discovery as a surgeon is characterized by distinguishing ourselves from those around us and determining what is important to us. The neurosurgeon must experiment and learn by trial and error. Some of the things that we try do not go well, and we learn our limitations. If a neurosurgeon becomes “stuck” at this stage and cannot discover himself or herself as a surgeon, he or she generally cannot go on to the next stage. This phenomenon is, however, unusual.

The developmental countercurrent that occurs around this stage relates to the tension between patient safety and caution versus the need to innovate and challenge surgical boundaries. Establishing the right balance between caution and prudence and developing stretch goals for surgical growth define this tension. It is important that the culture of the institution, group, or department be tuned to promote the proper balance. During the period of initial mastery, the more junior surgeon must be actively supported in practice and skill development by his/her more senior surgical colleagues. As an example, I recently treated a patient who presented with acromegaly. As we were considering an endonasal endoscopic transsphenoidal approach for surgical treatment of the offending adenoma, it became clear that we could not properly manipulate the endoscope due to the patient’s profound cervical kyphosis (chin-on-chest deformity). I therefore asked one of my colleagues to perform a deformity correction procedure that would restore a relatively normal cervical alignment for the patient, allowing her to undergo endonasal endoscopic transsphenoidal resection of the pituitary adenoma causing her acromegaly. This was a complicated set of procedures for this patient, but ultimately it was very successful. As my younger colleague addressed the cervical deformity, it was clear that the procedure would be complex and fraught with significant risk. My colleague accepted this, dealt with it, and successfully brought the patient through a complex procedure. This and other cases like it have led to his developing broad competence in managing complex spinal deformity patients and gaining great confidence in choosing the indications and best course for his patients.

Also at this time the neurosurgeon must develop the proper balance between grit as described by Angela Duckworth1 and flow as described by Mihaly Csikszentmihalyi.2 Grit is manifested by persistence and resilience and has to be part of every neurosurgeon’s makeup. Grit is needed to

---

FIG. 1. Stages of career development for academic neurosurgeons within the clinical, research, and leadership domains as they progress through their careers from resident to professor. The amount of effort in the various domains may change at various stages of development.