



The Downside of Technological Advances in the Surgical Training Environment

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Editorial

There is no question that sales representatives from surgical device companies are effective in convincing surgeons to use their products. In fact, this activity can be seen to unfold in and around operating rooms on a regular basis. Though I have strong opinions about the value of this activity, I am not here to claim whether it is right or wrong. However, as a surgeon regularly involved in the training of residents, I do have significant concerns regarding the effect of “new technology” on the development of surgeons.

Surgeons rely on sound principles to help them navigate through the challenges and inevitable pitfalls of every case which has their name on it. These principles (and associated nuances) are related to human tissue and how it responds to the manipulation and purposeful violation of any invasive procedure, to three-dimensional hand dexterity, and to the mechanical orchestration of surgical instruments. Surgeons acquire these principles and nuances through repetitive exposure in their own residency training. Then, they repeat and fine-tune those practices over and over as they care for many patients during their careers.

For those involved in the development of surgeons, it is the passing on of these core standards and principles that is most important. A new surgeon armed with tried and true techniques is a surgeon equipped to handle adversity, including adversity which comes in the form of the failure of new instrumentation. However, when residents are exposed again and again to “new technology”, the acquisition and honing of reliable techniques and principles is impeded. This, in turn, is likely to dissuade new surgeons from pursuing full integration of these reliable techniques and principles into their own practices.

One simple example of interchanging new instrumentation for sound and predictable technique in podiatric surgery is the use of power reamers for joint preparation in the first metatarsophalangeal joint arthrodesis procedure. The goals of joint preparation in arthrodesis procedures are: 1) Articular cartilage removal and 2) Subchondral bone plate fracturing. When these goals are attained using hand instrumentation such as curettes and osteotomes, the result is a stable (and therefore, fixation-friendly) and injured (and therefore, ready to heal) subchondral bone plate with a maintained contour. While powerful and efficient, reamers rapidly claim cartilage and bone as they churn down through opposing joint surfaces. In novice hands, shortening of the metatarsal as well as weakening and modification of the subchondral plate can occur. These undesired effects on fusion construct and outcome are less likely to occur with the more predictable and reproducible hand-based approach.

While surgical company representatives have little concern for surgical resident development beyond encouraging those residents to use their products in their eventual practices, it is the responsibility of the surgical attending to ensure each resident receives a steady diet of sound techniques. Certainly, this will require the staff attending to routinely use these standardized approaches in their own practices, even at the cost of disappointing the company representative.

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