The agony of complications in neurosurgery

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Dr. Anil Nanda is the Professor and Chairman of the Department of Neurosurgery at LSU Health Sciences Center at Shreveport. A native of New York, Dr. Nanda earned his medical degree with honors from JIPMER, Madras University in 1982. Dr. Nanda completed his neurosurgery residency at the Hahnemann University School of Medicine in Philadelphia. In the spring of 2012, Dr. Nanda received his Master of Public Health degree from the Harvard School of Public Health. Dr. Nanda has served as President of the North American Skull Base Society (2005-2006). He is committed to the expansion of growth in the field of neurosurgery. He is a prolific writer and a very good orator. With his large experience in management of neurosurgical patients, his sagely advice regarding the importance of complications in neurosurgery is very important for the residents and young faculty. Neuorsurgical procedures are fraught with complications. This article presents an interesting take on agony of complications and humbling experiences faced by all of us during our practice of neurosurgery.

In a room where people unanimously maintain a conspiracy of silence, one word of truth sounds like a pistol shot.

– Czesław Miłosz

As surgeons, we are known for our energy, vision, and enthusiasm for changing outcomes and results. This enthusiasm sometimes causes us to focus solely on our successes. Unfortunately, in academic medicine, the truth of the matter is that the triumphs of surgery are hailed while the disasters are swept under the rug to be ignored. We as a community tend to have a "drum major instinct" as Martin Luther King, Jr. said in one of his iconic speeches. We like to be in front and "parade our results" to show that our techniques and accomplishments are flawless.

This optimistic enthusiasm for newer procedures, outcomes, techniques, and tricks sometimes moves us away from being reflective about the art and the disasters that can occur. Make no mistake, none of us want to talk about some of these problems—the complications that keep us awake at night, that remind us that we as mortals tinker with an art that can completely deflate and destroy our spirit.

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Having operated on over 14,000 cases, I know that patients' faces fade, typical procedures are forgotten, but our disasters truly mark our psyche and resolve us to try and concentrate on a more humble approach in order to do better. I will give two clinical scenarios.

Scenario number one: A 45-year-old male required a lumbar discectomy. While operating on the disc, I noticed perhaps more blood during surgery than I had ever seen before. I put some gel foam in, but I remained alert that I had gone a little too deep. I asked the anesthesiologist if there was any hypotension and he said no, everything was fine. But the bleeding still bothered me.

Postoperatively, he was neurologically intact, he moved his legs, but his hemoglobin kept dropping. On postop day 1, it dropped four points; I got suspicious and ordered a CT scan.

Unfortunately, the CT scan showed a retroperitoneal hematoma. The patient quickly had an arteriogram, which showed a pseudoaneurysm in the iliac. Luckily, it was stented with excellent results [Figure 1a-c]. He was discharged 4 days later and had no adverse outcome. A year later, he is asymptomatic with no problems.

This instance was humbling because even after doing several hundred lumbar disc surgeries, I used a discrongeurand got a piece of the iliac. The outcome could have been a lot worse. He could have become hypotensive and died on the table. It is deeply humbling to know that even while doing something that you have done a hundred times before, things can still go wrong. This episode prompted me to review the literature, and I learned that most of these iliac injuries occur with the upbiting rongeur when it is inserted too deeply. As a result, I became a little more cautious about using the rongeur. Though I am still haunted each time I perform a lumbar disc procedure by the blood that came out of that particular patient, I know how fortunate I was that the results were not far worse.

Scenario number two: A 60-year-old female with a giant ophthalmic artery aneurysm came for an elective clipping [Figure 2a-c]. This was prior to the stent/coil era, so she was scheduled for a routine craniotomy clipping. I felt quite comfortable doing this—at the time, I had had experience with over 500 aneurysms, close to 75 of which were ophthalmic artery aneurysms. I drilled out the clinoid and found calcium in the dome of the aneurysm. I had also exposed the carotid in the neck; I put a temporary clip in the neck and attempted to clip

Figure 1a: Left common iliac artery pseudo aneurysm following surgery

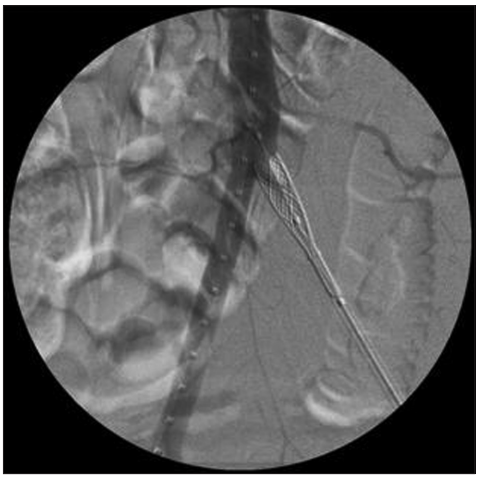

Figure 1b: Successful coiling of the pseudoaneurysm

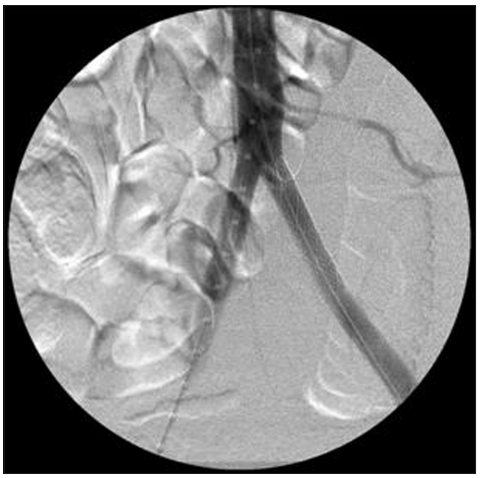

Figure 1c: Successful coiling of the pseudoaneurysm

Figure 2a: Left paraclinoid lesion with peripheral calcification

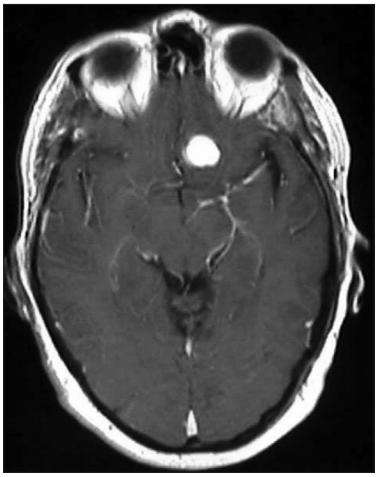

Figure 2b: Left paraclinoid lesion with peripheral calcification

Figure 2c: A giant multilobulated left ophthalmic internal carotid artery aneurysm

the aneurysm. Unfortunately, in the process of clippingthe aneurysm, the neck tore. We had a rupture and I ended up doing a saphenous bypass graft, but the outcome was poor and the patient did expire.

Every time I clip an ophthalmic, I think of this case. What measures could I have taken? What should I have done or not done? Perhaps I should have done an elective bypass before the procedure and then sacrificed the carotid. Alas, these are the kinds of questions that we will never answer.

When dealing with complications, it is imperative that we practice the utmost honesty. Seneca's aphorism was well echoed by Shakespeare in *Hamlet* when Polonius said to Laertes, "This above all: To thine own self be true, and it must follow, as the night the day, thou canst not then be false to any man." I think any attempts to sugarcoat or camouflage complications are a disservice to our neurosurgery community. First, it gives an impression that lesions with the potential for high morbidity can be done with very low or acceptable morbidity. This proves a catalyst for younger neurosurgeons to try high-risk procedures, which can result in untoward consequences. Second, complications can injure the psyche and trouble the soul, but are necessary for us to grow. I feel that if we did not experience the deflation that comes with complications, our art would not improve.

One of my favorite quotations is from basketball legend Michael Jordan—"I've missed more than 9,000 shots in my career. I've lost almost 300 games. 26 times, I've been trusted to take the game winning shot and missed. I've failed over and over and over again in my life. And that is why I succeed." I think it is our failures that drive us to improve, to try to figure out how we could have done a better job. Each week, I try to sit down with my residents and go over all the complications we experienced in our clinic. I always start with my own.

If we aren't honest, it is the art that suffers. Ours is an art that deserves respect, humility, and above all, honesty. If we are honest, then we are careful.

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