Spinal:

The Culture of Obstetric Anesthesiology at Gbagada General Hospital

(Lagos, Nigeria)

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Richard D. Sparks Writing Contest

22 March 2016

Introduction

I remember the first time I saw the spinal cord in neuroanatomy class, that string of jelly, that gossamer coated, cellophane wrapped, conduit of the body. It had kindly been dissected out from its bony encasement by the neurology PhD students who served as our guides and instructors. With gloved hands they drew out each spinal cord from its white bucket of formaldehyde and laid it on moist towels on the tables before us. I noticed the cut ganglia that protruded at intervals like centipede legs down the sides. Indeed, what was most shocking to me was that the spine, and in turn, my spine was no bigger in diameter than my thumb. I could hardly see the butterfly shaped white matter on its cut surface whose clustered nuclei I had studied like a Rorschach in poster-sized scale. This glistening worm was the reason for my sleepless nights drawing and mapping color-coded connections, subway maps for pain and vibration and how the brain knows where the body is—spinning or standing, on mountain or in the sea— in physical space. Our student guides demonstrate how the spinal cord's meninges are divided—the dura mater is the hard tissue layer that lines the outside of the cord. In the dissection process it must be peeled carefully from the vertebral column. The arachnoid mater is the cobweb-like tissue layer that clings tightly to the pia mater—tender mother in Latin. The arachnoid, pia mater and the spinal cord itself are indistinguishable until the cord tapers into a cone of empty arachnoid and dura at approximately the first and second lumbar vertebrae. We are shown a specimen with the sacral nerves still intact and spread across the table more like a peacock's tail than a horse's. Later, I will learn that by finding the center of the line drawn with first finger and thumb from the crest of both hips at

approximately the fourth and fifth lumbar vertebrae, I will know where to place the needle for injecting heavy Marcaine. The procedure, called a subarachnoid (SAB) regional block or spinal, is the analgesic and paralytic of choice in Nigeria for patients where general anesthesia is not indicated or considered unsafe. I saw the spinal used most often for obstetric and gynecology cases but even for a hip replacement in a 92-year-old woman. Many of the patients expressed surprise at how quickly the injection took effect, the strange tingling sensation that coursed down their legs, a shock not unlike the cold touch of the iodine swab against the middle back. Can you lift you legs? And, remarkably, the same patient that walked down the stairs from the ward moments before tells us no, her legs are now heavy. Soon, the healthy infant will be delivered painlessly by caesarean and I am awestruck when I imagine that this necessary surgical procedure is made possible by a tiny injection to the same gummy rope no bigger than an electrical cord I saw in neuroanatomy class.

Gbagada General Hospital

"Only the guarantee of amnesia, the fact that the patient will remember nothing but the anesthetist's saying "Sweet dreams," allows us to be surgeons."

Abraham Verghese, *Cutting For Stone* (2009).

In the summer of 2015 I received a Stanley Graduate International Award to study cross-cultural anesthesia use in rural Nigeria. I had originally planned to conduct most of my research in eastern Nigeria where I have an understanding of the Igbo language however, due to last minute safety concerns I was limited to Lagos.

Lagos is the international hub of Nigeria, its former capitol and one of the most cosmopolitan cities on the continent. Lagos is also a place of marked dichotomies and contradictions. It is a place where you might have a world-class, state-of-the-art interventional cardiology unit in one ward of the hospital and rusted overhead surgical lights and exposed, squealing oxygen tanks in another. Even at the teaching hospital, monitoring equipment was outdated and poorly maintained yet I also witnessed a laparoscopic appendectomy exactly as I'd seen it done during my surgery rotation here in the US. A senior registrar in anesthesiology at Lagos University Teaching Hospital (LUTH) said to me, "I believe in our declaration as a hospital: We care but God heals. So I still pray for my patients but I do not substitute faith for my intervention as a medical practitioner. I believe you intervene and you pray." Therefore, when counseling a mother in Yoruba on the likely brain death of her machine-ventilated child, he encouraged her to pray. At Gbagada General Hospital, a smaller public institution in Lagos, the surgeons prayed before the first incision and allowed the patient to sing hymns, even sang along!

The goal of this paper is to highlight the remarkable training and innovation I saw at Gbagada General Hospital despite social, economic and infrastructural challenges specifically in the area of obstetric anesthesiology. By far the most rewarding of my observership experiences in Lagos took place at Gbagada General Hospital. I had the opportunity to interview two anesthesiologists at Gbagada about their medical education, why they chose to practice in Nigeria, their thoughts on traditional medicine, religion, and the state of surgical care in Nigeria. As well as informal conversations with the registrars, medical officers, and nurse anaesthetists. It is important to note how important meeting these incredibly accomplished and talented female physicians was for me. It was

the first time I was surrounded by both patients and physicians who looked like me and who came from the same country as my parents. One of the anesthesiologists even attended the same medical school my father did in Lagos. According to the deputy head of anesthesia:

> The area where we encounter cultural bias the most is in obstetric anesthesia where a patient is told she needs to have a cesarean section because there maybe cephalo-pelvic disproportion, when the baby is too big and you know she's not going to deliver the baby vaginally and you've told her and yet she refuses. So the first thing is usually they go to the herbalist. From the herbalist maybe to the traditional birth attendant. They may end up in the churches praying about it and when it gets really bad and they almost have uterine rupture then they come to the hospitals. Which also is another reason why the mortality rate at the hospital is so high. They give us a bad name. But then they come to us when they're so bad. They don't come early enough. So it's a major problem. So it's all cultural bias. And when they come sometimes they don't want to go to sleep. So it's a good thing that we have mastered the technique of spinal anesthesia here. Because some of them don't want to sleep. Some of them may not want a needle in their back as well. We have to persuade them because they need one or the other. They're wary of doctors in general and hospitals because they believe people come there to die. But people will die because they don't come on time. (Interview Notes, Erondu 2015)

An example of such a case is that of a lawyer who had infertility and multiple fibroids and was told she didn't need surgery. Instead, she went to a traditional healer who gave her a corrosive agent to insert into her vagina. When she finally presented to the hospital her original complaint of infertility and multiple fibroids was complicated by

sepsis and vaginal stenosis. Sadly, she was eventually discharged with the fibroids still there. Therefore, a second goal of this paper is to illuminate Gbagada's particularly successful practice of spinal anesthesia in obstetrics by using an anthropological lens.

The Culture of Anesthesiology

The anthropologist's definitions of culture are many-fold. It is the total way of life of a people, a way of thinking, feeling, believing, a set of learned behaviors and techniques for adjusting both to the external environment and to other persons (Geertz 1973). Similarly, the culture of anesthesia might be divided into the rules and behaviors that govern the relationships between healthcare provider and patient during the perioperative period and the principles that govern the classes of medications used to achieve loss of consciousness and pain management. The anesthesiologist's ritual might be divided into Preoperative Evaluation, Induction, Maintenance, Reversal/Emergence, and Recovery. Each ritual has its own checklist of medications and equipment. In cases where spinal anesthesia is indicated fluids and ephedrine, anti-emetics, anxiolytics and opioids are at the ready. The anesthesiologist's sickle, torch, and staff is the laryngoscope blade for airway management. The physical examination revolves around this tool: how small is the chin relative to the size of the tongue? When the patient tilts her head back and opens her mouth wide, can you see the tonsillar pillars? The laryngoscope exists to ensure accurate placement of the plastic windpipe extender, the endotracheal tube, between the vocal cords. Finally, the Holy Grail of perioperative

medicine is the machine of inhaled anesthetics with its balloon and bellows for oxygenation, and its monitor for blood pressure, cardiac electrical activity and carbon dioxide emission. According to my anesthesiologist interlocuters, the department of anesthesiology at Gbagada General Hospital has existed since the hospital's opening in the late 1970s. All of these cultural standards of anesthesia care held firm at Gbagada despite power outages and missing spinal kits, through broken air conditioners and administrative delays.

The Red Line Taboo

On walking through the doors marked Operating Theatre my first day, I found it difficult to distinguish between staff, patient and family, as all crossed the cracked and faded red line freely. Symbolically, in the way that many cultural taboos are meant to protect and socialize its members by defining purity and pollution, acceptable behavior and unacceptable, the red line is meant to distinguish between civilian and surgical staff, street attire and hospital scrubs. However, when the hallway serves as both waiting area and recovery room it is impossible to enforce this distinction. To the Western gaze, this blending of what Arthur Kleinman (1988) terms the disease, the ill and the sick, that is, physician intervention, patient experience, and the disruption it causes to family, might seem incongruous even dangerous. But when monitoring is limited due to a shortage of staff and equipment, it might even be safer to keep the recovering anesthesia patient close to the OR and also allow their family members near to help care for them.

Here, also, the nurse's table sits like a gatekeeper exactly on the line, it is where family members in flip-flops, t-shirts, head ties and wrappers, bring receipts of payment to the hospital's billing department and reach into Ghana-must-go bags to prove that all items from the nursing list are correct and accounted for. The cost of obstetric care at Gbagada General Hospital must be resolved immediately. The OR nurses work with family members and spouses to ensure that the bill for the procedure and all materials has been paid. The patient purchases her own bandages, gauze, pads, coconut oil for the baby, blood products, and IV fluids. The negotiation and transaction happens right there on the red line border, at the matron's desk. The gift exchange between patient and provider is tangible, it is seen, it is physical, it does not come in a paper bill months later with hidden fees bundled into it. Unfortunately, the current fee for service model also means a patient who can't pay is either turned away or kept in the hospital, accruing more debt, until he or she can. The physical body itself becomes a sort of collateral. And what is the true monetary value of a person, a body, a life?

Induction

I usually arrived to the theatre just as each woman was helped onto the operating table for her spinal. In the moments she took to rest we studied her anatomy from outstretched leg to hip to back to belly. Was the vertebral column going to be an easy railroad or a subtle dimple? I marveled at how unwieldy some of their stomachs were, large and uncomfortable, some painful with uterine fibroids (leiomyoma) and ascites.

Pregnancy, labor, and delivery are indeed backbreaking work. I sensed each lady's trepidation as she tried her best to keep center while shifting her bottom down the narrow table to give us room to set up for the procedure. We gave her a pillow to clutch to her chest under her armpits and then asked her to bend—or rather, hunch—around it. The paper packaging of the subarachnoid block (SAB) kit is unwrapped and tucked under each woman taking care to keep the sterile face from touching the skin, then the gauze is unwrapped, the sterile gloves, the specialized needle. One must be especially careful to avoid contamination because the cost of sterility in Nigeria—clean water, electricity for autoclaving, disposable plastic—is quite high. When the spinal does not "catch," that is, when the injection must be repeated, we meet the specter of the faulty, incorrectly stored or expired medication. "Is it possible that all medications in that shipment are faulty?" We murmur. "Has anyone else had problems today?"

Once it does "catch," the spinal anesthesia is fast acting but a short two to three hours in duration. There is a medical language barrier to determining how high the heavy Marcaine spinal block has traveled, to ensure that the block has not only managed to bathe the cerebrospinal fluid surrounding the free dangling sacral nerves at the end of the cord, but also has ascended up to the level of the tenth thoracic vertebrae, midway up the spinal cord itself. To identify this level, the patient is asked to characterize the touch of a pointed object on her skin from belly button to shoulder that maintains the feeling of pressure but not of sharpness or pain. "Is it painful?" She is asked. "No, but…" The pharmacologic goal for the spinal is to relax the abdominal muscles and chemically disrupt the spinal cord's pain pathway from incision to brain. The ability to characterize pain in all of its definitions has been a preoccupation of poets for centuries. In the world

of anesthesia it, too, is central. Is it a pulling pain or a sharp pain? Might we use other symbols or representations like, it is the feeling of a pencil eraser pushing against a chest that feels like a field of cotton balls?

Anesthesia in the awake patient, as in the case of a spinal, requires particular care and sensibility. It requires therapeutic listening to patient anxieties as well as a sort of divination for physiologic changes and medication side effects. The nurse matron anesthetist explains to me that it is important to speak to each patient in her own language, in most cases this is Yoruba, so that she is at ease for surgery. And indeed, "sorry" does not quite have the same calming effect as "ndo" in my Igbo language, or "pele" in Yoruba. It requires an immense amount of trust and bravery on the patient's part to accept complete immobilization of the lower extremity when, in other societies paralysis is a curse that results from a bone pointed at you by a evil-doer or by a cloud of powdered blowfish poison. But, we explain, it is equally amazing and powerful and important to master pain and make life-saving surgery possible with just a needle prick to the spine.

The Sterile Field Taboo

The anesthesiologist serves as bridge between surgeon and patient. The most important signifier of this relationship is when, after the anesthesia induction period is over and the patient's body has been scrubbed clean with iodine, the surgeon covers the surgical field with sterile drapes leaving a square of open skin just above the pubic bone,

and lifts the free edge, the barrier near the patients' head, for the anesthesiologist to wrap around the IV pole. The hands of surgeon and anesthesiologist do not touch yet that exchange of cloth is like a tacit agreement in view of the patient that both sides are playing for the same team. In a resource poor setting where most surgical items are only sustainable if they are reusable, this means the drapes are more of a towel than a blanket. Therefore the physical barrier between anesthesiology team and surgery team is more a shelf than a wall. This allows not only for more interaction between doctor and doctor but also between doctor and patient. It is impossible, as a surgeon, to forget that there is a head and a body, a fearful, anxious, and also curious mother there along with you. And so we prayed and sang Yoruba hymnals with these mothers. We predicted the sex of the child. Those women who waited until the last minute to seek surgical intervention were scolded the way you would a close friend. Providers who had experience with childbirth or spinal anesthesia themselves cheered the women on. However, the most memorable demonstration of bridge crossing/barrier breaking by the anesthesiologist was the successful resuscitation of three infants in one day one of whom required chest compressions and facemask oxygen.

Emergence

In general, it takes far longer—an entire morning in many cases—to get the patient downstairs from the ward than it does to perform the surgery. Then it is a quick incision followed by a mighty mighty tug. I remember one case turned over so fast that the newly delivered infant remained in the warming unit while the next case, a myomectomy under general anesthesia, began. The sleeping infant lay in stark relief against the anesthesia machine alarms, the bustle of intubation, the sound of inhaled gas. I imagined the dreams she was having, a matrix-like first experience of the world outside the womb.

Recovery

At the end of each case the surgeon breaks scrub to help wipe blood and excrement—a side effect of the spinal is temporary loss of bladder and bowel control—and to help transfer the patient onto her hospital bed. The hospital guest at Gbagada is cared for lovingly, I think, because the red line or sterile field between provider and caretaker is porous. Around the hospital compound I saw clothing lines and persons coming from the backyard after cooking or washing their family member's bedding. We greeted each other and I curtsied as I sign of respect to those who were older than me. I thought to myself, people *live* here. In a similar sense this includes the hospital staff who rarely get days off and so, and are familiar and kind to each other, like a family—albeit a slightly bedraggled one.

Improving Maternal Health in Nigeria

The obstetric anesthesiology cases I witnessed at Gbagada were joyous occasions in the end however, it is important to recognize that the physiology of a normal pregnancy is similar to many chronic disease states of the heart and lung. Between 2003 and 2009, 73% of maternal deaths internationally were due to obstetric causes (Say et. al. 2004). Obstructed labor alone accounts for 1-5 deaths per 1000 live births and is the most common need for obstetric surgery (Say et. al. 2004). Causes of obstructed labor include a large fetal head that is unable to pass through a small pelvis, abnormal fetal positioning in the birth canal, and fetal defects. Without safe surgical intervention, obstructed labor can result in fistula or an abnormal and embarrassing connection between the vaginal wall and the bladder or anus, fetal demise, or maternal death by hemorrhage, pregnancy-related hypertension, or sepsis (WHO 2016). Leiomyoma, pink and purple nucleated whorls on histological examination, more beautiful than a Van Gogh, can cause significant morbidity for women. The uterine muscle overgrows in places, bulges into and out of the uterus, stretches out into the pelvis at odd places with pedicled fists. In the worst cases you can palpate the bulky uterus—usually difficult to do from the abdominal side—and sufferers complain of severe menstrual bleeding and pain. Those who manage to conceive risk inability for the uterus to contract post-partum, even with surgical intervention, uterine massage, and IV Pitocin. Instead of tightening like a bobby pin, the leiomyoma filled uterus closes like a hand puppet with golf balls in its mouth. The resulting hemorrhage, defined as more than 500mL of blood loss within 24 hours after birth, can lead to maternal death. Half of the O&G cases I saw at Gbagada were

complicated by leiomyoma.

Lowering maternal mortality internationally is a Millennium Development Goal (MDG). In Nigeria, the maternal mortality ratio is 814 per 100,000 live births compared to 239 per 100,000 on average in the developing world (WHO 2016). Yet Nigerian government expenditure on health is only 6.5% of total expenditures (WHO 2016). With more government help Gbagada General Hospital and other healthcare institutions could be shined and polished to help Nigeria meet every Millennium Development Goal. A study of the history of Gbagada General Hospital and its role in the community might lend better insight into hopes for the future. Improvement in hospital infrastructure and an electronic medical record, for example, would make preoperative evaluation more efficient and also allow for proper continuity of care.

Of course, continuity of care is impossible without adequate staffing. According to WHO Global Health Workforce Alliance Data (2016) Nigeria currently has 5 hospital beds per 10,000; 4 physicians per 10,000; 16 nurses and midwives per 10,000. Without an increase in these numbers, a proper recovery room and round-the-clock monitoring of critical patients is fool's gold. During my time in Lagos, the registrars at the Teaching Hospital were on strike due to inadequate pay. A shift in government focus to improving hospital facilities and resources as well as compensating these essential personnel might be the answer to training and retention of highly educated healthcare professionals.

From my brief observation it seemed that most women post-caesarian did not receive the same amount of opioid analgesia that would be expected for someone who had received significant abdominal surgery in the US. Opioids and anxiolytics like

midazolam are contraindicated while the infant is still in utero to prevent respiratory depression and sluggishness in the newborn, however, in the postpartum period, once the spinal anesthesia has worn off, analgesic options were limited to paracetemol, diclofenac, and pentazocine due to cost and international regulations on controlled substances. A future study should investigate the culture of pain management—traditional and western medicines—in childbirth inside and outside the hospital in Nigeria as well as structural barriers to medication access nationwide.

Conclusion

The aim of anthropology is the enlargement of the human universe through the particulate matter of all the things that make up our historical, social, and cellular milieu: culture. It is no coincidence that physician-writer Abraham Verghese's prize-winning novel, *Cutting for Stone*, features the miraculous birth of twins joined by a tendonous conduit at the head in 1954 Addis Ababa. This literary gem highlights the important culture of obstetric and gynecological care and underscores my argument that without anesthesia, life-saving surgical intervention in obstetrics would not be possible. Happily, despite limited options for post-surgical analgesia, I felt that the culture of anesthesia care at Gbagada was comparable to what I've seen in the US. The paper has also shown that the subarachnoid spinal block in the field of obstetric anesthesiology deserves particular attention. Indeed, the word "spine" has taken on a new meaning for me. It describes the powerful and talented core of anesthesia providers at Gbagada General Hospital who,

with quills and barbs, strength and resolve, are breaking the barrier to optimal surgical care in Nigeria.

Acknowledgments: The author thanks the University of Iowa Office of International Programs, the Stanley Graduate Grant for International Research and Gbagada General Hospital in Lagos, Nigeria for making this research possible.

References

Geertz, C. *The Interpretation of Cultures: Selected Essays.* New York, NY: Basic Books; 1973.

Kleinman A. *The Illness Narratives: Suffering, Healing and the Human Condition*. New York, NY: Basic Books; 1988.

Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels JD, et al. Global Causes of Maternal Death: A WHO Systematic Analysis. Lancet Global Health. 2014;2(6): e323-e333.

Verghese A. *Cutting for Stone.* New York, NY: Vintage Books; 2009.

WHO (2016). Nigeria: WHO Statistical Profile. Retrieved January 27, 2016, from http://www.who.int/countries/nga/en/

WHO (2016). Nigeria: HRH Country Profile. Retrieved January 27, 2016, from http://www.who.int/workforcealliance/countries/nga/en/