MY JOURNEY TOWARD A CAREER

An Honors Thesis (HONRS 499)

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(Date: 12/91)

Expected date of graduation
(12/91)
My Journey Toward A Career

Ever since placing second in the Indiana State Science Fair competition in fourth grade, I felt that my future profession would be in a science related field. Whether it be a teacher, doctor, dentist, or researcher, I knew I would always be interested in science. As a high school student, I therefore enrolled in science and college-bound courses to gain more knowledge in these fields. However, not until I reached my junior year in college did I attempt to decide which area of science I would pursue. While I eliminated teaching because of the lack of respect I feel it receives from society, I decided to test my interest in the chemistry field by working as an organic chemistry researcher the summer after my junior year. At first I enjoyed the responsibility of setting up and controlling particular chemical reactions. Likewise, I enjoyed the success of completing a reaction properly. While all of this was interesting in the beginning, it quickly became tedious and monotonous. Since there was little interaction with intelligent life, I quickly became bored with graduated cylinders, erylenmeyer flasks, and filtration vacuums. For this reason I decided not to pursue the research field at this time, but rather focus my attention
on the medical and dental field. The next summer I observed a general surgeon in order to gain some insight into my field of future choice. The following journal notations explain the diagnoses and procedures of the problem, while also noting the feelings of the patients, medical specialists, and me.

First Day of Surgery

The first operation I witnessed was a mastectomy, the removal of the breast. For this procedure, two incisions in the shape of an ellipse are made to encompass the entire breast tissue. Next, the fatty tissue is cut down to "the red line", a common term used to describe the point at which one sees the pectoral muscles. Continued cutting is done around the breast until it is completely detached. The excess bleeding is stopped and two drainage tubes are placed into the wound. The remaining tissue is then sewn together. Each different layer of tissue must be attached to ensure proper healing. Likewise, each tissue must be sewn together with the proper suture material. Once this procedure is completed, the outer tissue is stapled together to ensure a good fit.

This particular patient had an enormous tumor in her left breast. The only problem the large tumor caused the surgeon was that the incision was more difficult to sew together, primarily because of a lack of available skin tissue. As a
result the wound will not heal as well producing a more prominent scar. However, this is a minor complication when dealing with cancer.

Since this was my first surgery, I was very nervous. I wondered if I would faint or vomit. As the surgeon made the first incision, my forehead began to sweat. My body temperature rose from ninety-nine degrees Fahrenheit to what seemed like one hundred and ninety-nine. Fortunately, this state did not last long. By the time the second incision was made, I was completely engulfed in the surgery. I was still not convinced whether I could handle surgery until the surgeon cut through an arterial bleeder embedded in the fatty tissue. This blood vessel proceeded to spew blood on my scrub clothes, which surprised me, but did not bother me. After this happened, I knew I would not have trouble "stomaching" the rest of the day.

The next operation seen was an endoscopic cholecystectomy, a newly developed procedure to remove the gall bladder using a camera and other instruments. The gall bladder is usually removed because it is stony often due to an improper diet. In this procedure, four small incisions are made in the abdomen. One of the incisions, the incision through the umbilicus (navel), is the site for the camera and also the place for the removal of the gall bladder. Trocars, instruments used to puncture through the fatty tissue and into the abdominal cavity, and alligator clips, instruments
enabling the grasping and moving of the gall bladder, are placed in the other three incisions. The body coelem is then filled with carbon dioxide gas, which expands the cavity, to give the surgeon more room to maneuver the gall bladder and instruments. The next step in this operation is to partially detach the gall bladder from the liver bed. The gall bladder, which is easily detected by its robin's egg blue color, is manipulated by the alligator clips. After the gall bladder is sufficiently unhooked posteriorly, the cystic duct and artery are located. This is the crucial portion of the operation. Once located, these two vessels are ligated, tied, and stapled. Once secured, the artery and duct are cut, detaching the gall bladder from everything but the bed of the liver. Now the rest of the gall bladder is removed from the liver. Once the gall bladder is completely free, the camera is removed and the infected organ is placed near this vacant incision. The gall bladder is then pulled through the incision using hemostats and the surgeon's hand.

An endoscopic cholecystectomy is a type of operation that is very tolerable to watch because only four small incisions are made. Everything else is seen on a television monitor. Since I had never heard of this technique, I was amazed with the technology of today's surgery and with the ease of the operation. However, I am sure the experienced surgeon made the operation look easier than it was in reality. I was also fascinated with observing the diseased gall bladder. The
new to me.

Since I had no idea what to expect in the operating room, I was surprised by many aspects of the surgical process. One of the aspects of surgical techniques that really surprised me was the idea of having to suture each different type of tissue together before the wound could be closed. I did not even imagine this concept, nor did I imagine the concept that there were so many tissue types. I just assumed the "skin" could be tied together no matter what type or where it occurred.

Possibly the most surprising and frightening aspect of surgery that I did not comprehend was the concept of a sterile environment. For example, I thought of the operating room as a very sterile environment that could not be contaminated. However, I was shocked to see nurses, not participating in the surgery, walk in and out of the operating room. Furthermore, I was surprised to discover that I did not have to wear any gloves or "scrub in" to watch the operation. The only protection I had to take was to wear scrub clothes, a mask, and a hat; however, these were not sterile, only clean.

Another misconception I had about the operating room was the unrelated conversations that occurred. I never conceived of conversations during surgery between surgeons, anesthesiologists, and nurses that concerned their personal lives. They would talk about their activities the night before, they would tell jokes, and they would listen to music being played in the operating room.
Second Day of Surgery

Today was a combination of hospital surgeries in the morning and office appointments in the afternoon. During the morning, I once again saw endoscopic cholecystectomies and many removals of warts and moles; however, no additional or unusual observations or knowledge was gained.

On the other hand, I observed other new operations and procedures. One of these operations was a lumpectomy. A lumpectomy differs from a mastectomy in the fact that only a portion of the breast is removed. The patient then seeks minor treatments of radiation to destroy any cancerous cells that might have been left behind. The limiting factor of deciding whether to perform a lumpectomy or a mastectomy is the size of the tumor. A tumor greater than two to three centimeters usually requires a mastectomy.

Since this particular surgery was performed under local anesthesia, the surgeon allowed me to assist in the procedure. I was not required to "scrub in", but was required to wear surgical gloves. Little did I realize how difficult it was to put on these gloves without contaminating them. After wasting two sets of gloves, I finally got a pair on properly.

During this lumpectomy procedure, I was excited to participate even though I only sponged off the excess blood and cut suture ties. The operation was short and rather easy
compared to the mastectomy. The only difficult portion of this procedure was in locating the tumor. Since these tumors are very small, it is sometimes difficult to locate them. Therefore, the surgeon must constantly feel for the tumor in the breast while also looking at the X-rays to make sure he has actually found it. In fact, sometimes the tumor is so small that a flexible needle, introduced by the X-ray technician, is present indicating the exact spot of the tumor.

One of the disgusting aspects of this operation that I had not yet encountered was the various sounds of surgery. The worst of these sounds was when the connective tissue of the tumor was being clipped away from the interior part of the nipple. This aspect makes a lumpectomy somewhat more difficult to "stomach" than a mastectomy. Likewise, the constant groans and squirming of a conscious patient makes this procedure more difficult to me.

Another procedure the surgeon and I encountered was a colonoscopy. For this procedure almost the entire ascending, transverse, and descending colon, as well as the rectum, are searched for polyps. These growths are proliferations of the inner lining of cells that may become cancerous. The patient is sedated for the procedure. The area of concern is searched using a six foot flexible optical light which the surgeon can manipulate using various control knobs. Similarly, other functions are possible with this instrument, such as air and water flow and suction. Fortunately, there is a teaching lens
that can be attached to the scope to allow two people to observe the procedure.

As the scope is inserted, the surgeon attempts to "straighten" the colon from its normal shape into a more rounded shape which provides a smooth retraction of the scope while scanning rather than a jumpy movement which might result in a missed polyp. Once the colon is shaped correctly and the scope is inserted completely, the surgeon retracts the scope looking for polyps or other abnormalities in the lining of the tissues.

Difficulties arise since it is impossible to straighten out every crease and bend in the colon. Also, inadequate preparation for the procedure by the patient makes it difficult to see the polyps through the feces; therefore, much more time is needed to wash out the intestine. The preparation of which I speak is a liquid "drink" which flushes out the colon and rectum.

This particular colonoscopy was successful. Adequate preparation by the patient allowed for easy searching which revealed one polyp. It was removed and sent for testing to determine whether it was benign or malignant. On the other hand, some difficulty was evident in properly shaping the colon. However, repeated "rams" and "jerks" finally allowed proper shaping.

The colonoscopic procedure had a special interest to me, primarily because my mother required this technique several
years ago. Since my parents did not discuss my mother's problem to me because I was too young to understand, I did not know what she experienced. However, after observing the operation, my questions and concerns about my mother were answered.

After lunch the surgeon and I had office appointments with several people who were planning to have surgery, who had already had surgery, and those who were wondering whether they would need surgery. Many of these appointments were women who had already had a mastectomy. Three major concerns are dealt with during this type of postoperative appointment. One of these concerns is the progress of healing. The wound is examined to determine if any infection has occurred. Furthermore, the drainage tubes are removed to prevent infection. The second concern addressed is swelling caused by fluid buildup. Although the drainage tubes are attached for the first week after surgery, fluid continues to drain several weeks and months later. As a result, the surgeon must aspirate fluid from the cavity with a needle. Since most nerves are destroyed during the surgery, most patients feel little pain from the needle. The amount of fluid aspirated varies from patient to patient and has no bearing on the success of the operation. However, failure to remove the fluid would cause the healing process to be slowed considerably. Finally, the third concern is flexibility. Once the patient returns home from the hospital, she is...
expected to perform various arm exercises. These exercises are performed to increase flexibility to an area where much of the elastic skin has been removed. Likewise, the exercises increase circulation to the traumatized area which increases healing.

Of the patients seen with recent mastectomies, none had had any problems to date. While some wounds were healing better than others, all were satisfactory. However, those patients whose wounds were forming more fluid were required to set up appointments more frequently than other patients.

In addition to postoperative mastectomy appointments, numerous other appointments today were made to inquire about possible breast cancer problems. Many of these concerned women made an appointment to have their breasts checked for lumps. Since almost all of these women had already located abnormalities in their breast, most were expecting bad news. However, not all of the patients received it. Some of these "lumps" were only water filled cysts, while one woman just had lumpy breasts. These women were rarely treated, instead, they were told to carefully watch any changes that might occur. Unfortunately, other women did receive bad news. These women were then informed of possible treatments to their problem.

There was a unique comparison I saw between those women who had a mastectomy and those who were having their breasts checked for lumps. I noticed that the women who had a breast removed were more hesitant to show an outsider, namely me, the
site of their removed breast than they were to show me their normal breast. This observation shocked me since I assumed a woman would be more embarrassed of her "private parts" than she would be of a scar. Furthermore, mastectomy women, as a whole, had more reservations showing me their chest than did those who had both breasts intact. The more I think about this phenomenon, the more I believe it has nothing to do with anatomy, rather a feeling of pride.

The number of women with problems of the breast dumbfounded me. I was not aware of the severity of breast cancer, primarily because I was a male. However, this attitude of invincibility was quickly changed when an elderly gentleman with gynecomastia was seen. Gynecomastia is the inflammation of breast tissue in a male. Although the problem of gynecomastia usually does not deal with cancer, it can cause severe emotional problems for younger boys who feel they are growing breasts.

This particular patient was not so much concerned with the sight of his mild case of gynecomastia, rather the pain it produced. As a result, the surgeon informed him of the possible alternatives, which were surgery or no surgery. Since the patient was in discomfort, he elected to have the surgery performed the following week.
Third Day of Surgery

Once again this day consisted of hospital operations and office appointments. The day began with a bronchoscopy. This procedure is performed when there is an abnormality in the lungs, usually either a milky or bloody discharge. The causes of these discharges could be a result of an irritant, a traumatized area of the lung, or possibly by lung cancer. Usually, bronchoscopy patients are, or have been, smokers for many years. For this procedure the entire mouth, epiglottis, larynx, trachea, and bronchioles are anesthetized in order for the surgeon to examine the lungs with a scope. Once again the surgeon allowed me to participate slightly in the procedure; I was given the duty of holding the patient's tongue while the surgeon anesthetized the throat.

Once the patient was sufficiently anesthetized, she was laid on her back and the scope was introduced. This scope is similar to the scope used for the colonoscopy, only smaller in diameter. As the scope was introduced, I was able, with the aid of the teaching lens, to see the epiglottis, false and true vocal cords, and many bronchioles of the lungs. The entire portion of the "accessible" lung was explored. Fortunately, no tumor was found.

The overall emotion of the patient was relief. Since this woman had been a smoker for over thirty years, she was a possible victim of lung cancer, and she knew it. Therefore
she was quite happy when she learned she did not have lung
cancer.

While I was excited to learn that the patient did not have lung cancer, I was also excited to acquainted with this area of the human body. Although I had learned the anatomy of this portion of the body, I had never observed the structures firsthand. The procedure was difficult for me to follow since the surgeon was constantly changing directions and entering different bronchioles. As a result, I was often "lost" in the patient's body.

The next surgery I observed was another endoscopic cholecystectomy. All preoperative tests concluded that this patient's gall bladder was only slightly stony; therefore, the surgeon taped the operation in order to have a "correct" copy of the newly devised procedure. Everyone in the operating room should have known this fact would jinx the surgery. From the beginning to the end of the operation, complications resulted. First of all, there was a problem getting the trocars to puncture through the body cavity. This problem occurred because the woman was quite obese and the trocars were not long enough to extend through the adipose tissue (fat) and peritoneum. However, when one of the trocars was finally introduced into the body coelem, it punctured the liver. Consequently, more time was needed to stop the bleeding of this organ before the removal of the gall bladder began. Eventually, the removal of the gall bladder was
attempted, only to find it almost completely filled with
gallstones. This quality made the gall bladder very difficult
to handle and maneuver using the alligator clips. Even when
the gall bladder was excised, more difficulty was encountered
trying to remove the organ through the umbilicus. Since there
was a lack of elasticity of the gall bladder due to stoning,
the umbilicus incision was enlarged to allow easier passage.

There is no need to say that the tape of the operation
was erased. During the beginning of the operation, the
surgeon was upset over all the problems incurred, but as the
operation continued, the complications became almost funny.
While I am sure the experience humbled the surgeon, the
situation taught me that surgeons often encounter
complications during operations. Their ability to accept the
problem and to adapt to it is an important quality necessary
in a successful surgeon.

The final surgery I observed today was a hernia
operation. Inguinal hernias may be either indirect, direct,
or combined. For the purpose of this paper, only the direct
hernia will be discussed since this type was the only one I
witnessed during my surgical observations. In this defect,
the floor of the inguinal canal, consisting primarily of the
transversalis muscle and fascia becomes weakened, and with
continued strain a bulge of peritonum protrudes into the
floor of the canal.

On physical examination alone, it was quite obvious to me
that a protrusion was evident. Even when the patient was in the supine position of the operating table, an enormous bulge was present. The surgeon stated that since the bulge protruded directly forward, it was probably a direct hernia.

The incision for a repair of an inguinal hernia begins at the pubic tubercle on the appropriate side directed upward for four to six centimeters toward the anterior superior iliac spine. The incision is carried down through the skin and subcutaneous layers of tissue. Further extension of the incision exposes the external oblique muscle. This is then cut to identify the ileoinguinal nerve. Once the nerve has been identified, it is dissected free and retracted away from the dissection of the hernia. Now, the contents of the inguinal canal can be seen. The hood of the canal is then cut down the length of the inguinal tube. The spermatid cord and nerve are then pulled out of the way to allow access to the floor of the canal. At this point, the floor of the canal is inspected to determine the type of inguinal hernia.

In the case of this patient, it was a direct hernia. Once the type of hernia is determined, the process to alleviate the problem begins. The technique to solve this problem is called "the dart technique". To solve the direct inguinal hernia, the surgeon first makes an incision in the floor of the canal where the protrusion is located. The "dart", which is a type of undigestable gauze in the shape of a cone, is placed on the inner side of the canal floor where
the incision was made. The dart is then sutured to the floor. Another portion of gauze, in the shape of a horseshoe, is also sutured to the canal floor with the spermatic cord running through the middle of the horseshoe. The remaining tissues are sutured and the wound is closed.

The surgery for this patient went well and no complications resulted. As I watched the operation, I was frustrated to discover that I could not distinguish what the surgeon was doing. Although the surgeon spoke aloud while performing the operation, I was unable to sufficiently see all of the structures present. As a result, I felt "lost" during the operation. However, after voicing these frustrations, the surgeon consoled me by saying that it takes many operations to understand completely the process of a hernia, even for a surgeon. This made me feel more at ease, but my lack of confidence was still visible.

During office hours, an unappealing type of appointment is frequently encountered. This appointment is for hemorrhoid problems. To relieve this problem, a patient can usually have the hemorrhoids "banded." In this procedure, a small rubber band is placed around the hemorrhoid which "cuts off" all circulation to the tissue. As a result, the hemorrhoid falls off within a few weeks. The procedure is performed for one hemorrhoid every month until there are no more present. While all the hemorrhoids could be banded at once, they are usually removed one per month to decrease the pain. If many
hemorrhoids were banded at the same time, chances are the increase in pain would cause the patient to terminate the banding procedure for the rest of the hemorrhoids.

The process of banding a hemorrhoid is quite simple. First the surgeon lubricates the anal sphincter and then inserts a conical device that allows the surgeon to see into the rectum. This instrument has the rubber band attached. As the device is slowly retracted, the tissue "flows" over the end of the cone. As a result, all the tissue in the rectum can be seen. Once a hemorrhoid is noticed, the surgeon can stop and squeeze a trigger that releases the expanded rubber band and places it on the inflamed tissue.

Slight discomfort was experienced by all the patients. However, I seemed to notice men seemed to verbalized their pain, while women seemed to withstand the pain. This characteristic surprised me since society believes men are the tougher gender. I was not able to determine if the men felt more pain, verbalized it more, or were bigger "wimps" than women.

Fourth Day of Surgery

The first situation the surgeon and I encountered today was a result of a hemorrhoid surgery. The patient had recently had surgery to relieve a serious case of hemorrhoids;
however, the traumatized tissue had prolapsed out of her anal sphincter. Consequently, her sphincter was beginning to contract causing her more pain. Therefore, the surgeon felt if he would sedate her in her hospital room, he could insert the swollen rectum and allow it to heal at home rather than at the hospital.

Once the patient was sedated, she was laid on her side. The surgeon told me to stand at the foot of the bed and hold her leg up in the air so that he could push the inflamed tissue back. As the surgeon attempted to do this, the patient awoke from her unconsciousness, screamed, raised up, and began swinging her arms violently. Consequently, I was forced to also hold down one of her arms while the surgeon continued his work. The situation looked like one might see in a Twister game. Although the surgeon was able to return the rectum to its proper location, any exertion on the part of the patient returned the rectum outward. As a result, the rectum would not stay in place; however, the surgeon felt the tissue was retractable easily enough to allow her to be dismissed from the hospital.

This incident made me realize that some circumstances in a surgeon's job cause him to inflict pain on his patients. While I know this procedure had to be done, it is difficult for me to purposely hurt someone even though it is for the best. Most remorse was forgotten, however, when the patient returned to the surgeon's office to thank him. She said, "I
haven't felt this good in six months."

The next task performed today was a gastroscopy on a middle-aged man. The purpose for a gastroscopy is to determine if there are any abnormalities in the esophagus, stomach, or small intestine. These abnormalities may include ulcers, small polyps, or even cancer. In this procedure a large scope, identical to the one used for the colonoscopy, is introduced into the patient's mouth after sedation. The scope is inserted down the esophagus and into the stomach. Once both the greater and lesser curvatures of the stomach are searched for abnormalities, the scope is inserted through the pyloric sphincter and into the beginning of the small intestine. Again, the area is searched for possible tumors, polyps, or ulcers.

In this patient's case, no serious abnormalities were found. However, the surgeon did notice a possible area of the stomach that was retroflexing. In other words, a small portion of the stomach was rising into the lower portion of the esophageal tract. As a result gastric acid was coating the sensitive tissue of the esophagus and causing the burning sensation of which the patient spoke.

Once again I was amazed with the anatomy of a new area of the body. While I thought the esophagus and stomach were simple structures, I was surprised to discover interesting features of each. On the other hand, the constant gagging and drooling by the patient caused some attention to be lost.
After lunch and a few hospital visits, the surgeon performed another cholecystectomy. However, it was not an endoscopic cholecystectomy. It was supposed to be, but unfortunately it was not possible. The reason was because the body cavity of the patient was not properly inflating; therefore, the endoscopic cholecystectomy could not proceed. Instead, the surgeon was forced to make an incision approximately six to eight inches long in the abdomen. Once the abdomen was opened, the gall bladder was excised in the same manner.

While this operation is easier for the surgeon because of the increased freedom of movement, the procedure is much worse for the patient. For instance, the recovery time for the endoscopic technique is about five days while the regular technique is about a month. Also, the endoscopic method is less expensive because of a decrease in the length of the hospital stay from a week to overnight. Finally, there are no restrictions of heavy lifting that would inhibit work with the endoscopic technique, while the other method allows for only slight lifting until the wound is completely healed.

When the surgery was completed, I could see the disappointment in the face of the surgeon. While he knew there was no other way to perform the surgery, he still felt guilty. As a result of this incident, I learned that surgeons often incur setbacks which they must deal with emotionally, by accepting a situation, as well as physically, by adapting to
the situation.

I enjoyed seeing this different type of procedure. The surgery seemed much easier and was much quicker than other endoscopic operations. Although I did not wish additional pain caused by this technique on the patient, I did enjoy seeing the organs of the abdomen without the aid of a television monitor.

The last procedure the surgeon performed today was a bronchoscopy. The patient was a middle-aged man who had been smoking for over forty years. He had been coughing up blood as well as a milky fluid. Likewise, it was evident from X-rays that he also had fluid that was collecting under the lung. As the scope entered the primary bronchus of the left lung, a huge growth was noticed.

After taking a biopsy of the tumor, the surgeon finished the examination of the rest of the lungs. Then, the surgeon performed a needle aspiration of the fluid below the left lung. For this procedure a needle is inserted, with the aid of the X-rays, in the site of the fluid chamber. Once the needle was inserted, a bloody fluid was seen; it was collected. The fluid, as well as the biopsied mass, was sent for testing. While the patient got dressed, the surgeon and I washed up. During this time, the surgeon told me that the patient would not live to Christmas (six months). I was surprised by this comment. I assumed some type of treatment or surgery could be performed; however, the surgeon stressed
that the presence of bloody fluid under the lung was a sure symptom of cancer.

As we returned to the waiting room, the surgeon explained the grave news to the patient and his wife. The surgeon said he had a tumor in his left lung which was most certainly cancerous. Furthermore, he explained the possible options they could pursue once the type of cancer was identified; however, no plans could be formulated yet, since the type of cancer had not been established. The patient and his wife were stunned by this news. While I feel they both expected the outcome, I think they were hoping for good news. The most frustrating circumstance of this incident for the patient was that no concrete plans could be made for the treatment of the cancer until its identity was known. For someone who might only have months to live, a day is a very precious amount of time.

Unfortunately, the surgeon and I were not finished confronting death, for the next operation was a biopsy of a sore from a previous mastectomy wound. The patient, who had a mastectomy performed twelve years earlier, was concerned with a scabby sore on her scar. The biopsy was a simple process that required only a small portion of the scab and tissue under the skin surface. The wound was then sutured together.

In the waiting room, the surgeon explained to the patient and her husband that he thought this problem was indeed a
reoccurent cancer. He continued to say that it is very rare to see a cancer reoccur after five years; however, it is possible even if one cancerous cell was left behind. Consequently, the couple decided to discuss the situation between themselves before deciding their treatment.

I could tell by the looks in their eyes that the husband and wife were both discouraged. The idea of having cancer is a very difficult situation with which to accept. However, this couple already had prepared themselves twelve years ago. This fact probably made the dilemma more difficult to handle. After years of agony with cancer, I am sure the couple felt the cancer had been eliminated. Unfortunately, it was not. After all the worries over many years, the couple was probably beginning to feel relief, only to discover the reoccurrence of this deadly disease. Since the couple had already experienced cancer, it was easier for the surgeon to explain the problem to them. However, it was more difficult to explain why the cancer had come back after twelve years.

Fifth Day of Surgery

The entire day revolved around one operation. This operation dealt with the removal of a major portion of a patient's lung, called a lobectomy. The operation is approximately five hours long; however, it is broken down in
three different parts. The first two parts of the operation are the most important because they determine whether or not the removal of the lung will occur. First, the surgeon makes a small horizontal incision in the throat, between the fourth and fifth cartilagenous arches, but not through the trachea. Then, a scope is inserted and the lymph nodes around the outside of the primary bronchus are biopsied for cancer cells. This portion of the surgery is very dangerous. In fact, it is more dangerous than the removal of the lung because the pulmonary artery and vein and aorta are prominent in this area. As one can imagine, improper insertion of a scope in this area can easily cause hemorrhaging of these vessels. Furthermore, if bleeding does occur, there is no way, nor time, to stop the bleeding in the thorax from the small incision in the throat.

If the tests of the biopsied lymph nodes are negative, the lymph nodes around the trachea are biopsied. Similarly, these lymph nodes are tested. If either of the tests on the lymph nodes is positive, the operation is abandoned. This is because the cancer would have already spread "out of bounds", and the removal of the diseased lung would not remove all of the cancer cells in the body. However, if the tests are negative, the incision is closed and the patient is prepared for the lobectomy.

Luckily, this particular patient passed the preliminary steps for the operation. The final portion of the surgery
entailed the removal of the lung. The first step in the operation is to make an incision between the fourth and fifth ribs along the entire side of the patient, practically from the nipple to the spine. This incision is as deep as the ribs. Once this has been accomplished, the cartilage between the two ribs is cut and the two portions of the ribs are separated almost twelve inches with the aid of a clamp that pushes the two sides apart. This allows complete access to the lung and heart. Next, the diseased portion of the lung is identified and the process to remove it begins. Just as in the case of the gall bladder, the arteries and ducts that lead into the lung are ligated, tied, stapled, and cut. With the gall bladder, only one artery and duct are present; however, with the lung, anywhere from seven to twelve ducts and arteries must be treated. Consequently, great care is needed to separate all of these vessels. Once the lung is completely removed, many different kinds of pain killers are injected into different parts of the chest cavity. The ribs are then reconnected and the cartilage and tissues are sewn together.

During this operation, the patient was extremely cooperative, thus allowing the procedure to be a success. However, there were a few minor incidents that were a bit abnormal. As stated earlier, the entering incision is made between the fourth and fifth rib to allow the easiest access to the lung; however, this particular patient's anatomy was a bit unorthodox. Therefore, the incision was not in the
optimal position. As a result the ribs were separated slightly further to allow necessary access. During this step, though, one of the ribs cracked. This made the separation technique even more difficult, but the problem was resolved and the rest of the operation went smoothly.

Unlike other surgeries, I anticipated this operation the night before. I realized the opportunity for me to see the lungs and heart of a living person was highly unusual. As a result, the day of the surgery I became more in tune to the seriousness of the operation as did all of the participating staff. During this operation there was no joke telling, paperreading, or small talk. Instead, the staff was alert and attentive to the procedures. During the entire operation, I was much more careful and cautious not to distract the surgeon from his duties. As I stood on two twelve-inch high steps balancing myself using an overhead light, I was able to see the operation clearly. As the surgeon opened the ribs to expose the lungs and heart, I found myself in a trance. Never could I have imagined how colorful an expanding lung and beating heart could be. One reason for this feeling could have been because of the lack of blood in the cavity. Instead, a shimmering orange color, like that of orange sherbet, was seen. This color was a result of the thin layer of fat that surrounded the heart and pleural cavity. Combined with the reddish-pink lung, the site reminded me of the sunset.
While the surgeon worked on removing the lung, I took the liberty to glance at many other distinctive features in the area, such as the phrenic nerve (which lies on top of the heart), the dorsal aorta, the vena cava, the diaphragm, and the pulmonary artery and vein. As the lung was being removed, the surgeon mentioned to me two unfortunate instances which he had previously experienced during this type of operation. One of these examples occurred when a heart stopped beating. When this happened, the surgeon's only option was to stimulate the heart by manually massaging the heart in warm water. Fortunately, the heart regained its beat and the patient lived. In the other instance, however, the patient was less fortunate. As the lung was being removed, the pulmonary artery ruptured and the patient bled to death. He was then obligated to tell all the patient's relatives what had happened. After this story, the surgeon reminded me of a conversation we had earlier in the week. I said, "Isn't it difficult for you to tell someone they are going to die (soon)?", referring to the man with lung cancer (Day 4). The surgeon replied, "If you think that's hard, try telling eleven family members that there relative is dead."
Sixth Day of Surgery

Again, this day consisted of surgery and office appointments. As far as the time spent in the hospital, two extraordinary situations developed. One of these problems dealt with a colonoscopy. Normally, this procedure begins by having the patient consume one gallon of preparatory liquid the night before the procedure that cleans out the bowels. However, if this preparation is not followed, complications can result. Such is the case with this patient.

As the surgeon introduced the scope into the rectum of the patient, it was clear to see that the patient had not completed his preparation. However, since the elderly patient was already sedated, the surgeon decided to proceed anyway. The further the entry of the scope, the more "congested" the colon became; the surgeon, however, would not give up. Instead he introduced more water and air via the scope into the man's colon, which is normal procedure. This turned out to be a mistake. The water only caused a more liquid stool, while the air caused the patient to flatulate. This resulted in a "mess" with an atrocious smell all over the table. The surgeon attempted to siphon the excess stool through the scope and into a container. As a result, almost two liters of feces was collected with no improvement to the situation. Consequently, the surgeon aborted the procedure.

Because of this procedure, I was able to see, and smell,
the less admirable tasks a surgeon must endure. While the previous example might make one think the surgeon should have quit the procedure at once, I applaud his efforts for reasons that may not be quite evident. Since the patient had already partially prepared for this procedure by consuming "the worst tasting liquid ever", the surgeon wanted to attempt to succeed with this effort rather than putting the patient through this torture again. Likewise, the patient, who was an elderly man, was already sedated; therefore, the surgeon did not want the man to be "unconscious" more times than necessary. So one can now understand that the surgeon was not proceeding with the colonoscopy for his good, but rather for the good of the patient.

As a result of this complication, I further realized that surgeons must not only be good at what they do, but they must also be caring individuals who understand the patients' concerns. From this act of "kindness", I learned more about what it takes to be a successful surgeon than from any other single operation.

The other unusual situation that came up today was a pleasurable highlight for me. As the surgeon prepared for a mastectomy, he told me to scrub in with him for this operation. I immediately became excited. While washing our hands, the surgeon explained to me how I should wash my hands, where to hold them, where not to place them, and various other "rules". After about five to ten minutes of hand scrubbing,
we entered the operating room where more instructions were given to me on how to dry my hands, how to put on my gown, and how to tie my gown. Once this was completed, the surgeon and I stepped to the table with each of us on opposite sides of the patient.

During the operation I was required to perform many tasks. The most basic of these tasks was to blot off any excess blood from the working area. I was already accustomed to this task since I had done it with other "minor" procedures earlier. However, there were many other tasks that were new to me. These tasks included holding clamps, instruments, and the breast tissue in such a way to allow easier access during the operation. Luckily, I had seen these tasks performed in earlier operations so I knew what to do; however, little did I realize, by just watching, how difficult some of these tasks were. Since these tasks are done to make the surgeon's job easier, the assistant often finds himself in awkward positions. This puts enormous strain on the muscles in the arms, legs, and back. As a result, I found myself almost wincing in pain from having to hold a clamp steady in a certain position for ten minutes.

Once the breast had been removed and the tissues sutured together, the surgeon began to staple the skin together. However, he stopped and decided to let me try. After some quick instructions, I began to staple the incision closed. I continued until the incision was completely closed. As I
glanced up to ask the surgeon if I had done the stapling properly, I saw a look of unbelief on his face. I proceeded to ask him if I had done something wrong, but he assured me "no". When I then asked him why he was looking at the incision with unbelief he replied, "I can't believe you did that so easily. That is probably better than I could have done." I was shocked, but elated to hear such praise from this man.

During office hours, a few interesting appointments were witnessed besides the normal mastectomy check-ups and hemorrhoid bandings. One of these appointments involved a woman who had recently had an operation to remove some varicose veins in her legs. In the office the surgeon looked at the progress of her healing and was pleased. However, the woman complained of great pain in one of her arms. The surgeon examined her arm and found nothing wrong. He suggested that the pain in her arm might be a result of the trauma to her legs. The surgeon further explained that the brain may somehow be transferring the pain in her legs to her arm. This concept seemed simple enough for me to comprehend, but the woman did not seem to understand. Instead of reiterating the information the surgeon had given her, the patient told her husband, who was in the waiting room, "The doctor told me I was crazy." The surgeon immediately said, "Now that's not what I said!" Consequently, the surgeon retold the patient's husband the correct information.
Another unusual, but frustrating, appointment dealt with the lady with reoccurrent breast cancer (Day 4). The patient and her husband, who is a minister, made the appointment with the surgeon to discuss solutions to her problem, or so the surgeon thought. Instead, the couple expressed their choice to let God decide her fate. They believed that if God had wanted the cancer to disappear the first time, it would have. In fact, they expressed their previous indecisiveness to have the mastectomy performed at all. As a result they felt God was showing them that this was not the choice they should have made.

The surgeon attempted to persuade her to have chemotherapy or radiation treatments instead of surgery. However, they declined. The surgeon tried to emphasize to them that if God wanted people to ignore doctors' help, He would not have given people the ability to be doctors. Still they rejected his ideas. Seeing that he could not persuade the couple to change their mind, the surgeon wished the couple luck with their problem and bid goodbye.

I was very surprised to see this type of blind faith prevalent today. Although I feel God has control of everyone's life, I do not feel He wants us to ignore help. Although surgery would not have been a viable option, I believe this situation to be a helpless feeling for a surgeon, not being able to help someone who obviously needs it.
Seventh Day of Surgery

Just as I previously assisted the surgeon in an operation on Day 6, I once again assisted him today. In fact, I assisted him all day. The first operation for today was another mastectomy. Although I gained more experience from this surgery, no specific problems resulted, with one exception. At the beginning of the procedure two elliptical incisions are made that define the area to be removed. As the surgeon began to make these incisions, he stopped and handed the scalpel to me and told me to make the incisions. With the help of a purple marker, I was able to "cut along the marker line" adequately. Surprisingly I had little difficulty and the operation proceeded as planned.

The trust and confidence that the surgeon showed in me blossomed on my face. At first I was stunned that he would even suggest this duty to me, but afterwards I felt the surgeon did this to instill confidence within me. I even feel the surgeon received some satisfaction from the incident by seeing my jubilation.

While I was a "veteran" with assisting in a mastectomy operation, I had no experience with the next two surgeries, a hernia operation and an appendectomy. During the hernia operation, I had the same duties as in any other operation--sponge the wound, hold the instruments, and staple the wound. However, I was able to further understand the problem of
hernias by being so involved. In the other hernia operations, I could barely see what the surgeon was doing. In this operation and having scrubbed in, I was able to feel the weakness in the inguinal canal and other structures necessary for the understanding of a hernia.

Since I was constantly concerned with whether I had the ability and knowledge to become a surgeon, I was always doubting myself. Consequently, the surgeon had to continually reinforce my self-esteem by allowing me to participate. By allowing me to feel and see several structures that I was unable to observe during previous hernia operations, the surgeon was increasing my knowledge of surgery. As a result, I became more confident with my abilities, even though they were quite undeveloped.

The final surgery today was a result of an emergency appointment. This appointment was made because of severe pain in the lower right quadrant of the abdomen. My immediate assumption was an inflamed appendix. After precise questioning and searching, the patient was determined to have acute appendicitis, which would be resolved by removing the infected organ immediately. The surgery begins by making a right lower quadrant muscle-splitting incision in the appropriate area. Once the tissues are cut, the abdominal peritoneum is opened, which exposes the cecum (large intestine). The location of the appendix, which is attached to the end of the large intestine, is identified by a taenia.
leading to the fat pad found at its base. The appendix is delivered through the incision and then exposed for identification and ligation of the blood supply. After removal of the appendix with a "bovie", the stump is ligated.

The only problem that occurred in this operation was in locating the appendix. The reason for this was that the patient's anatomy of the large intestine was different than normal. Instead of having the appendix close to the incision, the large intestine wound around improperly resulting in the location of the appendix in the left lower quadrant. As a result, a couple of feet of intestine was "unravelled" out of his body to locate the appendix. Because of this improper position of the appendix, the surgeon felt the pain was not a result of an inflamed appendix, but rather "knotted" intestine. This was partially confirmed when the appendix was located. Upon its location the appendix seemed, at most, only slightly inflamed. However, the appendix was excised anyway to prevent further problems in the future.

I was amazed to learn that this much variance can occur in a "normal" human body. I was also surprised to see that many unusual things can be done to the body, such as unravelling the intestine outside the body. While this type of surgery is considered minor, I found it to be very interesting and enlightening.

As the surgeon and I cleaned up following surgery, he stated that he was going to look at some X-rays and CT scans
of a patient planning to have an ileostomy done tomorrow to make sure everything was alright for the surgery. The surgeon said that I could go with if I wanted, so I did. Although this would not be my first time looking at X-rays and CT scans with the surgeon, I felt the experience could only benefit me.

Once we arrived at the records room, the surgeon found the patient's file and we looked at the scans. On all but one of the scans, the patient's health looked normal; however, one X-ray of the chest revealed a serious problem. There appeared to be a rather large mass in one of the patient's lungs. This mass was impossible to see from the front view scans because of the shadowing caused by the heart.

After much deliberation and thought, the surgeon decided to cancel the surgery until the mass was identified. Unfortunately, the surgeon felt it was lung cancer, probably from metastasized cells in the colon. As a result, the surgeon and I went to the patient's hospital room and explained the unfortunate news. At first, more disappointment than fear was witnessed. This was to be expected since the operation had been planned for months. After the initial shock, though, the patient began asking questions which revealed his concern of the mass. These question could not be answered, however, since the mass had just been located.

The situation was complicated even more when the patient's family arrived and the entire scenario was repeated.
Upon the family's knowledge, the feelings in the room became more somber. Surprisingly, the patient was the one who kept everyone calm. This was interesting to see since, when alone, the patient showed many emotions, but when with his family, he showed great strength.

Since this would be my last surgical observation, I was saddened not to be able to follow the progress of the patient. During the time in the hospital room, I found myself struggling to hold back the tears. To see a man go from joy to disappointment in a matter of seconds is a very difficult situation to handle. I guess, however, I must learn to control my emotions in order to become a surgeon.

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As I compare the experiences of my observations with my prior knowledge of a surgeon's job description, I am amazed by the great differences. Before my surgical observations, I was naive to the responsibilities of a surgeon. These responsibilities, which include pre- and postoperative
appointments, prescribing medication, and hospital visits, require much more time from the surgeon than does the actual operation. Learning these duties of a surgeon was perhaps one of the most important lessons of my summer.

As I began my observations with the surgeon on the first day, I was excited to see many different surgeries throughout the day. However, I quickly learned that operations were not all that a surgeon did. After finishing operations, a surgeon is required to sign several papers while also giving instructions to nurses. Even then, a surgeon must dictate preoperative, operative, and postoperative notes about the patient in order for insurance companies to be informed of their client's progress. Furthermore, the surgeon is required to discuss with the patient's relatives the outcome of the surgery.

While I was intrigued with being able to observe several surgeries, I was disappointed to discover the above duties of a surgeon. I suppose this knowledge disappointed me because I never thought someone with so much intelligence would be made to perform these menial tasks. All in all, though, I was still very interested in becoming a surgeon despite these newly learned "negatives."

During the next few days of surgical observation, I realized the vast knowledge I would have to learn in becoming a surgeon. This frightened me, but I realized I would learn this knowledge in medical school. However, there were other
characteristics that I realized I would have to learn in order to become a successful surgeon.

The first of these qualities is communication. While knowledge is necessary in performing the operation, communication is needed to explain the surgery and its outcome to the patient and his family. By effectively explaining the operation, a surgeon can instill confidence in his abilities. Likewise, by communicating properly the possible complications of the operation, a surgeon can decrease his chances for malpractice suits.

The second of these qualities is a control of emotions. By this I mean that a surgeon must possess the ability to care for his patient while also being able to have an unbiased opinion for the concerns of the patient. Many instances were observed where improper control of emotions could have caused even more complicated situations for the surgeon.

Days later I learned that a surgeon's job, which is usually stimulating, can be very depressing. Having to explain to patients that their lives are going to be shortened dramatically can cause severe mental stress in a surgeon. Similarly, having to deal with death, complaints, and pain every day can cause a surgeon to become frustrated.

Yet, with all of these negatives, I learned there are always many more positives. These esteem-raising incidents can range from saving a person's life to a simple "thank you" from a patient. Learning to forget the negative events and
remembering to hold onto the positive ones can allow a surgeon to become very satisfied with his career.

Finally, I learned, through all my surgical experiences this summer, that a surgeon's job is much more demanding than I once thought. I realized there would be days when I did not want to be a surgeon and days when I did. However, I realized I must focus on all of my experiences and arrive at a conclusion, not from just the positive or negative ones. In conclusion, I can confidently say, "I want to be a surgeon more than anything else in the world."