Baylor operating room: past, present, future

JUDITH BRUMM, RN, CNOR

Judith Brumm, RN, CNOR

Throughout Baylor's history, nurses have worked alongside surgeons in the operating room (OR). Their roles, however, have changed through the years. Some tasks—such as spending hours sterilizing instruments and preparing materials—have been eliminated, and new functions have been added. Specialized nurse anesthetists have also worked in the OR; many of the early ones were trained at the Baylor School of Nurse Anesthetists *(Figure 1)*. This successful program had approximately 400 graduates before it closed in 1978 (1).

While traditionally most of the nurses were women, all of the orderlies, now called ancillary support technicians, used to be men. They shaved and prepared the surgical patients the night before surgery and worked at night as ancillary help in the workroom. Male registered nurses and surgical technologists came into the OR in the late 1950s and then worked mostly in the urology service.

This article focuses on the changing tasks of nurses in the OR. It begins with a section on the training of OR nurses, reviews practices and methods for preparation of sterile supplies in the 1940s and 1950s, and closes with a snapshot of OR nursing in the decades since 1940. A sidebar recounts OR nurses' personal experiences.

Figure 1. Students at the Baylor School of Nurse Anesthetists learning about anesthesia.

Figure 2. Lila Erickson (second from right) when she graduated from the operating room technique graduate course. She later was a preceptor for many students.

TRAINING OF OR NURSES

After becoming a registered nurse, a nurse had to complete a course in OR technique and management before working in the OR. This course offered 5 hours of credit toward a bachelor's degree in nursing.

One of the teachers of the course was Gladys Burriss, who came to Baylor in 1949. In her class, she handed out a surgery schedule and asked the students to list 4 surgeries. Then they had to list a surgical team for each patient, including surgeon, anesthesia providers, circulator (now called perioperative nurse), and scrub person. Finally, she would ask the students to fill in the names of 4 loved ones by the surgeries. After this exercise was completed, the class would discuss why the specific people were chosen to be in attendance. This emphasized the importance of always treating each patient as if he or she was that special person in your life.

Lila Erickson Schlosser, who worked at the Baylor OR from 1952 until her retirement in 1999, was also key to the teaching

From the Surgical Services Center for Perioperative Education, Baylor University Medical Center, Dallas, Texas.

Historical articles published in *Proceedings* will be reprinted in *How We Care,* volume 2. Readers who have any additional information, artifacts, photographs, or documents related to the historical articles are asked to forward such information to the *Proceedings'* editorial office for possible inclusion in the book version.

Corresponding author: Judith Brumm, RN, CNOR, Surgical Services Center for Perioperative Education, Baylor University Medical Center, Roberts Hospital, Second Floor, 3500 Gaston Avenue, Dallas, Texas 75246 (e-mail: judithb@BaylorHealth.edu).

program *(Figure 2)*. She was a preceptor for many new graduate nurses and experienced registered nurses in the Baylor OR.

Baylor OR nurses are dedicated to continuous learning. They participate in the Association of Operating Room Nurses (AORN), which was incorporated in 1960. Through this organization, Baylor nurses can share their expertise and benefit from that of others, as well as from the association's standards and recommended practices to enhance safe patient care.

OR NURSING IN THE 1940S AND 1950S

The earliest verbal history on OR nursing came from several registered nurses who started working at Baylor in the late 1940s and early 1950s. The first OR supervisor remembered by name was Cora Roddy, who left in about 1948. At that time, the supervisor reported directly to the administration. June Pellet, who came to Baylor as a staff nurse from Parkland Hospital in 1947, was the first OR director and remained in that position from 1963 to 1976.

Before 1950, the ORs were located in the Veal Hospital, in the approximate location of the Y Wing. There were 12 ORs: 8 major rooms, 1 minor room, 2 rooms for cystoscopy, and 1 cast room *(Figure 3)*. About 25 registered nurses rotated on 3 shifts. They did not leave until all of the rooms were cleaned and ready for the next case.

In 1947, the emergency department was located on the first floor of the Veal Hospital. The OR nurses would go to the emergency department, assess the patient, and then notify the physician or surgeon of the patient's condition. If the patient needed surgery, he or she was taken to the fifth floor of the Veal Hospital. When the ORs were occupied, the patients were lined up in the hall on their beds until they could be treated.

This method of having patients wait in the hall on their beds was practiced in the Truett OR, which opened in 1950 and consisted of 17 air-conditioned "ultra modern" rooms (2) and was used until Roberts Hospital opened in January 1986. At that time, a preoperative anesthesia assessment area was built. Ann Hood talked Gladys Burriss into coming out of retirement to open the preanesthesia holding area. This area was used to facilitate the movement of patients from their room to the OR, to allow medications and intravenous lines to be started preoperatively, and to provide confidentiality during the interview and assessment by the preoperative nurse. The preoperative holding area in Truett was opened in 1993.

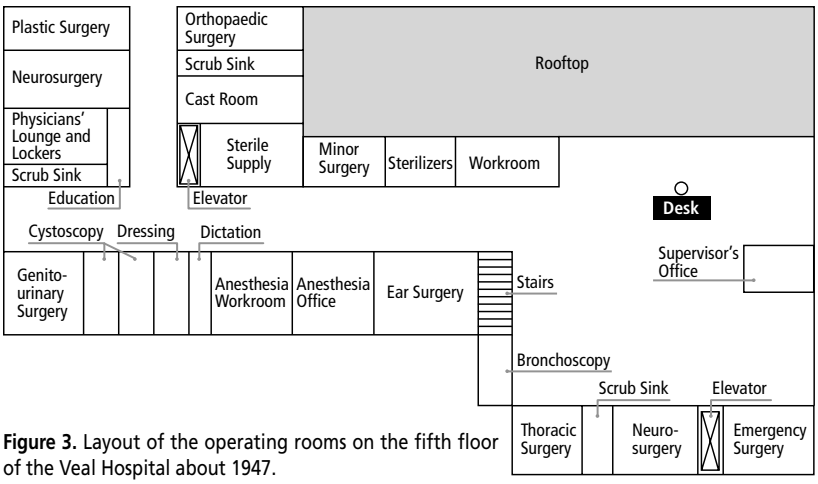

Figure 3. Layout of the operating rooms on the fifth floor of the Veal Hospital about 1947.

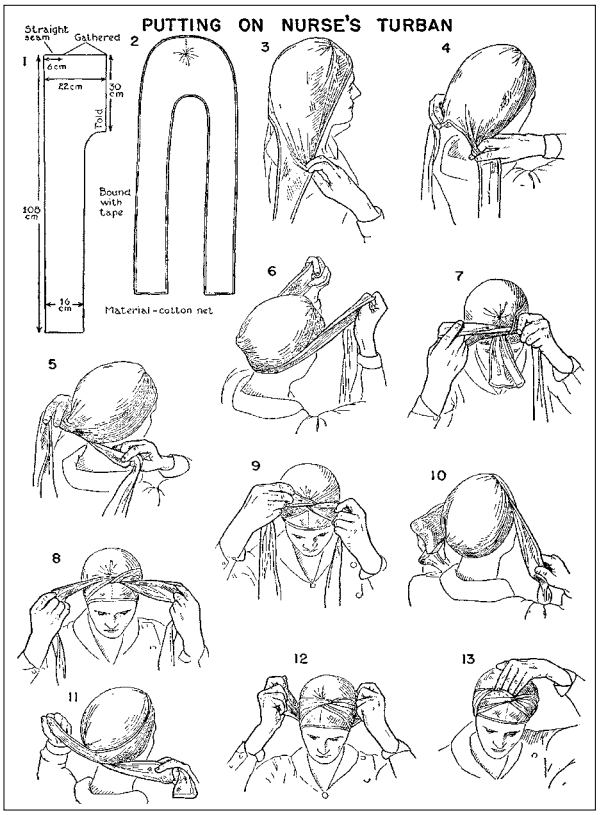

Figure 4. Putting on a nurse's turban. Reprinted from Cutler EC, ed. *The Aseptic Treatment of Wounds.* New York: The MacMillan Company, 1948.

In the 1950s, the head nurse of the department scrubbed with the chief of the service and ran the room. Registered nurses scrubbed for the procedures, and the surgery technician or licensed vocational nurse ran for supplies. Now, the perioperative nurse circulates, and another nurse or scrub technician passes the instruments to the surgical team.

Surgical attire for the nurses in the mid 1950s consisted of regular white starched uniforms. The nurse anesthetists wore their street clothes and started wearing scrubs about the same time as the nurses. The physicians were already wearing scrubs by that time. To cover their hair, nurses made their own hoods out of material that had 2 ties and was 26" long. The nurses twisted the ends around their heads to make a turban *(Figure 4)*. Baylor provided standard V-neck scrub dresses for the women; these were worn with stockings.

In the 1940s and 1950s, the back-table method was used: the sterile instruments and supplies needed for the day's cases were set up on 1 or 2 back tables, and a Mayo tray was set up with only the basic instruments and sponges. When additional instruments or supplies were needed, the scrub person would use ring sponge forceps to retrieve additional instruments or supplies from the back table to the Mayo tray, thereby keeping the remaining instruments uncontaminated. When the case was complete, the scrub person would move to the next patient or cover the back table so the room could be cleaned and set up again for the next case. A new Mayo tray was set up, and the back table was uncovered. This process of retrieval was

repeated until all of the cases for the day were completed. This method allowed full utilization of the small number of instruments and conservation of sterile supplies. Other hospitals were using this method in the 1950s as well.

The nursing assignments for the next day were made after the day's cases were completed. This allowed the nurse time to go to assess the patient. The patient was scrubbed with green soap and shaved, and then a sterile covering of muslin was applied. It was removed in the OR when it was time for the surgical scrub. Frequently, nursing students did the interview and preparation the night before and then scrubbed for the case the next day, keeping notes in their notebooks. They were able to see the patient every other day and added to the progress notes. This is an example of very early perioperative nursing!

In the late 1940s, the anesthesiologists also saw the patients the night before surgery and ordered the preoperative medication. In 1949, an anesthesiologist began a residency program and assumed the management position of anesthesia and OR nursing. Explosive anesthetic gases were used most often; some spinal anesthetics were used.

All surgery patients went back to their beds on the floor after surgery. The registered nurses had a cart, much like a grocery cart, filled with supplies, which they took to the patient's room. This was their "recovery." There was no postoperative recovery area until after the move to Truett in 1950.

In the late 1950s, the OR lights were ceiling mounted and adjustable, and standing spotlights were used during surgery. Even then, "fix the lights" was a common request from the surgeons.

June Pellet developed several ideas for improvement in the OR that were later implemented. She was the first to suggest making laparotomy sponges. It took Curity 2 years from the idea's conception to manufacture the first sterile laparotomy sponge packs. She also suggested the disposable surgical mask. She worked with 3M and Baylor, doing the first research on the efficacy of Cidex. With the money from this research, the nursing education fund was initiated to fund educational programs for OR nurses.

PREPARATION OF STERILE SUPPLIES

Preparing for work in the OR in the 1940s and 1950s required the nurse's ingenuity and critical thinking skills. Sutures, needles, and sharps had to be sterilized, as were bottled water and saline irrigation. Instruments were sterilized by soaking them in a solution of 2% Lysol and sterile water. They were rinsed with sterile water before use.

Tap water was poured into 500-mL glass bottles, capped with a rubber top, and sterilized. When opened, the suction created in the bottle by the sterilization process made a "pop" sound. If no "pop" was heard, the water was not considered sterile.

To make the normal saline used for irrigation during surgical procedures, a saturated salt solution was prepared in the pharmacy and ordered on the daily drug order for the OR. This solution was added to sterile water and capped with 4" × 4" gauze and paper. The cap was secured by a rubber band, and the bottle was sterilized in the autoclave. The solutions were processed separately from other items. By 1980, salt tablets were added to the water instead of the saturated salt solution.

The OR staff, including nurses, washed the instruments by hand, assembled them in appropriate sets, and sterilized or soaked them in Bard Parker solution (a mixture of formaldehyde and alcohol) or Zephrin. Between the cases, the instruments were boiled in instrument boilers. After boiling, the instruments were transferred to the OR by the scrub person or circulator.

At the end of the day, the contaminated reusable needles, including hypodermic needles, and blades were cleaned in soapy water, rinsed well, and dried with ether or air dried. They were not made of stainless steel, so to keep them rust free and sharp, they were scoured and sharpened. The needles and sharps then were autoclaved or soaked in Bard Parker solution. Unsterile needles were placed on a board with a spring secured across the length and then sterilized. The nurses were responsible for their own sterile needle pack. The needle pack in the early 1950s consisted of cutting needles; a ⅜" circle needle; a trocar with a cutting tip for fascia, cervix, and skin; Mayo needle sizes 2, 4, 6, 8, round with cutting tip; and Keith needles.

Sutures used in the OR in the 1940s to 1950s consisted of chromic and plain catgut and cotton. The chromic gut came unsterile in glass vials and was soaked in chromium salts to increase the tensile strength and decrease the absorption time. It was prepared by washing with soap and rinsing with sterile water. Then the vials were placed in sterile jars and covered with Zephrin solution. In 24 hours, the contents of the jar were considered sterile. Then the sterile jar was opened and the vials were put on the sterile field, laid in a folded towel. The vial was broken and the suture removed. The suture was placed in a sterile towel to keep it from tangling.

Cotton suture was purchased at a local store. Using about 30 strands of sizes 0, 00, and 000, the suture was wrapped around a suture board and sterilized. The suture ties were then placed in folded towels to keep them from tangling. Silk and cotton sutures were cut to the desired length and wound around bobbins, sterilized, and used as ties.

There were few swedged-on needles at that time, so the scrub person had to thread most of the needles. The first atraumatic swedged-on needle was chromic gastrointestinal sutures on 2-0, 3-0, and 4-0. The suture was stiff and hard to control, so it was placed in a folded towel to help keep it straight. Soon afterwards, most of the suture used for eye surgery was swedged on.

French-eyed needles had a V opening on the back so the suture could easily be pulled into the eye of the needle. French-eyed needles were also used for intestinal anastomosis.

Milliner needles were purchased by the nurses at a millinery shop. These extra-fine, sharp needles were sterilized and used in surgery with cotton suture for skin closure. The nurse had to sterilize the suture; cut and wind it on bobbins; sterilize it; and cut, moisten, straighten, and thread each suture as it was used.

A bit later, stainless steel wire was sterilized on spools by the manufacturer and cut and threaded as needed on the field.

Dressing sponges were made of 4" × 4" gauze that was purchased on unsterile rolls. The nurses cut and folded the gauze to make it 32 ply, counted it into 10s, and wrapped 2 packages at a time. These were packaged in stainless steel cups or glass jars for sterilization in the OR. Cotton applicators and cotton balls were made in the OR by staff; these were placed in jars or cans and also sterilized in the OR. Only 2-eyed needles were used on

a case. No counts were taken; all of the patients were x-rayed before the wound was closed. At the end of the day's cases, the nurses made additional sponges.

Used gloves were washed, dried, and inspected for holes. If any holes were found, the gloves were sent to central supply for unsterile use. Pairs of the gloves were powdered with talc, packaged in envelopes and an outer double-muslin wrapper, and resterilized.

The linen nondisposable packs were prepared in the order of use, wrapped in 2 double-muslin wrappers, and sterilized. Some packages of towels, sheets, and gowns were wrapped separately, sterilized, and stored it the sterile locker. The disposable custom packs came into use in 1987 for both ORs.

FROM THE PAST TO THE PRESENT

Fifty years ago

Intravenous tubing and gloves were reprocessed. The OR staff did all the sterilizing for the entire hospital. The scalpel blades were sterilized by soaking them in alcohol. Methyl methacrylate (e.g., Lucite) balls were kept in stock to use for filling tubular chest cavities after pneumonectomy procedures. Regular nursing uniforms (not scrubs) were worn in the OR.

A brochure summarizing activities of the hospital during 1951–1952 indicates that 15,738 operations were performed in the 17 ORs.

Forty years ago

All cases for the day were set up on the same back table, and needed instruments were removed with sterile ring forceps to avoid cross-contamination. After a case, the contaminated instruments were removed, a sterile Mayo cover was opened, and sterile instruments were removed from the back table. Any extra instruments necessary were added to the sterile Mayo.

The nurses "recovered" their own patients. Rooms were fogged to disinfect them. Sponge racks were used to count and display all the used sponges. They were counted in packs of 12.

The nurses resharpened needles for use the next day and put up needle books of free needles, and they cut cotton and silk sutures off spools and prepared them for sterilization.

Thirty years ago

If the surgeon was going to use an electrosurgical unit, the patients were "grounded" by using a large metal plate with a gel applied to the plate so it would make a good contact.

"Dirty" case protocol was used when cleaning the OR after a contaminated case. Any patient thought to be infected was operated on at the end of the day. When the surgery was complete and the room was being cleaned, the circulator would bag all of the trash and linen, including her shoe covers. Another nurse would stand outside of the OR door, and working together, the 2 nurses would double bag the trash and linen. (Now we use "standard precautions," treating all of the patients as if they are infected, thus protecting the staff as well as the patient.)

We used ether and cyclopropane, both flammable, explosive anesthetic gases. Shoes with conductive rivets or soles were worn to decrease the possibility of a static spark causing a fire.

The nurses repackaged radiopaque 4" × 4" sponges in packages of 10. Suction tubing and catheters were washed, flushed, and resterilized.

There was no outpatient surgery, and fathers were not allowed in the delivery room for cesarean sections.

Patients weren't monitored closely because of the lack of technology at the time. The nursing assessment was rarely documented.

Twenty years ago

Just 20 years ago, OR nurses handled bloody sponges with their bare hands. Glutaraldehyde, a carcinogen, was used extensively.

Other than in the urology service and a few gynecology cases, few endoscopic procedures were being done, and lasers were still "exotic."

From 10 years ago to the present

Many changes have occurred in the OR in just the past 10 years. The focus on patient care and safety has increased, and now, when appropriate, patients' families are involved in their care. Discharge planning is a significant part of perioperative teaching.

Music and aromatherapy are used with some patients. Massage therapy and various forms of meditation are also in use. A relaxation channel is available 24 hours a day on all of the televisions with the Baylor channel. Baylor has a very active Healing Environment program that benefits patients, families, and the staff. An Interfaith Garden of Prayer recently opened, which provides a place for individual prayer in a beautiful, peaceful place. This will be available around the clock for people of all faiths to pray or walk the labyrinth.

Intravenous conscious sedation and monitored anesthesia care are being used more in some groups of patients.

A computer is present in each of the 42 ORs, in the preanesthesia assessment area, and in postoperative recovery rooms. All OR charting documentation is done by computer.

In 2002, 24,249 surgical cases were performed at Baylor. These surgeries included many innovations. For example:

- Endoscopic surgeries are routinely on the daily surgery schedule. These procedures include laparoscopic gastric bypass, cholecystectomy, hernia repair, nephrectomy, adrenalectomy, colectomy, and multiple gynecology, urology, and orthopaedic procedures. Twelve endoscopic towers can be rolled into any room (6 in the Roberts OR and 6 in the Truett OR), 5 cardiovascular rooms have "mini-booms," and Roberts Hospital has 4 endosuites (one of which has video capability). Thus, 21 endoscopic cases can be done simultaneously.
- A Nissen esophagogastrectomy is done through a laparoscope to create a sphincter to reduce gastric reflux. A Heller myotomy or laparoscopic procedure may be done, if necessary, to reverse the Nissen.
- "Star Wars" technology is routinely seen in the surgical suites. A retractor repositions itself on voice command from the surgeon, a needle is inserted into a tumor, and the tumor is either frozen or heated. Both cryoablation and thermal ablation cause destruction of the tumor.
- One OR offers robotics technology. The surgeon sits at a robotic console performing surgery on the mitral valve in the patient's heart. The surgeon, using an endoscope, is virtually inside of the left atrium. A few general surgery procedures

PERSONAL STORIES

Several registered nurses from Baylor's past and present were willing to share some of their special memories of working at Baylor.

Gladys Humphries Burriss

Gladys Burriss was a teacher and mentor of OR methodology; she came to Baylor in 1949.

Special memories: "The nurses made and washed their masks until about 1949. Curity introduced their 'ready-made' masks in about 1950. Davis & Geck introduced disposable masks in about 1953.

"The externs made $4.40 an hour. Interns were all graduate nurses. Nurses could not have any 'bad' habits, except smoking. They worked with a 'buddy' for 3 months while training for the perioperative role."

New technologies then: "Dr. Sellers, an otolaryngologist, was the first at Baylor to use a headlight. It was a coal miner's lamp. He had a drill and was the first to use an intravenous drip for irrigation with the drill. I hung intravenous solution attached to an eye dropper, using a Hoffman clamp to turn it on and off."

Dreams that came true: "Ready-made masks with filters; sterile fluids; presterilized suture, not in glass vials; and sterile Foley catheters."

Best day in Baylor OR: "Moving day to the new Truett OR. Dr. Sellers and Dr. Michael, his associate, helped with the move. One of the most rewarding days in the OR was a case with Dr. Duckett and Dr. Wood. The patient was a pretty little girl who was a national 4H beauty queen. She needed a valve replacement. After the heart valve was replaced, she began to 'pink up,' but we kept her in the OR until she was stable and awake; there was no postoperative recovery room or intensive care unit then. Later we took her to her room to her parents."

Ann Hood

Ann Hood was hired in 1968 (leaving in 1987 and returning in 2001) and is currently director of nursing education and research.

Special memories: "One of my special memories is of the Baylor Follies, in which we threw a big party and people on staff performed. Everyone had a great time! We also had employee craft shows. Boone Powell, Sr., anonymously entered his famous recipes."

Best day in Baylor OR: "One of my best days in the OR was when June Pellet relieved me from the scrub role on a hand case and offered me the job in the education department. This allowed me to be where I am today.

"June Pellet envisioned the first OR internship program. I was very lucky to have helped create this program. Also, I was involved with the internationally known postgraduate management program. We had students from Switzerland, England, Germany, and Canada. I attended in April to June of 1968. In 1978 I was teaching the class!

"As an educator there were many things I wanted to accomplish, but I could not get the support necessary to make the changes. Mrs. Pellet told me, 'If you want to create change, get in the decision-making position.' I later became associate director of Roberts OR.

"The first nurse intern program was 1½ years in length. The nurses rotated through the labor and delivery service, as well as all of the OR services. Special courses were taught, enabling them to work in specialty areas. The postgraduate program was already in effect in 1947. It was more or less 'free labor.' The classes were scheduled when no surgeries were posted."

Worst day in Baylor OR: "When I was administrative supervisor of the 3:00 to 11:00 PM shift in the 1970s, we were using reusable linen. Once we still had cases to do, and there was no linen. I called the laundry to find out why we had no linen and was told that something broke and I had to send the staff to the laundry to fold the linen. One of the OR technicians proceeded to tell me that he didn't fold linen. Well, eventually, I talked him into going over to the laundry to fold linen and put packs up for the next day. I believe that was when the OR seriously began to think about disposable packs!"

Martha Frier

Martha Frier was hired in 1962 and retired in 2000. She held positions as staff nurse in labor and delivery, evening supervisor of labor and delivery, staff nurse in the OR, supervisor of the urology service, and supervisor of the ancillary support technicians.

Special memories: "To keep up with technology, even then, we were constantly remodeling the ORs and, because of growing inventory, changing supply storage areas."

Best day in Baylor OR: "I had a lot of good days in the OR. It would be difficult to pick one, but I enjoyed scrubbing cesarean sections."

Worst day in Baylor OR: "Any time a patient died was difficult."

June Pellet

June Pellet was the OR director from 1963 to 1976.

Special memories: "I received a lot of support from the staff, and their competency was very high. I enjoyed developing staff and watching them grow. This was an ongoing process and covered many years. "

Best day in Baylor OR: "I have so many good memories of my years at Baylor, I can't choose just one. I enjoyed my job and the people. Administration was very supportive of the education process for staff."

Worst day in Baylor OR: "During a cesarean section, the mother and baby died. The father was watching from the amphitheater."

Ethel Walley

Ethel Walley was hired in 1961 and currently works in surgical services.

Special memories: "I always enjoyed the talent shows, craft shows, and, most of all, the OR staff picnics on Flag Pole Hill. When I came to Baylor, everyone was so friendly. There was a real sense of family and strong teamwork. No one left the OR until all the cases were complete and the rooms were cleaned and stocked and ready for the next day. Baylor has been good to me!"

Best day in Baylor OR: "In early 1964, June Pellet came to me and told me that I had to go have my picture taken for *Baylor Progress* because I had been chosen as the 'Baylor Sweetheart.'"

Worst day in Baylor OR: "The OR called me at 2:00 AM and asked me to come in for a case. The patient was Frank Kidd, MD, one of our general surgeons. He had been out of town and was brought back to Baylor. Dr. Ben Mitchel was the surgeon."

Janette Foy Brown

Janette Brown was hired in 1968 and is currently clinical manager of perioperative education and ancillary service.

Special memories: "I was standing at the front desk in the Truett OR and heard an explosion. I turned toward the sterile processing area (decontamination room), which was directly across from the front desk. Steam was rolling out of the door in big clouds. Luckily, no one was working in the area at that moment because some of the locks on the door to the pass-through steam sterilizer had broken during a sterilization cycle, and the steam pressure had blown the door open and knocked it off its hinges. That is the most scared I've been in this OR. I thought a bomb had gone off."

Best day in Baylor OR: "I have experienced so many good times at Baylor in the past 37 years that it is impossible to pick the best day!"

have been done using this robotic technology, but to date it is used mainly for mitral valve procedures.

- Brachytherapy is used: long, thin needles are loaded with radioactive seed and placed into the patient's prostate gland, thus decreasing the need for an open prostatectomy or radiology treatments for prostate cancer.
- A "rollerball" is used to dissect a vascular organ, causing only minimal bleeding.
- Minimally invasive hip replacement surgery is performed. Patients are back on their feet much more quickly since the muscle is not cut, as in traditionally surgery.

Almost weekly, new and exciting surgical devices are introduced and new surgical procedures are performed. Soon, they too will be routine, and it will be just another day in the OR! Change in the OR is constant. We draw on our successes as we examine the need for present and future changes in our practice settings.

Acknowledgments

I thank the following staff, past and present, for sharing their invaluable stories, pictures, and memories of their time at Baylor: Karen Bufton, Janette Brown, Gladys Burriss, Martha Frier, Ann Hood, Linda Plank, June Pellet, Lila Schlosser, Shirley Taylor, and Ethel Walley.

1. Ramsay MAE. Anesthesia and pain management at Baylor University Medical Center. *BUMC Proceedings* 2000;13:151–165.
2. James PW. *Fifty Years of Baylor University Hospital*. Dallas: Baylor University Hospital, 1953.
3. Levinson MM. The heart-lung machine. *Heart Surgery Forum*, 2003. Available online at http://www.hsforum.com/stories/storyReader$1486; accessed July 9, 2003.