

Reminiscence of a Pediatric Surgeon

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Pediatric surgery was born when William Ladd restricted his practice to the Boston Children's Hospital shortly after the First World War. Ladd's resident, Robert Gross, in 1938, opened the door to the surgery of congenital heart defects by ligating a patent ductus arteriosus. At the end of World War II, Gross and Orvar Swenson, set the standards for the treatment of esophageal atresia, tracheo-esophageal fistula and Hirschsprung's disease, as well as cardiovascular and intestinal anomalies. "*The Surgery of Infancy and Childhood*" by Robert Gross, published in 1953 should be read by every pediatric surgeon. Gross defined the specialty by age rather than by anatomical region or nature of pathology and he took complete control of pre and post-operative care. Children were no longer treated as "little adults".

After the Second World War, surgeons flocked to centers such as the Boston Children's Hospital and the Great Ormond Street Hospital to learn pediatric surgery. By the end of the 20th century, surgeons all over the world were treating children with excellent results. The early pediatric surgeons - motivated by compassion for suffering children-taught scrupulous sterile technique, gentle tissue handling, meticulous hemostasis and the accurate replacement of lost blood and fluids. They also demonstrated the importance of concentrating infants and children with complex surgical problems in children's hospitals or academic medical centers.

The second half of the 20th century saw great changes in how we make a diagnosis and in surgical instrumentation. In 1951, as a medical student, I saw my first pediatric surgical patient, a baby with hypertrophic pyloric stenosis. The pediatrician made the diagnosis by the history of projectile vomiting and the palpation of a small mass in the right upper quadrant. The surgeon performed a Ramstedt pyloromyotomy with local anesthesia while the baby sucked sugar water laced with a few drops of whiskey. The baby went home in a day or so, cured. Could any procedure be more elegant or less invasive? Today, the diagnosis would more likely be made by ultrasound or some other imaging modality. The operation might be performed with a laparoscope, video and disposable instruments under general anesthesia. The result would be no better.

This change to more complex, less invasive instrumentation defined surgery during the early years of the 21st century. Near the end of my career, I took up laparoscopic surgery for cholecystectomy and pull-through operation for Hirschsprung's disease because laparoscopy offered better visualization of the anatomy. Surgeons across the world have applied this new technology to almost every operation, but must

every operation be performed with the latest technology? In some cases, such as repair of an inguinal hernia repair, appendectomy or pyloromyotomy there would appear to be no advantage over standard techniques. One has to wonder if, in some instances, the new technology is not being used as a marketing tool, rather than for the patient's benefit. All surgeons, not just pediatric surgeons, with their eyes on a video screen may lose sight of the patient. We must continue to focus on each patient with his own unique anatomy and pathology.

New diagnostic tools such as computerized tomography, ultrasound and magnetic resonance imaging help to solve obscure problems but add little to the diagnosis of common diseases. Are these diagnostic tools being overused and is the increased radiation dangerous? This technology, like the changes in surgical instrumentation, add to the cost of medical care and may distract the physician from the history and physical examination - the study of the whole patient. Especially, in our training programs, pediatric surgeons should emphasize clinical as well as technical skill.

Coincident with these technologic changes, pediatric cardiac surgery, orthopedics, urology and neurosurgery became distinct specialties. Some pediatric surgeons now confine their efforts to transplantation, trauma, oncology or the treatment of specific defects such as anorectal anomalies. This specialization brought about new levels of excellence; but specialists must have a strong "general" background in order to maintain their perspective for the whole child. The "general pediatric surgeons" must study and work with greater diligence to ever improve their clinical and technical skills.

Pediatric surgeons, indeed every doctor interested in childcare, must take notice of the relationship between the increased incidence of birth defects and childhood cancer with environmental toxicants. During my early years in Chicago, the heartland of North America, childhood cancer was a curiosity even in academic centers. By the 1970s, our children's hospital had an entire section devoted to the treatment of cancer. This increase was not simply due to improved diagnosis. Parents and physicians of mid century could have palpated lymph nodes and abdominal masses as that of any 21st century doctor. Hospitals of other areas had similar experiences. The increase was not a matter of referral or diagnosis, but due to environmental toxicants released by our surrounding steel smelters, chemical plants and oil refineries as well as the agrochemicals used on our farmland. My observations on the increased incidence of cancer in children are not unique. Every year, more children are being diagnosed with cancer¹. This increase is most apparent for leukemia and brain tumors and is best explained by a child's increased exposure to environmental carcinogens^{2,3}.

There was a similar increased incidence of many birth defects.

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Gastroschisis, scarcely recognized during the early 1960s became one of the most common defects in our surgical unit within fifteen years. This increased incidence of birth defects has occurred throughout the world, and appears related to environmental toxicants, especially agrochemicals^{4,5}. Following the Second World War, the use of agricultural pesticides increased astronomically. These chemicals are now found in the tissues, blood and breast milk of animals and humans from the Arctic to the Antarctic. The fetus and the newborn infant taking human breast milk are especially at risk of harm due to exposure. All physicians, especially pediatric surgeons, should make a greater effort to correlate chemical exposure with disease in their patients.

The model developed in the United States for surgical training promotes research and the delivery of technologically based care to citizens, based on their ability to pay. The world's leaders in pediatric surgery should critically observe this model and make their own way to new levels of excellence, as measured by outcome in individual patients and by the optimum delivery of care to their own population.

Many surgical training programs in the United States require trainees to spend time in a research laboratory. Perhaps time spent in community practice might help young surgeons develop a greater appreciation of the needs of their patients.

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