The gynecologist’s office was, historically speaking, the original setting for surgical practice. In 1809, Ephraim McDowell performed the first ovariotomy and removed a 22.5-pound tumor from Jane Crawford in his Danville, Kentucky office—decades before the development of anesthesia or the aseptic technique. Three developments—introduction of surgical anesthesia, improved operative techniques, and the evolution of the medical-economic environment—shaped surgical practice for over two centuries.

The latter part of the 20th century also brought two dramatic changes that affected gynecologic practice. The first included social changes which created a demand for legalized abortion and elective sterilization. The second was a cascade of technological growth and innovations that created the field of minimally invasive gynecologic surgery (MIGS), allowing many procedures to be transferred from the hospital to the outpatient setting and then to the office. With the increasing demand for patient-centered care, effective operating room utilization, and the efficient use of physicians’ time, many gynecologic procedures are now being performed in an office-based setting. But, at least three important obstacles remain: the need for widespread accreditation, the availability of teaching in an office-based environment, and meeting the ethical obligation for adequate analgesia and sedation in an office environment.
INTRODUCTION

Gynecologic surgery did not originate within the prestigious chambers of a hospital operating room; instead it began in the remote confines of an early 19th-century physician’s office, in central Kentucky, where a bold and original idea—removing a life-threatening intraabdominal tumor—came to fruition. For most of the 19th century, as operative techniques and anesthesia were developing, gynecologic surgery was increasingly performed in an office or home setting. However, in the latter part of that century, during the decades following the Civil War, enormous strides were made in surgery, anesthesia, aseptic techniques, and formalized nursing training that would affect the future of our specialty.

The turn of 20th century brought many demographic and social changes to America. Simultaneously, a revolution in surgery and anesthesia, the development of diagnostic and laboratory services, along with the modernization of medical education witnessed the hospital emerge as a modern institution of healing and teaching. In the years just prior to World War II, both the American Board of Obstetrics and Gynecology as well as the American Board of Anesthesiologists were founded and the imprimatur of these specialty boards became a requirement for practice in most hospitals.

World War II produced a sea change in the practice of medicine and surgery, while stimulating the dramatic expansion of the 20th-century hospital system and motivating the modern infrastructure of health insurance. The post-war years witnessed numerous technological achievements in medicine and surgery along with a rapidly growing and well-insured population that soon exceeded the capacity of hospital beds and operating rooms. The response to these shortages spurred the development of outpatient surgery centers beginning in the 1960s. With the advent of Medicare and Medicaid programs in 1965 the federal government adopted a central role in financing the costs of American healthcare.

The 1970s also witnessed another important social change—the legalization of abortion services in the United States. The management of a large influx of elective pregnancy terminations, requiring discretion and privacy, was ill-suited to the hospital or emerging outpatient department and stimulated the early growth of office-based gynecologic surgery (OBGS). A handful of physicians soon recognized that the skills learned in this setting—gentle tissue handling, the use of local anesthesia, and intravenous sedation—along with the support of a well-trained nursing and administrative staff allowed other gynecologic procedures to be transferred to the office-based surgical (OBS) setting as well. Soon, laparoscopic sterilization, diagnostic hysteroscopy, the treatment of vulvar cysts, and loop electrosurgical excision procedures (LEEPs) were being reported in an office setting—but only by a limited group of pioneering physicians.

The last 30 years have seen three major changes that are now motivating many gynecologic procedures to move to the OBS setting. First, the technological achievements of the last three decades have resulted in the unprecedented ease and safety of many commonly performed gynecologic procedures—diagnostic and operative hysteroscopy, as well as endometrial ablation—in an OBS setting. Second, the increased growth and complexity of hospital systems has imposed many new insurance and administrative barriers to the delivery of care to patients. Third, the major healthcare payers, in an effort to reduce the cost of inpatient and outpatient operating room services, have provided strong financial incentives for physicians to perform procedures in an OBS setting. In 2006, the Centers for Medicare and Medicaid Services (CMS) instituted a 237% increase in relative value units for diagnostic hysterectomy with endometrial sampling.

The relocation of many gynecologic procedures, from the hospital and outpatient setting to the office, comes at a time when gynecologists struggle for improved reimbursement and better utilization of their time while seeking reduced administrative barriers to more patient-centered care. Patients are motivated by the inherent cost savings of OBGS and the individualized care available in the already-familiar office environment removed from the complexities of an increasingly corporate hospital structure.

This article will trace the history of gynecologic surgery as it moves from its original setting—the early 19th century physician’s office—to the increasingly sophisticated but complex environment of the late 20th century hospital. We will examine how the advances in surgery and anesthesia and the changing medical
economic environment have intertwined and influenced the growth of OBGS. After examining the present-day status of OBGS, we will also identify the obstacles to OBGS practice and how best to overcome them.

**EVOLUTION OF ANESTHESIA**

Anesthesia was arguably America’s first important contribution to medical practice. Josiah Trent, in celebrating the centenary of anesthesia, described surgical practice prior to 1846 as follows: “The patients were few in number, for the fear of pain was a deterrent equally as strong as the fear of possible accidents or of fatal errors by the surgeon; many preferred to die rather than endure the exquisite agony which was in store for them.”

The first surgical procedure to be performed with anesthesia is generally credited to Crawford Long, who, in 1842, employed sulfuric ether to excise a tumor from the neck of his friend, James Venables. Mr. Venables, after inhaling ether from a towel, had not believed the tumor had been removed until Long had showed it to him. The account of this achievement remained unpublished until 1849 and was later described by Nuland as “America’s greatest gift to the art of healing.”

The popularization of ether-anesthesia is credited to William T. G. Morton, and John Collins Warren, who on October 16, 1846 excised a tumor of the jaw from Mr. Edward Gilbert Abbott in a “public” event at the Massachusetts General Hospital (Fig. 1). Ether was administered through a newly constructed inhalation apparatus and the technique soon gained world-wide notoriety. Oliver Wendell Holmes, the venerated 19th century physician and writer, declared that “the fierce extremity of suffering has been steeped in the waters of forgetfulness, and the deepest furrow in the knotted brow of agony has been smoothed forever.” It was Holmes who suggested to Morton the name “anesthesia,”—a term that had been used by Plato to denote the absence of feeling.

The search for other anesthetic agents soon followed. Among those under consideration was chloroform, a colorless volatile liquid discovered in 1831. James Young Simpson, a well-known Edinburgh obstetrician, experimented with the inhaled vapors on himself and two of his friends at a dinner party on November 4, 1847. Chloroform “and its effects were rapidly demonstrated by the three seekers after truth falling out of their chairs and lying unconscious under the table.”

With no unpleasant after-effects, Simpson adopted chloroform as an obstetrical anesthetic agent and introduced it to the world in a paper delivered before the Medico-Chirurgical Society of Edinburgh. Simpson withstood withering professional and religious criticism in mid-19th-century England and was opposed by those who suggested “God has ordained that women should suffer during childbirth.” After being summoned by Queen Victoria in 1848 to attend the birth of her sixth child, Simpson’s participation was strongly opposed by Her Majesty’s medical attendants who were concerned with the safety of chloroform administration. But, in 1853, at the behest of Prince Albert, Dr. John Snow—a London physician known for his meticulous study of ether anesthesia—was summoned to administer chloroform during the birth of Leopold, Victoria’s eighth child. The Queen reportedly inhaled chloroform and the effect was soothing, quieting and delightful beyond measure.

The development of anesthesia foundered at first in the United States, but the Civil War (1861–1865) cemented its place in American medical practice. Much of the data relating to the use of anesthesia during the Civil War came from the landmark publication, the Medical and Surgical History of the War of the Rebellion (MSHWR)—a 6,000-page analysis of all aspects of medical and surgical care involving both Union and Confederate forces. The chapter entitled “Anesthesiology” is an analysis of 80,000 instances in which anesthetic agents were employed in the treatment of over 320,000 Union troops. Albin estimates that the combined Union and the Confederate armies utilized a total of 130,000 anesthetic agents during the course of the Civil War—employing them in a quarter of all surgical procedures. The MSHWR focused on 8,900 cases of “major operations in which agents were definitely ascertained” and noted that chloroform was used in 72.2%, ether in 14.7%, and a mixture in 9.1% of cases. Chloroform was likely the preferred agent since it was non-flammable and was associated with a quicker induction, greater potency, and more rapid return to consciousness. Although various inhalation devices were available at the time, most anesthetics were delivered by pouring the agent onto a handkerchief, towel, napkin, sponge, lint, or special cone. The merciful relief that anesthesia afforded the victims of the Civil War was best expressed by Confederate Army General “Stonewall” Jackson after being wounded during the Battle of Chancellorsville. Dr. Hunter McGuire informed General Jackson that he would be administering chloroform in order to amputate the general’s left arm two inches below the shoulder. After administering the agent McGuire reported that as General Jackson’s pain and suffering was mitigated, he exclaimed, “What an infinite blessing,” and then continued to repeat the word “blessing” until he became insensible.

Despite the increased acceptance and use of anesthesia for the remainder of the 19th century, “anaesthetists were low in the medical hierarchy” and had not yet developed the professional organizations for teaching and disseminating information through courses, journals, meetings, and societies. The emergence of anesthesiology as a medical specialty would await the early part of the 20th century with the establishment of the American Society of Anesthesiologists—the forerunner of the American Society of Anesthesiologists (ASA)—in 1935. The American Board of Anesthesiology was founded in 1938 as a division of the American Board of Surgery, and board certification soon followed. The public recognition of anesthesiology was affirmed as a specialty when it was advertised as the “hit show in the Medicine and Public Health Building” of the New York World’s Fair in 1939.

World War II brought an accelerated growth in medical and surgical technology and resulted in the development of blood banking, the treatment of infectious diseases, and an extraordinary investment in public and private hospitals. The war also stimulated the growth of medical insurers whose reimbursement policies in the post-WWII era favored hospital-based care.
In the setting of a well-insured population, with an abundance of surgeons and hospital beds, operative outcomes improved and there was an unprecedented need for anesthesiologists.17,28

By the 1960s, however, many communities experienced a deficiency in hospital beds. Purvis Martin noted “a severe shortage of hospital beds in the San Diego community during the 2 decades following World War II.”29 In this setting, gynecologists began performing selected procedures, such as dilation and curettage, in an office-based setting, and sodium thiopental was administered by either an associate gynecologist or a “roving anesthesiologist.” In fact, Martin noted “we felt relatively secure in using this agent for minor surgery on normal risk patients.” This all changed when medical liability insurance carriers, based on their experience in other communities, required the discontinuation of this practice and denied coverage to gynecologists.29 In the setting of increasing demand for hospital services and a shortage of operating room facilities, the outpatient surgery center was conceived.

In 1962, two anesthesiologists, David Cohen and John Dillon, sought to improve hospital bed utilization at the UCLA Medical Center.30 Cohen and Dillon established an outpatient surgery program that is considered the forerunner of the modern surgery center. The two believed that quality measures, including proper patient evaluation and proper equipment, were more important than whether or not the surgical procedure occurred in a hospital or outpatient setting. Cohen and Dillon reported excellent outcomes with a low hospital transfer rate and demonstrated a significant savings to patients and insurance companies. By the late 1970s, it was estimated that 20–40% of all surgical procedures performed in an average community hospital could be accomplished just as safely in an ambulatory or outpatient surgery setting.11

The role of the modern outpatient surgery center continues today as the primary setting for low-risk and minimally invasive surgical procedures.

**EVOLUTION OF GYNECOLOGIC SURGERY**

The first surgical observatory and amphitheater in the United States was constructed in 1804 at Pennsylvania Hospital31 at a time when surgical lighting was provided by the mid-day sun and sterile techniques were not yet practiced. Despite these prestigious surroundings, the first intraabdominal surgery was performed under considerably more humble environs.

In December 1809, Dr. Ephraim McDowell (Fig. 2) was called to the home of Jane Todd Crawford in Green County, Kentucky to evaluate what was thought to be a pregnancy that had “far exceeded the usual period.”32 After learning of her ovarian growth, Mrs. Todd agreed to travel on horseback some 60 miles back to Danville, “resting her tumor on the horn of the saddle”; whereupon, McDowell removed a 22.5-pound ovarian neoplasm on Christmas morning of 1809. Given that the procedure was performed without anesthesia, and that Jane Crawford made a complete and uncomplicated recovery, one can fairly state that she deserves as much credit as he for the beginning of modern surgery. McDowell published a description of his procedure, performed in his home office (Fig. 3), in 1817, and included two additional cases.33 Schachner34 noted that had McDowell “lived under the overpowering shadow of a famous university, it is safe to say that he would never have had [the] distinction of being the first ovariotomist.”

Despite McDowell’s pioneering genius, gynecologic surgery was generally unknown and unpracticed through most of remainder of the 19th century. Dr. Thomas Cullen, professor of gynecology at the Johns Hopkins Medical School, recalled gynecologic practice at the end of the 19th century as follows:

Now and then he would operate in a private house repairing a perineum or cervix. The operator would go to the patient’s home the day before, pick out the room he deemed most suitable, have it cleared out and cleaned, and the next day he and two or three of his colleagues would repair to the patient’s home. The operator would go to the kitchen, pick out a suitable pan, place his instruments in this and set them on the stove to boil... Gynecological operations were in large measure limited to removal of labial growths, perineal repairs, repair or amputation of the cervix, curetting of the uterus for cancer, curetting of the uterus for retained membranes, and the removal of large non-adherent ovarian cysts... Little or no attempt was made to remove pus tubes. Fibroids were left alone and no one would venture to remove the uterus for cancer of the cervix or body.35

The evolution of gynecology as a specialty would await the development of hospitals, diagnostic testing, and advances in both anesthesia and antisepsis. Even after Lister’s announcement in 1867, an antiseptic technique was only slowly incorporated into established American surgical practice. Boiled rubber gloves were first used by William Halsted in 1890 and, by 1895, dry heat and steam had largely replaced Lister’s carbolic acid for the sterilization of instruments and dressings.3

By 1897, improvements in surgical technique led to an increased use of hysterectomy. That year, Thomas Addis Emmet, the profession’s elder statesman, even criticized the use of “promiscuous hysterectomy” at the 22nd Annual Meeting of the American Gynecological...
Society. Dr. Emmet cautioned that “Now that the operation of hysterectomy has been so perfected, it stands as a terror to me, for I am often tempted to do it when I would not think of it if the result of the operation was not so successful. The danger of the procedure is the least obstacle to our progress today, for its execution has become too easy.”

The 20th century would see profound advances in the new unified specialty of obstetrics and gynecology as medical education, surgical technique, pharmacology, and anesthesiology advanced. The American Board of Obstetrics and Gynecology administered their first examinations to 79 applicants in May 1931.1 By the 1970s, gynecologic oncology, maternal and fetal medicine, and reproductive endocrinology were all recognized as subspecialties. The latter part of the 20th century also brought a panoply of social and technological change to women’s healthcare. In addition, this era would stimulate changes in the distribution of gynecological surgical practice in the United States that affects us to this very day, including the development of office-based gynecologic surgery.

In 1958, a major technical innovation was introduced by two Shanghai obstetricians—Drs. Yuantai Wu and Xianzhen Wu—that would influence abortion services worldwide. The method of vacuum aspiration, first published in the Chinese Journal of Obstetrics and Gynaecology,36,37 was soon adopted by physicians in the Soviet Union, Hungary, Bulgaria, Yugoslavia, and Czechoslovakia. By the mid-1960s, vacuum aspiration was introduced in both England and in the United States and concerned individuals throughout the world re-evaluated abortion practice through the lens of improved safety and expediency.36

The 1960s and 1970s witnessed a state-by-state shift in laws regulating abortion practice in the United States. As a result of the 1973 United States Supreme Court decision in Roe v. Wade, elective abortion became the most commonly performed gynecologic procedure in the US. By 1990, over 1.4 million abortions were performed annually.38 Until there was a demand for a large number of elective pregnancy terminations, the vast majority of gynecologic surgery was performed in a hospital-setting under general, spinal, or epidural anesthesia.39 The Roe decision unleashed a religious and political torrent that continues to this day. As a result of the need for medical discretion, patient privacy, and the already proven safety of first-trimester abortion under local anesthesia, pregnancy termination services were increasingly performed in a dedicated outpatient facility or an OBS setting. The safety of office-based first trimester abortion was supported by Peterson et al.40 who observed that general anesthesia carried a two- to four-fold increased risk of death related to elective first-trimester abortion. The demonstrated safety and discretion of pregnancy termination services caused a major shift in practice as services were increasingly brought into the outpatient and OBS setting.

The 1970s and 80s also witnessed a rapid technological growth in our specialty—the addition of laparoscopy into gynecologic practice. Advancements in laparoscopic light sources and techniques coincided with a growing demand for surgical sterilization, which was now suitable for the newly created outpatient and ambulatory surgery centers.
Concomitantly, several physicians became interested in the possibility of performing laparoscopic sterilization under local anesthesia in an outpatient setting. In 1977, Penfield reported a series of 1200 laparoscopic sterilizations under local anesthesia in two free-standing surgical units in Syracuse, New York. Because of the possible risk of major blood vessel injuries inherent to sharp-trocar laparoscopy, Penfield insisted that procedures performed under local anesthesia be carried out with the availability of an operating room and anesthesia services. However, with the development of the Hassan cannula (a blunt instrument that eliminated the use of both the Verres needle and sharp trocars; Fig. 4), also known as “open laparoscopy,” Penfield became a strong advocate for surgical sterilization in an OBS setting under local anesthesia.

The last two decades of the 20th century witnessed many developments in gynecologic surgery including the acceptance of outpatient and free-standing surgical centers, as well as office surgical suites (Fig. 5) for an increasing number of gynecologic procedures. Soon, techniques which had once been performed exclusively in hospital operating rooms, such as laparoscopy, minilaparotomy, hysteroscopy, and LEEP procedures, were increasingly migrating into these alternative sites. In the early part of the 21st century, endometrial ablation, endometrial resection (Fig. 6), hysteroscopic polypectomy (Fig. 7), and myomectomy (Fig. 8) have been performed in office-based settings.

There are numerous factors that currently favor the expansion of OBGS, including the development of equipment specifically designed for office-use, a favorable economic environment for gynecologists and patients, and the administrative ease of scheduling—all improving office efficiency. Additionally, the advantages of working with a consistent team of nurses and support staff is likely to provide better outcomes in a more welcoming and patient-centered environment. Both the American College of Obstetrics and Gynecology (ACOG) and the American Society of Anesthesiologists (ASA) have developed essential guidelines to assure the safety of OBS and continue to represent important efforts on behalf of both professional societies to embrace and enhance continuing quality improvement.

The Medical-Economic Environment: The Evolution of Hospitals and Health Insurance

The earliest US hospitals traced their origins to 7th century British almshouses—Christian-based charitable institutions which provided care for the widows, orphans, sick, and destitute of their community. Almshouses functioned as a combination guest-home, religious house, and infirmary, and they were often referred to as “Maison Dieu,” “Bedehouse,” and “God’s House,” as well as the more familiar “Hospital,” and “Almshouse.” While serving the chronically ill, deprived, destitute, and disabled, their therapeutic value was often questioned—at least one New York almshouse was characterized as “a public receptacle for poor invalids undeserving the name hospital.” In 1736, both the New York City Almshouse and the New Orleans Hospital of Saint John were founded and became the forerunners of Bellevue and Charity Hospital respectively. While providing a generalized welfare system for society’s underclass, the 18th and early 19th century almshouses were characterized by their squalid and overcrowded conditions and poor staffing that often required inmates to care for one another in such matters as nursing, washing, and ironing, as well as the
In many cases, these early almshouses may have served more as a deterrent to poverty and public assistance than an institution of healing. The almshouse began its metamorphosis into the modern hospital by shifting its focus to caring for those that were capable of rehabilitation and could be returned to contribute to society. Benjamin Franklin criticized charitable institutions as causing the poor to be “less provident.” He reasoned that giving mankind “a dependence on anything for support…besides industry and frugality during youth and health, tends to flatter our natural indolence, to encourage idleness and prodigality, and thereby promote and increase poverty, the very evil it was intended to cure: thus multiplying beggars instead of diminishing them.” In 1751, the Pennsylvania assembly passed an act creating the first Anglo-American hospital, modeled after the British “voluntary hospital,” in order to save and restore “useful and laborious” poor people to the community. Benjamin Franklin, Dr. Thomas Bond, and a coterie of Quaker merchants and other physicians also recognized hospitals as a vehicle for expanding medical education. Formalized instruction at the hospital followed, and, in 1765, the colonies’ first medical school at the College of Philadelphia was established. The Pennsylvania Hospital remained the only general hospital in the 13 colonies until the Revolutionary War. Other “voluntary” hospitals—financed by donations rather than taxes—soon followed, including the New York Hospital in 1771 and the Massachusetts General Hospital in 1821. Still, in the early nineteenth century, most Americans gave birth, endured illnesses, and even underwent “kitchen surgery” at home.

Prior to the 1860s, a physician might be content to spend an entire career without visiting a hospital ward, but the Civil War transformed nearly all aspects of medicine, surgery, and the institution of the hospital. By 1865, the last year of the war, the Union had built over 130,000 beds and treated over a million soldiers. The war stimulated both surgical innovation and the use of anesthesia—each facilitating the other. The adoption of antiseptic and aseptic techniques, along with greater attention to adequate ventilation in the late 19th century, enhanced an already increasing respect for both the medical profession and hospitals as they embraced a new era of therapeutic optimism.

The post-war era also ushered in the Second Industrial Revolution and caused the migration of large numbers of working people into urban centers. The new city dwellers—removed from their family structure and living in apartments—required a different setting for the management of acute illness and surgery. The social and scientific changes of the late 19th century spurred the evolution of the hospital from a “well of sorrow and charity” to “a workplace for the production of health.” The hospital—once a benevolent institution for the chronically ill—evolved into a business organization redesigned to be more attractive, safer, and acceptable to a broader swathe of society. By sending the incurably ill, and the “wicked and undeserving” to almshouses, while directing those with contagious illnesses to “pesthouses,” the hospital’s mission was transformed to one of curing acute illness. The exclusion of undesirable cases also served to combat the widespread public perception that hospitals functioned as a house of death.

Late 19th century doctors—aware of the need to persuade the public of the hospital’s new role—understood that adopting an organizational structure could be an indispensable vehicle for...
medical education and a means to interconnect physicians, surgeons, anesthetists, and paid support staff. But the wholesale renovation of the almshouse and early hospitals into institutions of health would require substantial capital investment and the involvement of the business community. As a result, physicians, in search of greater legitimacy, formed alliances with wealthy and influential donors seeking to enhance their personal reputations with the public. In some cases, doctors—aware of the need for the imprimatur of the hospital structure—even volunteered their services and provided medicine at their own expense. Community leaders—bankers, lawyers, judges, clergy, merchants, and industrialists—were also aware of the benefit of lending their support toward the establishment of facilities in their own communities. These leaders, in turn, became the future managers and trustees of the newly formed institutions and benefitted from the networks of influence.

The organizational structure of the late 19th century hospital would eventually depend on the adoption of the formalized training for professional nurses; a notion not initially embraced by physicians. Prior to the Civil War, nursing was considered a menial occupation taken up by women of lower socioeconomic classes. Formalized nursing began in 1861, when the Woman’s Hospital of Philadelphia was incorporated and began the training of professional nurses. The first course lasted six months and produced a single graduate in 1865, but the school did not flourish until after the Civil War. The war demonstrated that intelligent, disciplined student nurses performed a superior and cost-effective service and the profession eventually won public and hospital administrative support. With the growing emphasis on cleanliness, orderliness, and the aseptic technique, professional training schools—modeled after the Nightingale School in London—were soon established in New York, New Haven, and Boston. Between 1873 and 1900, the number of nursing schools increased from three to 432, and, with it, there was a profound rise in the prestige of the nursing profession.

The close of the 19th century also witnessed the geometric growth of intraabdominal surgery. Between 1889 and 1892, William and Charles Mayo had performed only 54 abdominal operations—a number that grew to 612 in 1900 and 2,157 by 1905. As surgical technology improved in the early 20th century, it expanded to include the thorax as well as the nervous and cardiovascular systems. This growth gradually moved surgery from the home- or office-based setting to the hospital. Between the onset of the Civil War and the turn of the 20th century, hospitals evolved from institutions concerned with the care of the poor and chronically ill to centers that provided the organizational and support structure for scientific research, education, and technological advancement that was tailored to the management of the acutely ill. As a result, the number of US hospitals increased from 178 in 1872 to more
than 4000 in 1910.61

The technological advancements of the increasingly complex 20th century hospital came at a financial cost; one that was increasingly borne by the consumer. The onset of the Great Depression exposed the vulnerability of the new healthcare system as hospital beds became vacant. In this setting, the concept of medical insurance emerged. The archetype for today’s insurance plans were developed at Baylor University Medical Center in 1929,62 in a plan that was offered to the local teacher’s union. By 1939, the Baylor experiment evolved into the first Blue Cross plans and enlisted some three million people. But, health insurance was still relatively uncommon before World War II,63 as most Americans could ill afford the premiums. However, in 1942, the National War Labor Board instituted wage and price controls to minimize inflation and war costs. In a setting of severe labor shortages, companies unable to offer higher wages, could attract much needed workers by offering healthcare insurance instead. To encourage the trend, the federal government ruled that monies paid for employees’ health benefits would not be taxed. The result was a surge in the number of Americans with health insurance between 1940 and 1955, which skyrocketed from 10 to 60% as labor unions became major consumers of health insurance.

World War II and its aftermath brought astonishing growth in medical technology. The recently industrialized production of penicillin played a major role in treating countless wounded following the D-day landings.64 The immediate post-war era saw the introduction of the intensive care unit,65 the expanded use of ventilators,66 and even the development of chemotherapy for several cancers such as leukemia.67 All of these scientific achievements underscored the increasingly important role of the hospital and demand for its services. Although the federal, state, and local governments had provided limited support to hospitals in the early 20th century, they would play an increasingly vital role in the development of the hospital system in the post-war era.

Two important hospital construction initiatives were adopted following WWII—the expansion of the Veterans Administration (VA) program68 and the Hill-Burton Act.69 Under the direction of General Paul Hawley, the post-WWII VA established a policy of affiliating the new hospitals with medical schools, establishing policies that would attract new doctors and encourage the VA hospital-based research program. The Hill-Burton Act—signed into law by President Truman in 1946—provided funds for the construction and expansion of community hospitals for a rapidly expanding and demilitarizing population. By 1975, Hill-Burton had been responsible for the construction of nearly one-third of US hospitals.69

The post-war years also caused a re-evaluation of the government’s role in providing healthcare to Americans. Many European countries had already adopted some form of national health insurance—a system that was rejected in the United States. However, in 1965, President Lyndon Johnson signed an amendment to the Social Security Act which provided medical care for the elderly and poor—Medicare and Medicaid respectively.70 The dramatic rise of healthcare costs in the years that followed caused Medicare to amend its fee structure in 1983 with the implementation of the prospective payment system for Medicare patients based on diagnostic-related groups (DRGs). The profound changes in the economic incentives for hospitals made ambulatory surgery profitable, which, together with newer anesthetic and minimally invasive techniques, promoted a rapid growth of ambulatory surgery. The number of procedures being performed in ambulatory surgery centers (ASCs) increased from 380,000 in 1983 to 31.5 million in 1996.71

The price tag of healthcare has seen a dramatic increase in the United States—the cost as a percentage of gross domestic product (GDP) increased from 5% in 1960 to 17.9% in 2017.72 The economic stress forced many hospitals to the brink of closure.73 increasing the financial burden to the existing ASC infrastructure, insurers, physicians, and patients. The forces of cost-containment and technological innovations that permitted a shift in surgery from the hospital to ambulatory settings are now encouraging the transfer of relatively low-risk and non-invasive procedures to the office setting. According to Urman et al.,74 medical practitioners in private offices performed 10–12% of ambulatory procedures with an estimated 12 million in 2009 alone. Unfortunately, the office still remains a relatively unregulated environment, with only a fraction of states75 requiring formal accreditation; a situation that has been described as medicine’s “wild west.”76 As of 2012, only 28 states had any guidelines or regulations pertaining to office-based facilities, and the vast majority lack accreditation by one of the three major accrediting agencies.77

**DISCUSSION**

The development of gynecologic surgery, anesthesia, and the modern hospital system have, for nearly two centuries, evolved and benefitted from what has been an interdependent relationship—each of these pillars enabling the growth and development of the other. The social, technological, and economic changes of the past 50 years have witnessed the migration of surgery from the hospital to the ambulatory setting, and, more recently, into the office. Today’s gynecologist has the benefit of small-diameter hysteroscopes (Fig. 9), self-contained global endometrial ablation systems (Fig. 10), and even miniature resectoscopes (Fig. 11) and morcellators that were unknown to previous generations. Recently, the change in the reimbursement structure56 has provided an additional impetus for diagnostic and operative hysteroscopies as well as endometrial ablation in an office-based setting. Apart from the economic incentives, the gynecologist benefits from the greater ease of scheduling procedures, the consistency of nursing personnel, and the improved efficiency afforded by the office structure. The benefits to patients include convenience, privacy, reduced cost, and greater personal attention in an already familiar environment. But, three significant problems persist in OBGS.

The first is a lack of accreditation standards around the country. Only a small fraction of states require accreditation by one of the three major agencies.75 Although ACOG published guidelines for OBGS in 2010,73 these lack the force of a legal standard and, in most cases, formal accreditation remains voluntary.

A second issue in instituting OBGS relates to the lack of training. Most residency training programs allow for the
mastery of hysteroscopy, polypectomy, endometrial ablation, and a wide variety of gynecologic procedures under general anesthesia. But, as these procedures are transferred to an office-based setting, there is often a lack of skilled and experienced supervision. This can be an important obstacle to OBGS as procedures under local anesthesia or minimal or moderate sedation are often highly modified compared to their hospital counterparts.

The third issue for gynecologists performing OBGS is that, unlike other specialties, gynecologists have not embraced the use of sedation and analgesia protocols for office practice. While plastic surgeons, dermatologists, urologists, and gastroenterologists have adapted to the office-based environment by providing a range of anesthetic regimens—including local, intravenous sedation, and monitored anesthesia care—gynecologists have lagged far behind. In 1990, Herman reported a prospective study of 212 consecutive unselected patients undergoing office-based colonoscopy and noted that while 82% of patients required no analgesia or sedation, the remaining 18% found it essential for the completion of their procedure. In 2007, Rubin et al. reported the results of 3,733 subjects undergoing colonoscopy and compared physician-administered conscious sedation (midazolam and fentanyl) to anesthesiologist-supervised propofol, noting that both methods were over 96% successful. In 2008, the American Society for Gastrointestinal Endoscopy published guidelines for sedation and anesthesia in GI endoscopy providing important principles for the administration of these agents in an office-based setting. Similarly, urologists have long recognized the importance of providing the option of intravenous procedural sedation for cystoscopy and sonographically-guided prostate biopsy. Yet, the literature for OBGS provides little guidance in offering the option of intravenous sedation for patients who, because of anxiety or the need for pain control, require it.

While office-based surgery offers clear advantages to properly-trained gynecologists, most OBGS procedures appear to rely heavily on proper patient selection, the use of local anesthetics, and orally-administered non-opioid analgesics and sedative hypnotics. The limitations of such an approach are obvious given the frequency of unexpected intraoperative events such as cervical stenosis, vasovagal reactions, and unanticipated pain. There are few studies that critically analyze the acceptability of these techniques for patients. In the author’s experience, exceeding 50,000 office-based procedures, a substantial number of patients require some form of intravenous sedation or monitored anesthesia care to undergo commonly-performed gynecologic procedures in a manner that is humane and considerate and achieves a desirable outcome. Bradley and Wildrich reported that, even in the most experienced hands, 12.4% of patients considered performance of a vaginoscopic technique without paracervical block (PCB) and a small-diameter flexible hysteroscope, “barely tolerable,” while another 3.6% considered it “intolerable,” precluding completion of the procedure. Readman and Maher demonstrated that diagnostic hysteroscopy without supplemental analgesia or sedation was intolerable in 10% of subjects, while Lau et al. compared the use of 2% lignocaine with normal saline in women undergoing hysteroscopy and biopsy and concluded that PCB failed to attenuate the pain associated with hysteroscopy and noted that the injection itself is painful and associated with some risk. One might reasonably conclude that PCB anesthesia may, at best, be ineffective, and, at worst, may be associated with increased pain attributable to the injection itself.

In recent years, with the advent of self-contained and non-resectoscopic endometrial ablation techniques, many so-called “global endometrial ablation” procedures have migrated to the office as well. A study by Clark found that 34% of women undergoing radiofrequency ablation—the most common variety used in the United States—“would have preferred general anesthesia in hindsight.” Wallage et al. studied 191 women who were randomized to undergo microwave endometrial ablation under general or local anesthesia. The authors noted that only 69% of eligible women would even consider treatment under local anesthesia. Of those that began their treatment under local anesthesia, 9% were unable to complete their procedures without conversion to general anesthesia. Although numerous women can tolerate many of the minimally invasive office-based gynecologic procedures, it is clear that many would prefer the option of having their procedures performed with the advantge of intravenous sedation. In 2012, one of the authors (MW) published a series of 414 operative hysteroscopes including endomyometrial resection, myomectomies, polypectomies, division of uterine septae and lysis of adhesions under moderate sedation with a completion rate of 99%—the one case that was not completed was unrelated to pain control.

In the next of this two-part series, we will review the current state of office-based technology and examine the author’s nearly 40-year experience in performing simple and complex gynecologic procedures in the OBGS setting. We will examine the organizational structure of an office-based surgery center, the initial and recurrent training of office staff, and, more recently, the incorporation of mobile anesthesia services as well as the importance of accreditation to professional staff, patients, and the public. It is the author’s firm belief that, as gynecologists whose goal is to offer thoughtful and compassionate care to women, we can and should do better. Moreover, we must gain and maintain public trust to assure patients that office-based surgery offers not only the advantages of expedience and economic incentives but that it does so without compromising care.

Our ethical responsibilities for providing patient safety and comfort in an office setting are affirmed in the ACOG Executive Summary for the Presidential Task Force on Patient Safety in the Office Setting, which states that “the type and level of anesthesia should be dictated by the procedure with input based on patient preference. The decision regarding the type of anesthesia should not be altered based on limitation of equipment or personnel in the office setting; rather, it should be based on patient need in relation to the planned procedure.”

AUTHORS’ DISCLOSURES

Dr. Wortman is a consultant for OCON Healthcare, Ltd. Ms. Carroll has no conflicts of interest to disclose.
REFERENCES


2. Waisel DB. The role of World War II and the European theater of operations in the development of anesthesia as a physician specialty in the USA. Anesthesiology 2001;94:907–14.


75. Quattrone MS. Is the physician office the wild, wild west of health care? J Ambul Care Manage 2000; 23: 64–73.
77. Rubin RA, Galambos MR. Are colonoscopies performed in private offices less likely to be successful? Gastroenterology 2007; 133: 1390–2.