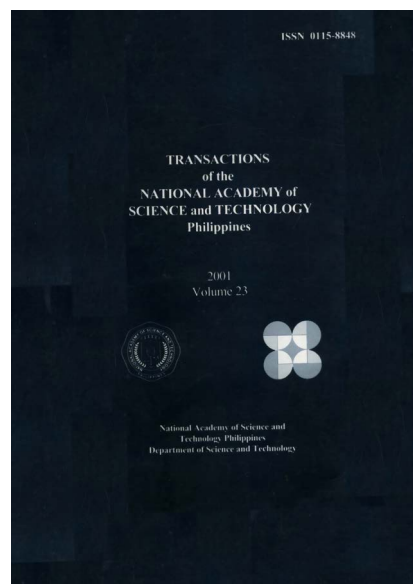


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## Philippine Surgery: The Past 25 Years and Into the New Millennium

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## **PHILIPPINE SURGERY: THE PAST 25 YEARS AND INTO THE NEW MILLENNIUM**

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### **ABSTRACT**

Philippine Surgery has developed in parallel with the advances of surgery in the United States and Europe. It is safe to claim that the last 25 years can be called the "golden years" of Philippine surgery.

The US Exchange Visitor's programs provided the opening for the training of most Filipino surgeons in the US starting in the 1950's and those who came back became the backbone of Philippine surgery during the last 3-4 decades. With other American trained medical specialists, they became the nucleus of our modern teachers in all medical schools, the researches, and the organizers of the privately owned hospitals that we have today. Among these prominent surgeons are Drs. Constantino Manahan, Romeo Gustilo, Ambrosio Tangco, Augusto Sarmiento, Victor Reyes, Enrique Garcia, and many others.

The PCS was organized in 1936 with its main objective to uplift surgical care and surgical training in our country. Its membership increased from 1000 fellows in 1975 to 2,060 fellows in year 2000 and is now composed of 1 chapters and 16 subspecialty societies.

The Philippine Board of Surgery was established in 1969 by returning American Board-certified surgeons and has become the official examining and certifying body for general surgeons. It has now certified 1,200 general surgeons practicing all over the country.

Open heart surgery for congenital defects and rheumatic heart diseases was first performed in 1959 at PGH and became routine surgery in the 1970's together with coronary artery surgery with the establishment of the Philippine Heart Center in 1974. Dr. Avenillo Aventura was its first Director. In Year 2000, 1,000 coronary bypass operations were performed at 5 Philippine hospitals.

The establishment of the specialty hospitals (PHC-1974, LCP-1981, NKTI-1983) and the upgrading of several privately owned hospitals, saw the burgeoning of various surgical procedures performed that are event today and in other developed countries.

Surgery for arterial diseases such as aneurysm and arteriosclerotic obstruction laparoscopic surgery for biliary tract disease, intra-ocular lens for cataract, gamma knife for brain tumor, endovascular and endoscopic procedures, transplantation of kidneys, liver, pancreas, and heart, various extirpative surgery for cancer and various reparative and rehabilitative operations are performed regularly in the various hospitals in Manila, Cebu, Davao, and other Philippine cities.

Modern surgery, as seen in many developed country, together with modern diagnostics and imaging modalities (CT Scan, MRI, Gamma Camera, Lithotripsy) are now available to our patients. This has made surgery more precise, safer, less traumatic and more successful than heretofore possible.

A short discussion on the fast developing field of virtual reality in surgery will be presented and the necessary development in health care financing that has to be addressed if these surgical advances are to be made available to all Filipinos and not just to a selected few.

## **Introduction**

Philippine Surgery during the last 25 years has developed in parallel with the advances of surgery in the U.S. and Europe. But before I proceed, I wish to give you a historical perspective of the Philippine hospital system that showed profound changes starting 35 years ago. The achievements of the Philippine surgeons were to a major extent influenced by the development of the Philippine hospital system that saw profound growth and changes starting 25-35 years ago. After all, these various surgical advances were performed in these hospitals.

## **Philippine Hospital System**

Before 1965, there were only two types of hospitals in the country:

- a. government or public hospitals- PGH, JRMMC, VLMM
- b. private- religious-owned hospitals- UST, St. Luke's, Our Lady of Lourdes, San Juan de Dios, Manila Sanitarium

Starting in the 1960's, physician owned and controlled hospitals were established as corporate entities which catered primarily to private patients – Manila Doctor's Hospital (1958), Makati Medical Center (1969), Medical City General Hospital (1968), Capitol Medical Center (1970).

In 1969, GSIS General Hospital was established presumably to cater mainly to GSIS covered patients (government employees). This hospital was eventually absorbed by the Department of Health and became a fully government owned hospital in 1978 (Ospital ng Bagong Lipunan).

The last 25 years saw the opening of specialty hospitals under a corporate set-up as semi-private institutions catering to both private and service patients

with partial government subsidies (PHC-1975, LCP-1981, PCMC-1979, NKTI-1983).

The U.S. Exchange Visitor's Program provided the opening for the training of most Filipino surgeons in the U.S. starting in the 1950's and those who came back became the backbone of the Philippine surgery during the next 3-4 decades. With other American trained specialists they became the nucleus of the privately owned hospitals that we have today. They also became the teachers in the medical schools and the researchers in various medical fields. Filipino surgeons who were founding Directors of these hospitals were:

Constantino Manahan (Makati Medical Center)  
Thelma Clemente (Capitol Medical Center)  
Enrique Garcia (Lung Center of the Philippines)  
Augusto Sarmiento (Medical City General Hospital)  
Avelino Aventura (Philippine Heart Center)  
Jose Caedo (GSIS General Hospital)

It is indeed a pleasure to review the achievements of Filipino Surgeons during the past 25 years since it is essentially these "Balikbayan Surgeons" of the late 1950's, 1960's and 1970's who brought their expertise to our land and who eventually established the "Halsted" system of surgical training in our country, a programmed step by step surgical training to a group of surgeons (as differentiated from the European single surgeon apprenticeship) with strong research orientation.

During the last 3-4 decades, advances in anesthesia, a better understanding of fluid and electrolyte derangement in trauma and shock, advances in blood transfusion and the development of synthetic suture materials and tissue replacements made possible the repair of congenital defects, diseased tissues, the resection of tumors heretofore not possible.

### **Cardiac Surgery**

Dr. Hector Baens, after his training in the U.S. came back in 1959 and joined the faculty of UP and together with Drs. Cristino Lazatin as surgeon and Enrique Garcia as 1<sup>st</sup> assistant performed the 1<sup>st</sup> open heart surgery in the country.

Aorto-coronary bypass surgery, which is essentially an operation to increase blood supply to the ischemic myocardium was first performed in 1972 by Dr. Avenilo Aventura at the V. Luna Medical Center. It was, however, in the Philippine Heart Center established in Feb. 14, 1975 where aorto-coronary bypass grafts were mostly performed during the last 25 years. In year 2000, 910 CABG were performed in our country, 491 of them were done at the PHC. Coronary bypass graft comprise 50% of all open heart operations done in the country today.

On November 5, 1955, Dr. Gumersindo Garcia Jr. successfully performed the 1<sup>st</sup> repair of an abdominal aortic aneurysm using an aortic homograft (cadaver aorta). This became a routine operation in our country during the past quarter of a

century including the more complex aneurysms involving the thoraco-abdominal and ascending aorta. Various bypass operations to the legs and repair of blocks to the cerebral circulation are common operations today, thus saving legs or preventing strokes.

During the last 3 years of the last millennium, endovascular operations using balloons and stents have become common procedures making these operations less risky, faster and less traumatic.

### **General Surgery**

The last 25 years saw the introduction of more complex procedures especially in cancer surgery, becoming routine and safer. What were essentially major extirpative and mutilating operations introduced in the 1950's became simpler in the 1990's i.e., radical and super radical mastectomy giving way to total mastectomy and/or lumpectomy.

Minimally invasive surgery joined the surgical nomenclature in the 1990's with laparoscopic surgery 1<sup>st</sup> performed in 1989 by surgeons from several hospitals so that by 1992, 1,500 laparoscopic cholecystectomies were reported from 10 Metro Manila hospitals. This operation is routinely done today all over the country.

Drs. Augusto Sarmiento, Fidel Cojuanco, Jose Caedo, George Eufemio from Cancer Memorial Medical Center in New York became the early proponents of radical neck and "commando operations", an operation to remove neck structures to include the mandible, tongue and neck for cancers of the oropharynx and larynx, which today are being slowly taken over by our otolaryngologist colleagues.

In organ transplantation, Dr. Domingo Antonio in UST together with Dr. Avenilo Aventura performed the first successful kidney transplantation from a living related donor in 1969. With Dr. Reginaldo Picache and Dr. Filoteo Alano who had transplant training in US and Europe, we established the kidney transplantation program we know today. I have been fortunate to perform the 1<sup>st</sup> successful kidney transplant from a brain dead cadaver in 1977, the 1<sup>st</sup> liver transplant in 1988 and the 1<sup>st</sup> multiple organ transplant in Asia of a liver and kidney transplanted to one patient and the first combined kidney and pancreas transplant. As of today, a total of 3000 kidney transplant have been performed as of year 2000. Heart transplant was performed by Dr. George Garcia at the MMC in May 24, 1994 and a lung transplant program is now in place.

### **Ophthalmologic Surgery**

Intraocular lens for cataract was introduced by Dr. Jose Pecson in 1979 when he operated on his own mother. He was trained at Massachusetts Eye & Ear Hospital of Harvard Medical School. When he presented his 1<sup>st</sup> 20 cases of lens implantation, Dr. Taylor Smith, Chief Pathologist of MEEH commented, "there is no place for implants in the human eye".

## **Neurological Surgery**

Dr. Romeo Gustilo and Dr. Victor Reyes developed the 1<sup>st</sup> formal training in Neurosurgery. Dr. Renato Sibayan first used the operating microscope which is now a regular neurological operating room equipment. Minimal invasive operations have the greatest impact in this field.

Indeed, time constraints does not allow me to describe numerous advances in the other sub-specialties, all of whom has made the last 25 years, indeed, the golden period for Philippine Surgery.

## **The Philippine College of Surgeons**

The PCS was organized in 1936 with Dr. Gregorio Singian as the Founding President. The last 25 years saw its growth and maturity. Today, it has 11 chapters and 16 subspecialty societies.

It coordinates with the DOH especially in the field of cancer, trauma, surgical infections, manpower development and training.

From 1008 fellows in 1975, today (Y2001), it has 2060 fellows members, a ratio of 1:40,000 (surgical specialist: population). With 32 medical schools, 2300 medical graduates/year. There are 118 accredited hospitals for residency training, 66 are accredited training programs in General Surgery.

## **The Philippine Board of Surgery**

Established in 1969. Founded by returning Filipino surgeons from the U.S. who all have passed the qualifying and certifying examinations of the American Board of Surgery- DIPLOMATES

It was organized “to improve the standards of training of surgeons” in the country.

Today – it conducts:

1. In-Service Training Examination
2. Written Examination
3. Oral Examination

The examinations are purely voluntary.

All the members of the Board of Governors and Directors are peer selected and work without any compensation.

The Textbook of Philippine Surgery was published in 1990. This is the first and only collaborative text written by Filipino surgeons so far.

## **Where to the Next Millennium?**

Surgery comes from the Greek work “Chirurgia” ( working with his hands), hopefully also with his head. It requires both cognitive analysis and integration of patient data, often incomplete, that has to be made quickly especially in emergency

situations. In the past, operations had to be performed with long incisions for adequate exposure, using our hands and eyes for visualization and manipulation of organs or tissues.

The enormous advances in medical imaging and minimally invasive devices especially during the past decade has revolutionized the whole practice of surgery. Three dimensional reconstruction of CT and MRI Scans, PET Scans, now provide us detailed reading, and with sophisticated new instrument allow us minimal trauma and adequate access without compromising exposure. Direct visualization may soon be replaced by a "virtual" camera image. In certain operations, it is now possible to overlie the visual field of the operating surgeon with computer generated images to aid with intra-operative navigation.

Virtual Reality is described as the combination of human computer interfaces, graphics, sensor technology, high-end computing and networking to allow a user to become immersed in and interact with an artificial environment. We can now see that in the coming decade, virtual reality will be used not only in the operating room but also in pre-operative planning, surgical education and surgical research.

Jaron Lanier introduced the term "virtual reality" in 1989, but its development dates back in the 1960's-1970's when computer became powerful enough to perform graphical calculations. We, physicians and surgeons were introduced to computer generated images in the late 1970's with the development of computer tomography (CT) ultrasound (US) and Magnetic Resonance Imaging (MRI). In the 90's, 3D reconstruction of these images became possible and the first attempt was made to integrate these datasets in the operating room to improve surgical navigation. Increasing computer power made modeling of human motion possible so that today, these are now available simulations of whole patient anatomy model skills simulators and simulations of surgical procedures.

The technical aspect of the software and hardware of this new technology is beyond this presentation, but suffice it to say that this has all been made possible by the advances in computer graphics derived from the research of the NASA Space Program. In 1989, the U.S. Department of Defense introduced SIMNET, a network of computers that allowed combat training in a virtual environment. As a matter of fact, SIMNET was used to prepare troops for the Gulf War. This is not being transformed for use in the operating theaters.

Computer capacities have undergone astounding capacities coupled with falling costs. Moore's Law named after Gordon Moore has tracked the doubling of computer ponies each year for the last 35 years so that the capabilities of a \$100,000.00 graphics super computer in 1990 was available in a \$150.00 Nintendo System by 1998.

The rapid progress in computer and graphics hardware will support the development of faster and more realistic VR applications. Currently, promising prototypes of surgical simulations are being tested. The next step is to add physiological data to the simulation. To simulate an intra operative hemorrhage, for example, it will be necessary to develop realistic graphics of a bleeding vessel

in real time that can be controlled by a haptic (touch) interface, while the physiological simulation responds to the blood loss.

If the integration of physiology and anatomy succeeds, and I don't see why not, the resulting virtual representation of a patient could not only be used to teach surgical skills and judgment, but also to rehearse procedures before performing them. Combining VR with advanced robotics could guide the surgeon through technically challenging procedures and avoid injury to vital structures.

Further development could integrate genetic and medical information into the virtual data set, creating a MEDICAL AVATAR. It may soon be possible to perform simulation on a patient's data that could provide individualized preventive medicine.

### **Concluding Remarks**

The explosive development of information technology and computer graphics presents a tremendous opportunity to create new tools for surgical training, planning and procedures. Together with the advances in Biotechnology, it will revolutionize healthcare in this new Millennium. A close collaboration between computer scientist and physicians will be essential to this exciting challenge of the new millennium.

I shall be remiss, however, if I don't include in this short discourse, the necessary funding to make available this exciting development in medicine and in surgery in particular, to our patients here in the Philippines.

Healthcare expenditures in the Philippines was P88 B in year 1997 (3.5% of GNP) with the cost borne principally from out-of-pocket (46%) expense and only a mere 7% from NHIP and 21% from the national government.

In February 1995, RA 7875, better known as the National Health Insurance Act was passed. As of today, only about 30-35% of the population is covered by Philhealth or the Philippine Health Insurance Corp. Philhealth is intended to provide health insurance coverage and ensure affordable and accessible health care services for all Filipinos (universal health insurance).

The mobilization of financial resources for healthcare, admittedly must come from an improved economic resource of our people. But it is altogether true that we need not have to wait this long. A strong "political will" which will require every Filipino, privately or government employed, all the self-employed, under employed and including indigents, to contribute to a "health fund" will enormously enlarge the health care fund pool that could generate the necessary financial capability so that all the advances in surgery and in medicine that we speak today need not necessarily be available only to the favored sector of our population.

Filipino surgeons have contributed an enormous share to the improved health care available to our people today. However, we can only rest if these advances could be made available to benefit the majority, if not all of our people.



