UNIVERSITY OF PORT HARCOURT

"THE GENERAL SURGEON: JACK OF ALL TRADES, MASTER OF ALL"

An Inaugural Lecture

By

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ORDER OF PROCEEDINGS

2.45 pm. Guests are seated

3.00pm. Academic Procession begins

The Procession shall enter the Ebitimi Banigo Auditorium, University Park, and the Congregation shall stand as the Procession enters the hall in the following order:

Academic Officer
Professors
Deans of Faculties/School
Dean, School of Graduate Studies
Provost, College of Health Sciences
Lecturer
Ag. Registrar
Deputy Vice Chancellor Academic
Deputy Vice Chancellor Administration
Vice Chancellor

After the Vice Chancellor has ascended the dais, the Congregation shall remain standing for the University of Port Harcourt Anthem.

The Congregation shall thereafter resume their seats.

THE VICE CHANCELLOR'S OPENING REMARKS.

The Ag. Registrar shall rise, cap, invite the Vice Chancellor to make his opening remarks and introduce the Lecturer.

The Lecturer shall remain standing during the Introduction.

THE INAUGURAL LECTURE

The Lecturer shall step on the rostrum, cap and deliver his Inaugural Lecture. After the lecture, he shall step towards the Vice Chancellor, cap and deliver a copy of the Inaugural Lecture to the Vice Chancellor and resume his seat. The Vice Chancellor shall present the document to the Registrar.

CLOSING

The Ag. Registrar shall rise, cap and invite the Vice Chancellor to make his Closing Remarks.

The Vice Chancellor's Closing Remarks.

The Vice Chancellor shall then rise, cap and make his Closing Remarks. The Congregation shall rise for the University of Port Harcourt Anthem and remain standing as the Academic [Honour] Procession retreats in the following order:

Vice Chancellor
Deputy Vice Chancellor Administration
Deputy Vice Chancellor Academic
Ag. Registrar
Lecturer
Provost, College of Health Sciences
Dean, School of Graduate Studies
Deans of Faculties/School
Professors
Academic Officer

PROTOCOL

- The Vice Chancellor
- Past Vice Chancellors
- Deputy Vice Chancellor, Administration
- Deputy Vice Chancellor, Academic
- Past Deputy Vice Chancellors
- Members of the Governing Council
- Principal Officers of the University
- Provost, College of Health Sciences
- Dean, School of Graduate Studies
- Deans of Faculties
- Heads of Departments
- Distinguished Professors
- Directors of Institutes and Centres
- Visiting Academics and Colleagues
- Esteemed Administrative Staff
- Captains of Industries
- Cherished Friends and Guests
- Unique Students of UNIPORT
- Members of the Press
- Distinguished Ladies and Gentlemen

PREAMBLE

This lecture affords me a once in a lifetime opportunity to openly express my gratitude to God and to the many benefactors and mentors He used to propel me forward in my pursuit of excellence in academic career and profession. The topic of the lecture **"The General Surgeon: Jack ofall Trades, Master of all**" was chosen to enable me throw some light on my chosen field of specialization and my contributions to learning, research, and community service.

With humility, I crave your indulgence to patiently listen to me and partake in my joy. I thank you for your attention.

DEDICATION

This lecture is dedicated to God Almighty for His free gift of salvation and His enablement for me to be what I am today, despite the paucity of personal merits; my darling wife, Dr. (Mrs.) Ikawuru Jebbin, who has sacrificially and faithfully been playing the roles of a wife, friend, mother, advisor, and counselor; my children, Eyinte, Igbanam, Jebbin and Ugbana who suffered a lot of deprivations during my Residency Training Programme and even in my early years of practice as a General Surgeon; my biological parents, Mr. Jebbin and Mrs. Elina Uchere (of blessed memory) for their love for me while they lived.

ACKNOWLEDGEMENTS

I am grateful to the Triune God Almighty, for all His daily load of benefits that has been beyond my comprehension. I thank my biological father and mother (both of blessed memory) for bringing me into the realm of human existence and handing me over to my uncle, Chief A. R. E. Osot-Ogile and his amiable wife, Mrs. Felicia Egunyork. They have been wonderful parents to me from 1970 till today. I am grateful to my parents-in-law Mr. Cliford and Mrs. Lydia Okpom (of blessed memory) for giving their only daughter to me in marriage. I remain grateful to my elder sister, Mrs. Ugbana M. Ijeh for always being there for me.

To Chief (Dr.) Osobonye R. LongJohn whose mastery of and dexterity in Surgery spurred me into taking up Residency Training in Surgery, I am indebted. I am extremely grateful to Prof. Ndu Eke for being a mentor indeed. I am grateful to my trainers in Surgery, Prof. Joseph Ojukwu and Prof. Gabriel Njeze; I thank Prof. J. M. Adotey with whom I worked for many years and carried out many researches.

I am indebted to late Apostle G. D. Numbere and his wife, Pastor (Dr.) Mrs. N. E. Numbere for being exceptional spiritual parents to me. My special thanks go to the current International Director of Greater Evangelism World Crusade, Pst. Isaac V. Olori and his wife Pst. (Mrs). Blessing Olori, and indeed the entire Greater Evangelism family for the spiritual support and friendship I enjoy daily. I am grateful to Prof. K. E. O. Nkanginieme with whom I worked closely to birth the

first Clerking Skills Laboratory in Nigerian Medical Schools, and from whom I learnt many virtues of a leader.

I am most grateful to the pioneer Surgeons of the College of Health Sciences, University of Port Harcourt, Dr. E.D. O. Mangete, Dr. E. E. O. Uche, Eze (Prof.) E. N. Elechi, and Prof. D. D. Datubo-Brown (all of blessed memory) for setting a high standard of surgical practice and teaching of the rudiments of Surgery. I am grateful to Prof. Nene Obianyo for teaching me the principles of Surgery at the University of Nigeria Teaching Hospital.

I am grateful to my uncle, Eng. J. C. Solomon and his wife, Mrs. R. J. Solomon for providing their home for me as a house officer, and for being always there for me in my time of need. I am indebted to my colleagues and Residents in the Department of Surgery for the lots of camaraderie we enjoy together. I am grateful to Prof. Ndu Eke and Prof. (Mrs.) A. R. Nte for going through the manuscript and offering useful suggestions.
To Ikawuru, my wife, my "jewel of inestimable value", my best friend, my substantive mother, confidant, counselor and fellow pilgrim, I am ever grateful. I am alive today because you are my wife. I can only love you the more.

I thank our children, Eyinte, Igbanam, Jebbin, and Ugbana who are God's special blessings to us. They have continued to be a source of joy to us. Their godly heritage has given us peace which cannot be bought with money.

I am greatly indebted to my committee of friends headed by Dr. T.E Diamond who have tirelessly worked for the success of this project.

The list of those to be acknowledged is indeed inexhaustible. I do profusely apologize to all those who deserve to be so acknowledged in this piece. Please forgive me. God knows all of you and will not owe you anything.

INTRODUCTION TO THE TITLE

There is a tendency to associate anything with the adjective "general" with dishonor or inferiority. Thus the term "General Surgery" to the public may carry the erroneous implication of a lack of specialization, a deficiency in expertise, or even a certain weakness of purpose. The truth, however, is that General Surgery specialty is the mother of all surgical specialties. An attempt to rename it "Surgery in General" is yet to take a firm grip. The spectrum of diseases that falls into the ambit of the General Surgeon is broad; the knowledge base is deep; and the responsibility to the patient (or client) can be quite challenging.

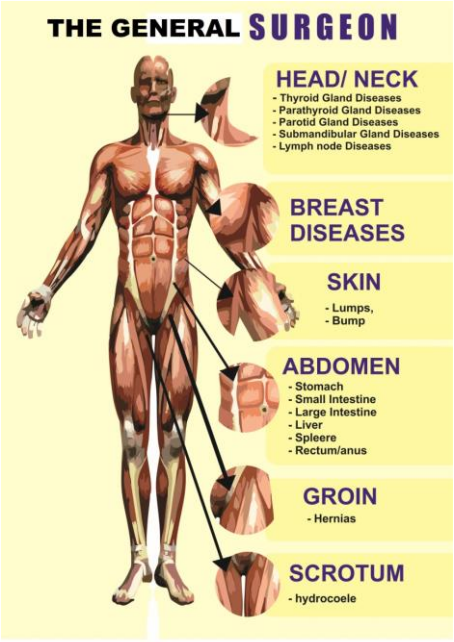


FIG 1: Domains of the General Surgeon

In managing the patients, the Surgeon may have to exhibit high profile skill in complex decision making. The major operative domain of the General Surgeon, **the abdomen**, has been described as the "The Magic Box", "Temple of truth" or "Pandora's Box" because of its propensity for springing surprises to the Surgeon. Greek mythology has it that Zeus, the Ancient Greek god of the sky and thunder, gave a box to Pandora with instructions that she should not open it. She, however, gave in to her curiosity and opened it, and all the mysteries and evils flew out to afflict mankind. Quite often, the Surgeon may not be sure of what he may find on opening up the abdomen, and woe betides anyone who dares to open the abdomen and is not fully equipped to deal with what one will encounter there! Like the Boy Scouts, therefore, the motto of the General Surgeon is "Be Prepared".

This lecture is a response to the traditional invitation to Academics that are elevated to the status of Professor to showcase to their colleagues and society what they had been doing in terms of research and service that brought the accolade to them. It is a privilege, Vice Chancellor Sir, to be given this opportunity at this auspicious time to fulfill this requirement. This is the fifth inaugural lecture from the Department of Surgery of this University. My predecessors are: Late Eze (Prof.) E. N. Elechi, Late Prof. D. D. Datubo-Brown, Prof. Ndu Eke, and Prof. A. U. Ekere.

A SNIPPET OF THE HISTORY OF SURGERY

Take from the air every aeroplane; from the roads every automobile; from the country every train; from the cities every electric light; from ships every wireless apparatus; from oceans all cables; from the land all wires; from shops all motors; from office buildings every elevator, telephone and typewriter; let epidemics spread at will; let major surgery be impossible-all this and vastly more, the bondage of ignorance, where knowledge now makes us free, would be the terrible catastrophe if the tide of time should but ebb to the childhood days of men still living!...Therefore, whoever desires progress and prosperity, whoever would advance humanity to a higher plane of civilization, must further the work of the scientist in every way he possibly can[1]. ***William J. Humphreys***.

Egypt, the "Cradle of Civilization", also became the cradle of medical thought, practice, and learning."The fact that the Neolithic chipped-flint knife was continually used by the Egyptians in embalming the dead connects their already complex civilization with prehistoric man"[1]. The medical papyri (the oldest being The Edwin Smith Papyrus) provided our main sources of knowledge of the earliest known phases of Egyptian Medicine. It is interesting to know, however, that even before the medical papyri became available, certain pictures engraved on the door posts of a tomb in a cemetery near Memphis (capital of ancient Egypt) and described by their discoverer, W. Max Muller, were believed to be the earliest known pictures of surgical operations[1].

Furthermore, Comrie, in an illuminating paper in Sudhoffs Archiv[2] described what were probably the earliest known

surgical instruments of the ancient Egyptians (about 1500 B C), consisting of three saber-shaped copper knives with hooked handles, found in a Temple near Thebes, an ancient Egyptian city.

Magic and religion formed integral parts of everyday life among ancient Egyptians who believed that evil gods and demons were responsible for many ailments. Medical treatment, therefore, often began with an appeal to a deity[1].
Mesopotamia (present day Iraq) was the starting point of Oriental Civilization, of which the Babylonians were the principal founders. Medical practice was early in Babylon and as with all early Civilization, "the first Babylonian physician was a priest or the first priest was a physician"[1]. Like the early Egyptians, early Babylonians had a special doctor for every disease. We learn from the Code Hammurabi (2250 BC) that medical profession in Babylon advanced rapidly in public esteem to be rewarded with adequate fees carefully prescribed and regulated by law. For example, ten shekels in silver was the statutory fee for treating a wound or opening an abscess of the eye with a bronze lancet if the patient happened to be a gentleman; if he was a poor man or a servant, the fee was five or two shekels respectively. If the doctor caused the patient to lose his life or his eye, he would have his hands cut off in the case of the gentleman or had to render value for value in the case of the slave[1]. This is not quite different from what obtains in some parts of the world even today. Indeed, as Alphonse Karr once satirically remarked, "the more things change, the more they remain the same''.

Ancient Greeks also practised Medicine and Surgery early. Among others, they believed that disease was supernatural in origin, being brought about by the dissatisfaction of the gods or from demon possession[1]. The role of Greek physicians was

to mediate between patients and the gods or to drive out the demons with prayers, spells, and sacrifices. The Greeks also had gods of healing, chief among them being Apollo.

The mystical side of Greek medical practice is clearly manifested in the cult of Asclepius (whom Greek mythology placed as the son of Apollo), regarded as a great physician. Asclepius was worshipped as god by the Greeks because of his outstanding surgical and medical expertise. Hundreds of Temples devoted to Asclepius were founded throughout the Greek and Roman Empire to which untold numbers of people flocked for cures, often with sacred dogs and snakes in attendance[1]. Asclepius was commonly represented as a handsome Jove-like figure, always attended to by the sacred snakes entwined around a rod. This is the origin of the snake in the medical emblem.

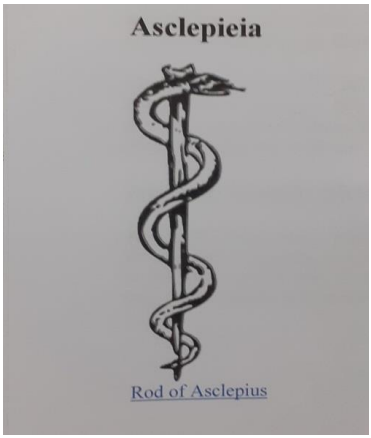


FIG 2: Rod of Asclepius[1]

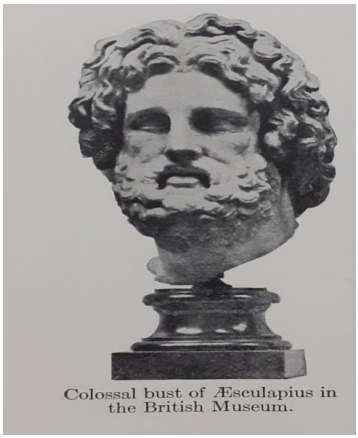
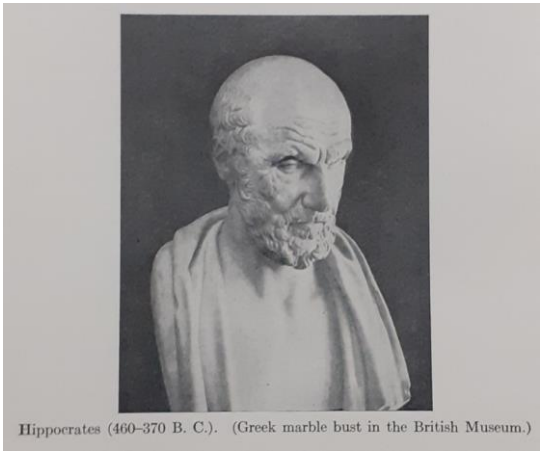


FIG 3: Colossal bust of Asclepius[1]

HIPPOCRATIC PERIOD

European Medicine entered into a scientific era with improved ethical ideals when the Greek physician, Hippocrates appeared on the scene in the 5th Century BC. Hippocrates was born in the Greek island of Cos off Turkey, of an Asclepiad family. Medicine owes Hippocrates the art of clinical inspection and observation. Rather than attributing disease to gods or other bizarre imaginations like his predecessors, Hippocrates virtually popularized bedside Medicine. The "use of the mind and senses as diagnostic instruments, together with his transparent honesty and his elevated conception of the dignity of the Physician's calling, his high seriousness and deep respect for his patients, make him, by common consent, the "Father of Medicine" and the greatest of all Physicians"[1]. He is believed to have set up the ethical code in medical and surgical practice – the Hippocratic Oath, which has stood the test of time. Sadly, after the Hippocratic period, the practice of taking clinical case histories died out.



Hippocrates (460–370 B. C.). (Greek marble bust in the British Museum.)

FIG 4: Greek marble bust of Hippocrates[1]

With the founding of Alexandria (331BC), Greek Science and Culture became firmly implanted in the ancient civilization of Egypt. Thus, the first medical school was established in Alexandria following the colonization of Greek Medicine in Egypt. Here, the sciences of Anatomy and Physiology, the bedrock of modern Surgery, were founded. Here, the great Anatomists, Herophilus and Erasistratus originated dissection of the human body. While Herophilus, who was a Physician and Surgeon, was the first to dissect the human body, Erasistratus had more interest in Human Physiology. He studied digestion, metabolism, and circulation of blood[1].

CELSUS

The history of Medicine will not be complete without mention of the work of Aurelius Cornelius Celsus who lived in the reign of Tiberius Caesar in Rome. Celsus was not a physician but he had a noble descent. He developed interest in compiling encyclopedic treatises on Medicine, Agriculture, and other subjects for the benefit of humanity. He was said to render medical assistance gratis and to be ignored by Roman Physicians of his day and slighted as "mediocre". Celsus is believed to be the oldest medical document after the Hippocratic writings, and of the seventy-two medical authors mentioned by him, only the work of Hippocrates remained relatively intact[1].

He was the first important writer on medical history. He, it was, that advised that the Surgeon "should be youthful or in early middle-age, with a strong and steady hand, as expert with the left hand as well as with the right, with vision sharp and

clear, and spirit undaunted; so far void of pity that while he wishes only to cure his patient, yet is not moved by his cries to go too fast or cut less than is required". Hence, the required aptitude of a surgeon: "the heart of a lion, the eyes of a hawk, and the hands of a lady"[3].

GALEN

The ancient period got to its climax with the name of the greatest Greek Physician after Hippocrates, Galen (131-201AD), the founder of Experimental Physiology. He was born to an architect at Pergamus in Asia Minor and commenced practice 164 AD. He was fast to attain leadership of his profession but retired early to devote his later life to study, travel, and teaching. A versatile Physician, he was the most skilled practitioner of his time but left no good record of clinical cases. He was credited with usually getting his patients well, utilizing polypharmacy[1].

Galen was a great Anatomist but a good part of his work turned out to be faulty and inaccurate because his dissection was on animals, especially monkeys and pigs. It was a taboo to dissect the human body in his day. He had clear understanding of the difference between origin and insertion of muscles and knew most of the muscles and their functions. He gave us the four classic symptoms of inflammation (**heat, pain, redness,** and **swelling**). His contributions to science were considered as finalities up to the time of Vesalius.

Although some of Galen's Anatomy failed in the long run, having worked on animals rather than humans, and because he

subjected accurate description of structures to speculation about their function, he was the first and foremost contributor to Experimental Physiology before Harvey. It is on record that the was the first to describe the cranial nerves and the sympathetic nervous system; made the first experimental sections of the spinal cord, producing hemiplegia; produced aphonia by cutting the recurrent laryngeal nerves; and gave the first valid explanation of the mechanism of respiration. His contribution to the physiology of the nervous system, respiration, and circulatory system, though faulty, was the only real knowledge for seventeen centuries[1]. Up to the time of Vesalius, European Medicine was such that everything relating to Anatomy and Physiology, as well as disease, was referred back to Galen as a final authority, from which there could be no appeal. After his death European Medicine went into obscurity for nearly fourteen centuries[1].

THE FALL OF THE ROMAN EMPIRE

In 476 AD when the Western Roman Empire fell, many surgical skills were lost to Western Europe. It took the Byzantine Empire to keep alive these skills, building upon the knowledge base developed by its Greco-Roman predecessors like Hippocrates and Galen. In preserving medical and surgical practice from ancient time, Byzantine Physicians influenced Islamic Medicine as well as fostering the Western rebirth of Medicine during the Renaissance. Notable among these Physicians were Oribasius (AD325-403), Aetius of Amid, who lived in the 6th Century AD, and Paul of Aegina (625-690 AD). The last of the Byzantine writers, Johannes Actuarius, who wrote an elaborate treatise on the urine is remembered as the

first to use a graduated glass for testing the urine, although the markings were qualitative, indicating the possible position of the different scrums, precipitates, and sediments[1].

The Byzantines pioneered the concept of the Hospital as an institution offering medical care and possibly cure for the patients, as a reflection of the ideals of Christian charity rather than merely as a place to die. From the 8th to the 13th Century when Islam was at its prime, Arabic writers produced Arabic versions of Greek texts and a few of their own. These textbooks were translated into Latin and for a time became the wellspring of medical knowledge during the medieval period[4].

THE MEDIEVAL PERIOD

The early Christian Philosophy and culture during the medieval era inhibited medical scholarship and research which were replaced with dogma. Standard medical knowledge was based chiefly upon surviving Greek and Roman texts preserved in monasteries and elsewhere with the fall of Western Roman Empire. Many simply had to put their faith in the Church and God to heal all their ailments.

As it was in ancient Egypt, priests again became the Physicians and the Church forbade them from practicing Surgery in order not to cause death. Arabic Physicians also paid little or no attention to surgical practice. The general practice of Surgery, including performance of major operations became relegated to barbers (barber surgeons), bath-keepers, and wayfaring charlatans and the Surgeon came to be regarded in a very menial light[1].

Until the Medieval period, suppuration (pus formation) was erroneously believed to be essential for wound healing ("laudable pus"). Suppuratives, including faeces, were thus inserted into clean wounds for pus to form. This contributed to making operative surgery a dangerous undertaking. Whoever was brave enough to operate stood in jeopardy of his life or limb if he operated unsuccessfully on any part of the feudal lords[1].

In the eleventh and twelfth Centuries Medicine was lifted to a much higher level by the establishment of the School of Salerno in Italy. Its origin was said to be obscure but that it came to existence in a "most mysterious way". This school aroused the healing art from its decay of half a millennium, infused new life into things and guarded the best traditions of ancient practice. According to Neuburger, the Salernitan Masters were the first medieval Physicians to cultivate Medicine as an independent branch of Science[1].

Surgical techniques improved in Salerno. Later, during this period, Universities under the Church sprang up in Oxford, Cambridge, Paris, Montpellier, Bologna, and Padua, each with its Medical School. Surgery, however, was not part of the curriculum of most of the Medical Schools except for Bologna. The establishment of Medical Schools created a divide between Physicians who trained in the classroom and Physicians who learned their trade purely through practice. Unlike the University-educated Physicians, Surgeons in the

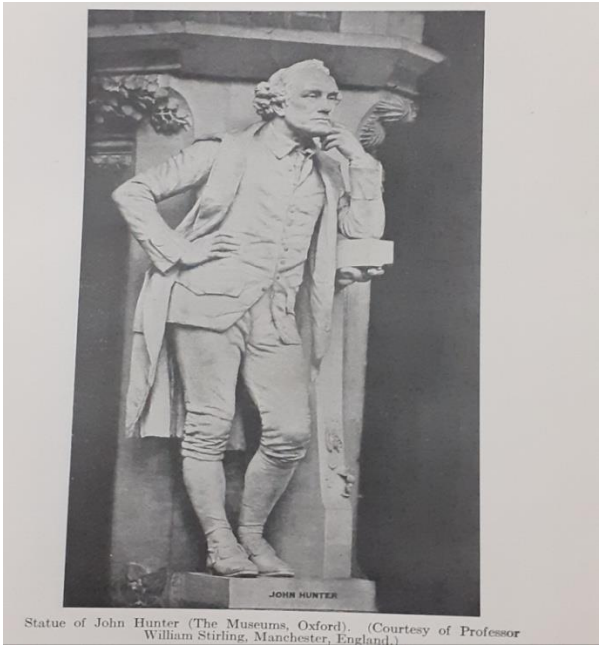
medieval era were still semi-educated and inferior and their training was by apprenticeship under the control of Guilds.

SURGERY DURING AND AFTER THE RENAISSANCE

The Medical Faculty became famous in the 13th Century for reviving the practice of human dissection which had been used in Europe since Roman times. This was in Bologna. Thus,the scientific study of Anatomy was started by great artists, one of the greatest being the genius **Leonardo da Vinci** (1452-1519). In 1543, **Andreas Vesalius**, Surgeon Anatomist and founder of modern Anatomy published "De Humani Corporis Fabrica", meaning "On the Fabric of the Human Body", which contained accurate diagrams of the human body. It was the first complete textbook on Human Anatomy. Vesalius based his ideas on observations, not the dogma of people like Galen. Much later, in 1628, **William Harvey** gave a vivid explanation of the circulation of blood through the body in veins and arteries. It was previously thought that blood was the product of food and was absorbed by muscle tissue.

Other notable figures during this period included **Ambroise Pare** (1510-1590), the greatest French Military Surgeon of his time; **Thomas Vicary** (1495-1565) who wrote a textbook that stood the test of time for two centuries; **William Chaseldon** (1688-1752) who was the most renowned Surgeon of England in the first half of the 18th Century. The greatest advancement of Surgery ever made by an individual was, however, by **John Hunter** (1728-93). Known as the Father of Modern Surgery, he made Surgery a science and not just an art, with Anatomy, Physiology, and Pathology the scientific basis."He described

the ramifications of the olfactory nerve in the nose, the arterial supply of the uterus, and discovered the lacrimal ducts in man, and many features of the lymphatic system. His permanent position in Science is based upon the fact that he was the founder of Experimental and Surgical Pathology, and a pioneer in Comparative Physiology and Experimental Morphology"[1]. The 19th Century thus closed with much better understanding of disease process, and symptoms and signs were correlated to Pathology. Methods of physical examination and keeping of medical notes improved and Science became more prominent in Surgery and in Internal Medicine.



Statue of John Hunter (The Museums, Oxford). (Courtesy of Professor William Stirling, Manchester, England.)

FIG 5: Statue of John Hunter[1]

THE DAWN OF MODERN SURGERY

Up to the beginning of the Nineteen century, surgical operation was a nightmare and it was performed as a last resort. Conscious and without pain relief, patients faced Surgery with intense trepidation, unspeakable agony, and considerable risk. Indeed, Surgery was torture! The inevitable brutality associated with Surgery made it less attractive than the more quiet and dignified work of the Physician, earning him the lower status of "barber-surgeon". Sepsis and shock were common, both leading to very high morbidity and mortality.

Many efforts at alleviating pain and discomfort had been part of the history of Surgery from ancient times. Alcohol and opium were used at times, as well as mandragora and some other herbs. These worked little but not appreciably well and in large doses produced secondary problems including vomiting and aspiration pneumonitis from undue sedation.

A young dentist, Horace Wells, was first credited with the use of nitrous oxide for the extraction of a troublesome wisdom tooth. Feeling no pain in what was usually a painful procedure, Wells believed he had invented painless dentistry even though his public demonstration of its use in January 1845 failed. Around the same time, the analgesic properties of ether were discovered and William T. G. Morton (1819-1868), a student at Harvard Medical School on the 16th of October 1846 arranged for a public demonstration of Surgery without pain. He successfully demonstrated the use of ether to provide anaesthesia for a Surgeon at the Massachusetts General Hospital, Dr. Warren to remove a tumour from the neck of one

Gilbert Abbott. The procedure was very successful, and a new era in Surgery dawned

A few years later, chloroform, a rather seductive substance was discovered. It quickly displaced ether and for about sixty years was the main anaesthetic agent in use. Queen Victoria used it in 1953 to help with the birth of her son, Prince Leopold. Her Majesty recorded in her journal “The effect was soothing, quieting, and delightful beyond measure". Though good, it was not as safe as it was originally thought. In some circumstances, it could lead to cardiac arrest and death. Also, there were occasional late complications of severe and fatal toxicity to the liver

Later, other forms of anaesthesia without loss of consciousness were developed: topical, local, and regional etc. In 1881, **Macewen** originated Endotracheal Anaesthesia with control of the patient’s respiration. By the end of the 19th Century, Anaesthesia had gained considerable prominence, becoming about the first example in which surgical practice was backed by emerging scientific developments after Anatomy, Physiology, and Pathology. Today, we have much safer and more effective agents such as sevoflurane and isoflurane.

Next, was the fight against sepsis. Wound infections, septicaemia, and shock made Surgery a dreaded form of treatment both to the patient and the Surgeon. According to some sources, it was not until the 1900’s that the risk of dying after Surgery was less than 50%. It was only after the turn of the Century that the likelihood of surviving Surgery became

greater than the chance of dying during or immediately after Surgery[5].

Many scientists worked assiduously in a bid to conquer pathogenic microorganisms. **Agostino Bassi** (1773-1856), an Italian Entomologist, anticipated the work of Louis Pasteur by 10 years in discovering that numerous diseases were caused by microorganisms. **Jacob Henle** (1809-1885), a German Physician, Pathologist, and Anatomist in 1884 also propounded the germ theory of disease. He did not find any specific bacteria himself; this was achieved by his student, **Robert Koch**. **Louis Pasteur**, by a series of experiments established the germ theory of disease while **Joseph Lister**, a Surgeon at the Royal Infirmary in Glasgow, Scotland, applied the latter's theory to kill microbes. He dressed a compound fracture wound with an antiseptic, carbolic acid on August 12th 1865. Thus Antiseptic Surgery was born.

In 1847, **Semmelweiss** of Vienna introduced asepsis in Surgery. He demonstrated that simple hand washing with an alkaline solution reduced infection rate. **Ernst Gustav Benjamin von Bergmann** of Berlin, a pioneer of Aseptic Surgery, in 1886 introduced steam sterilization of metal surgical instruments, dressing materials, gowns, and towels. **Gustav Neubar** of Kiel introduced the washing of hands by the surgical team, disinfection of patients' skin (skin preparation), and the use of surgical wears like caps, gowns, gloves and rubber boots.

Blood transfusion is an integral part of major Surgery. **Karl Landsteiner** (1868-1943), an Austrian Biologist, Physician, and Immunologist, differentiated the main blood groups in 1900. With **Alexander S. Wiener**, he identified the Rhesus factor in 1937. This epoch making discovery enabled Physicians to transfuse blood without endangering the life of patients.

In 1928, **Sir Alexander Fleming** discovered penicillin to fight infection. Since then, more potent antimicrobial agents have been discovered and have been in use. With the conquest of pain and sepsis, and the practice of blood transfusion, Surgery became largely safer and the dread associated with it became markedly reduced.

THE MAKING OF A GENERAL SURGEON

FIG 6: Surgeons in action in the Operating Theatre in UPTH

General Surgery is a specialty requiring in-depth knowledge and responsibility for pre-operative, operative, and post-operative management of patients who present with diverse spectrum of diseases. These diseases may require non-operative, planned, or emergency surgical treatment. In managing these patients, skill in complex decision making is often required, apart from competence in making diagnosis and offering operative intervention. Figure 7 is that of a typical general surgical patient.

FIG 7: A typical general surgical patient

The General Surgeon is a product of an accredited Medical school who undertakes a rigorous postgraduate training spanning at least six years[6]. The training includes both academic and professional hands-on dimensions leading to the

award of a Fellowship degree. Currently, to be awarded the Fellowship of the National Postgraduate Medical College of Nigeria or the West African College of Surgeons, the candidate must submit and defend a dissertation. By the time he is certified, he must demonstrate broad knowledge and experience in conditions affecting;

- Alimentary tract
- Abdomen and its contents
- Breast, skin, and soft tissues
- Endocrine system
- Surgical critical care
- Surgical oncology
- Trauma

He is expected to have a good grasp of disciplines like Anatomy, Physiology, Biochemistry, Epidemiology, Immunology, and Pathology. He is also expected to have mastery in clinical domains like wound healing, infections and antibiotic usage, fluid and electrolyte management, blood transfusion and disorders of coagulation; shock and resuscitation; metabolism and nutrition; minimally invasive and endoscopic intervention (including colonoscopy and upper gastrointestinal endoscopy; appropriate use and interpretation of radiologic diagnostic and therapeutic imaging; and management of pain.

The certified General Surgeon is expected to demonstrate knowledge and skill for diseases requiring team-based interdisciplinary care, including related leadership

competences. Additionally, he must possess knowledge of the unique clinical needs of the following specific patient groups:

- Terminally ill patients and their management; cachexia in patients with cancer and chronic conditions; and counseling support for end-of-life decisions and care
- Morbidly obese patients, to include metabolic derangements; surgical and non-surgical interventions for weight loss (bariatrics); and counseling of patients and families
- Geriatric surgical patients, to include management of co-morbid chronic diseases
- Culturally diverse and vulnerable patient populations

In some circumstances, the certified General Surgeon provides care in the following disease areas:

- Vascular surgery
- Paediatric surgery
- Thoracic surgery
- Burns
- Solid organ transplantation
- Urology

In these, however, comprehensive knowledge and management will require additional training. In unusual circumstances, the certified General Surgeon may provide care for patients with problems in adjacent fields such as Obstetrics and Gynaecology.

The General Surgeon is thus not only a **Jack of all Trades but also a Master of all** he is trained to do. General Surgery thus affords broad, yet often very specialized training in virtually all disciplines of Surgery and Medicine. The General Surgeon is without controversy the best person to manage patients requiring multi-system care such as major trauma. General Surgeons usually set the standard of surgical care in a community. As Gary L. Timmerman noted, "When patients are referred for advanced medical intervention, General Surgeons are commonly the only members of the local medical staff familiar with the procedure performed or management required".

The skill of the General Surgeon is tested every day as he encounters a myriad of surgical emergencies in the Accident and Emergency Department of every hospital (no two days are the same!). General Surgeons are indispensable, not only to patients, but also the healthcare providers in general. Broad training in diverse areas makes him a hot cake in today's market.

WHY I ELECTED TO GO INTO SURGERY

As a young boy, I had always enjoyed serving humanity; the more the lives of people I touched positively, the happier and fulfilled I was. When I graduated as a medical doctor and started my internship posting in Surgery, I fell in love with Surgery, courtesy of Chief (Dr.) O. R. LongJohn's surgical prowess. He was versatile and successfully operated on hernias, gall bladder, prostate gland, intestine, and bones, among others.

FIG 8: Photograph of Chief (Dr.) O.R. LongJohn

In my community, I discovered that general surgical conditions were the commonest surgical problems. The conviction that I would be most useful to my community if I specialized in General Surgery was what drove me to that specialty. I am happy to say that I have had no regrets for my decision.

Medicine is both an Art and a Science. If there is any branch of Medicine in which both are combined in fruitful harmony, it is Surgery. Here, cure is often by the skills of the hand, though medications and nutrition are not excluded. The effects of intervention are often more obvious than in any other branch and it is usually incontrovertible that improvement is a direct consequence chiefly of the intervention, even if it is assisted by

other methods. This is why I elected to go into Surgery. The Surgeon is a doctor who works and produces obvious results.

INSIGHT INTO MY RESEARCH CONTRIBUTIONS IN THE UNIVERSITY

By reason of my general surgical training and practice, I undertook researches spanning virtually the length and breadth of General Surgery. In this section, I will try to touch on a few areas of my research encounters which have impacted on society.

Acute appendicitis

This malady is one of the commonest surgical conditions worldwide. Among the researches I carried out in this area are two important ones:

- Local anaesthesia for appendicectomy: One Surgeon's experience[7].

  Here, I experimented on using local anaesthesia to operate on 35 patients with acute appendicitis who fulfilled some criteria. I concluded in that study that local anaesthesia for appendicectomy is feasible and safe, and that it is useful especially in local communities where trained Anaesthetists may not be available.

- Acute appendicitis masquerading as acute scrotum[8].

  Acute appendicitis presents typically with peri-umbilical pain that in a few hours settles at the right lower quadrant of the abdomen. Atypical presentations are common but association with acute scrotum is an

extreme rarity. A 30-year-old fisherman presented at a rural medical facility with a 2-day complaint of severe pain at the right hemi-scrotum but it turned out to be a case of acute appendicitis. He was successfully operated upon with uneventful recovery.

Phaeochromocytoma

This is a tumour of the adrenal gland considered to be very rare (the 10% tumour). About 10-20% is bilateral, 5-10% is malignant, and 10-20% is familial. In 10% of cases, its origin is extra-adrenal (10% in thorax, 10% in urinary bladder). Its presenting symptoms can vary to a large extent and similar symptoms can occur in many other clinical conditions. Thus, it is often called the great mimic and there can be significant delay in making a diagnosis. It is one of the few causes of surgically correctible hypertension. We managed 6 cases[9, 10] in my Unit in University of Port Harcourt Teaching Hospital. The last 5 cases were seen within 5 years. We published these cases in reputable Journals as case series. Apart from other symptoms, the patients all presented with paroxysmal hypertension unresponsive to medication. They were cured of their hypertension following a very delicate Surgery and challenging Anaesthesia. Unfortunately, we lost one of them who suffered cardiac arrest twice on the operating table.

Colorectal cancer

This cancer which used to be considered uncommon in our environment has recently assumed an epidemic proportion in incidence. We published 2 papers on this subject[11, 12]. The first was a ten-year review of colorectal cancers in UPTH,

published in the Port Harcourt Medical Journal.The common presenting symptoms were weight loss, change in bowel habit, rectal bleeding, and abdominal or rectal masses. The mean age at presentation was in the 4^{th} / 5^{th} decade as opposed to the 8^{th} decade in the developed world. Late presentation leading to poor survival in spite of surgical treatment and adjuvant therapy was almost the rule.

In 2006, we also published a paper in the South African Medical Journal where we reported 3 cases of mucinous colorectal cancer in 3 patients less than 25 years of age. We unfortunately lost the three of them within one year of presentation and surgery because of the aggressive nature of the condition in this age group and also the often late presentation.

Acute abdomen

An acute abdomen is defined as an abdominal condition of recent onset which may require an emergency surgical operation to prevent the demise of the patient. It is one disease conglomerate that can tax the skill of even the most experienced General Surgeon. All patients with acute abdomen in University of Port Harcourt Teaching Hospital between January and December 2004 were prospectively studied[13] with respect to their biodata, clinical presentation, investigations, diagnosis, treatment, and outcome. Nine patients out of 189 left the hospital against medical advice so 180 formed the basis of the study. There was a slight male preponderance, (1.25:1) and the mortality was fairly high (10%). Acute appendicitis was the commonest cause of acute abdomen with abdominal

trauma replacing intestinal obstruction as the next leading cause. Post-operative adhesion bands equaled obstructed inquinal hernia as the commonest causes of intestinal obstruction.

We also studied the morbidity and mortality spectrum in surgical acute abdomen[14]. Of 180 patients recruited into the study, 18.9% developed complications while 10% died. Those who presented to the hospital more than 24 hours after onset of symptoms had a significantly higher occurrence of complications than those who presented within 24 hours. Complications and mortality were also significantly higher in those below 1 year of age and those over 61 years of age. There is need, therefore, to avoid delay accessing treatment when acute abdominal pain occurs.

Patients who require emergency surgery may not die from it but will die from not getting it[15]. In treating the acute abdomen, a pre-operative diagnosis may not be made. Diagnosis is not an end in itself but a means to provide appropriate treatment[16].

Carcinoma of the breast

Carcinoma of the breast has also assumed an alarming proportion in recent times worldwide. It is estimated that about 26310 new cases are diagnosed annually in Nigeria[17]. Screening is one way an early diagnosis can be made and early treatment and good outcome obtained. Unfortunately, the only screening modality available in our environment is breast self-examination (BSE). We decided, therefore, to determine the

attitude to, knowledge, and practice of breast self-examination in Port Harcourt, using a questionnaire self-administered to 200 women from different walks of life[18]. We found that though about 85% of them were aware of BSE, only about 39% of them practised BSE and only occasionally. Among 76 health workers who participated in the study, only 60% of doctors and 53.7% of nurses practised BSE only occasionally. Only one doctor could describe correctly how to perform BSE! We went on to organize awareness campaigns following these revelations and we believe that the statistics has changed for the better.

We also carried out a study on the epidemiology of cancer of the breast in UPTH[19]. The age range of the 62 patients studied was 24 to 75 years. There were 61 females and only 1 male. Some known predisposing factors to breast cancer such as nulliparity, late age at first pregnancy, early menarche, absence of breast feeding, and obesity were uncommon findings in the study. The commonest histological type was infiltrating ductal carcinoma. Majority of the patients presented late to the hospital.

In course of my practice, I came across two cases of metastatic breast cancer with inguinal lymph node involvement. This is a very rare finding which we reported in the Nigerian Journal of Clinical Practice[20]. We could only find one other case reported by one Baba M and associates in the literature[21].

Hodgkin's lymphoma of the breast is a very rare disease. The good news, however, is that Hodgkin's lymphoma is generally

curable. We managed a 66-year-old woman who presented to us with this lesion[22]. The current treatment is chemoradiation. It was gratifying to observe complete remission of the lesion with only chemotherapy, using the MOPP regimen. The lady could not afford radiotherapy. There was no recurrence after twelve months of follow-up.

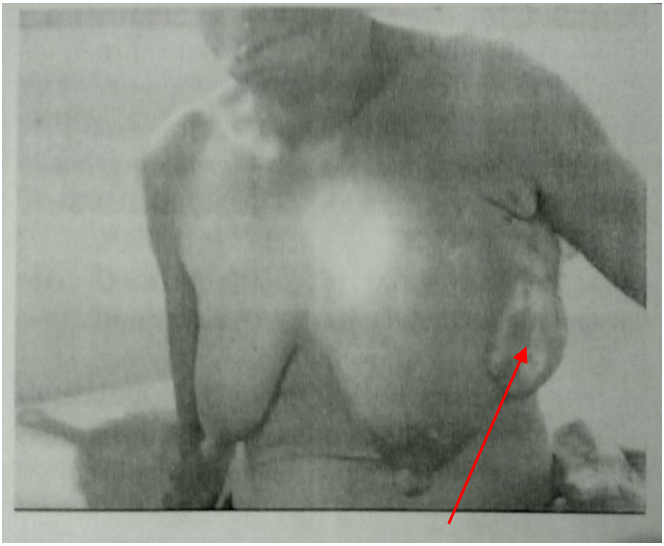


FIG 9: Patient at presentation.

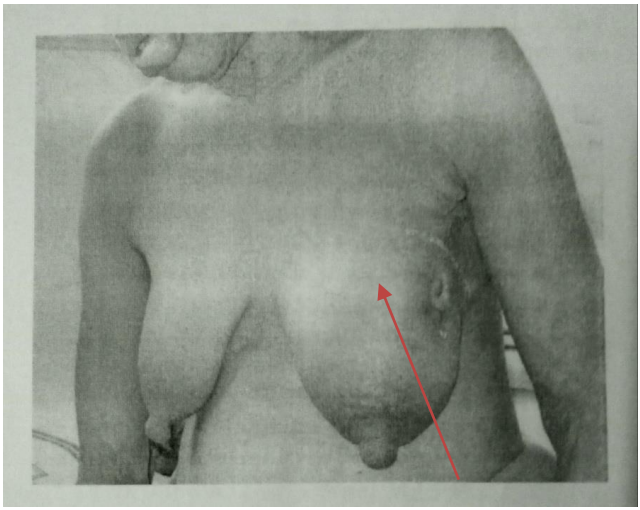


FIG 10: Patient after 2nd course of chemotherapy.

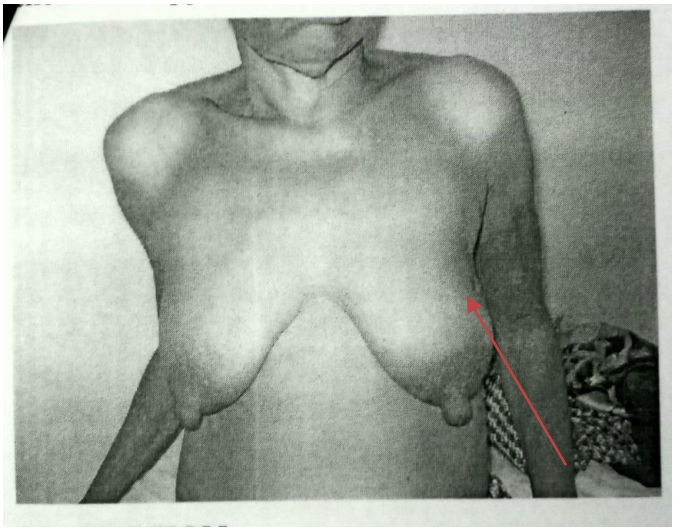


FIG 11: Patient after 4th course of chemotherapy.

Gunshot injuries

Towards the end of the last millennium and the beginning of the present, violent trauma, especially by gunshots, appeared to be on the increase world-wide and the Niger Deltaregion had a fair share of the menace. Unlike the case in advanced countries, there were inadequate data from many centres in Nigeria to support the observation. We therefore decided to prospectively study all cases of gunshot injuries that presented to the UPTH Accident and Emergency Department between January 2002 and December 2004 with respect to the demographic indices, type of missile (high or low velocity), anatomic distribution of injuries, treatments given, and outcomes[23].

One hundred and thirty-five patients were seen during the study period, with a male to female ratio of 8: I, and majority being students (38), civil servants (21), and businessmen/traders (20). Majority of injuries emanated from armed robbery (34.8%), unknown assailants (30.4%), the police (16.3%) and cultism (9.6%). There were 71 high velocity and 64 low velocity injuries respectively. The overall mortality was 22.2 %.

Abdominal injuries

Abdominal injuries are common in both civilian and military populations and remain a major source of morbidity and mortality[24]. Data on them were not available in our environment. This prompted us to study the pattern and outcome of their management in UPTH[25]. Over a period of 4 years we managed 45 patients with varying degrees of both

blunt and penetrating injuries, males being more affected (M:F=8:1). Penetrating injuries were in the majority (73.3%) with gunshots accounting for 63.6% while automobile crashes were responsible for 58.3%. Thirty-four patients had an exploratory laparotomy while 11 were managed conservatively. Two patients died, giving a mortality of 2.2%.

Typhoid Perforation

Typhoid perforation, one of the most important complications of typhoid fever continues to be common in our environment. The condition affects mainly children and young adults at the onset of their economically productive years. The mortality of this condition is very high at 20% if early operative treatment is given. It is worse with delayed presentation beyond 4 days when it can be up to 80%.

Between November 1990 and May 1994 we managed 30 patients aged between 4 and 45 years with this condition and studied the factors that affected their survival following surgical treatment. Late presentation, late surgical intervention, presentation in shock state, multiple perforations, and cases complicated by enterocutaneous fistula were associated with poor prognosis. Early presentation and prompt surgical intervention after adequate resuscitation greatly improved outcome. The paper was published in the Nigerian Heath Journal in 2004[26].

Spinal anaesthesia and peri-operative complications

Spinal anaesthesia is commonly employed in performing many surgical operations. Though easy to perform and largely safe, it is not without life-threatening complications. We decided to carry out a study to highlight the complications associated with this regional anaesthetic method used for 98 general surgical and gynaecological operations[27].

Twelve different complications were encountered in forty patients, the commonest being shivering (19 patients), followed by hypotension in 5 patients. These were successfully managed. We concluded that peri-operative complications due to spinal anaesthesia were common though many of them were mild. With good conduct of the procedure and meticulous monitoring, a good outcome is the rule.

Innovation

The use of drains to collect serosanguinous and pancreatic fluid, bile, or purulent discharge is often necessary in General Surgery. The drains come in different forms but access to them in our environment has always been a challenge. Prof. Fyneface Ogan and I therefore decided to improvise a tube drain using a urine collecting bag. The drain was prepared by cutting off the blue tip of the uribag as shown in the figure below (Figure 13). Two to four fenestrations, 2cm apart, were made in the opposite sides of the cut end of the tubing shown (Figure 14). A 1cm stab incision was made on the skin. With the aid of an artery forceps passed from inside the cavity to be drained, the tube was pulled through the incision into the cavity or tissue bed to be drained (Figure 16). It was anchored

to the skin using nylon 0 suture material. This was used in a variety of surgical and gynaecological procedures (104) and found to be very safe, efficient and cheap. It won the second prize in an Association of Surgeons of Nigeria (ASON) conference in Port Harcourt (2006) and is today being used in many hospitals in Nigeria. The research was published in Tropical Doctor[28].

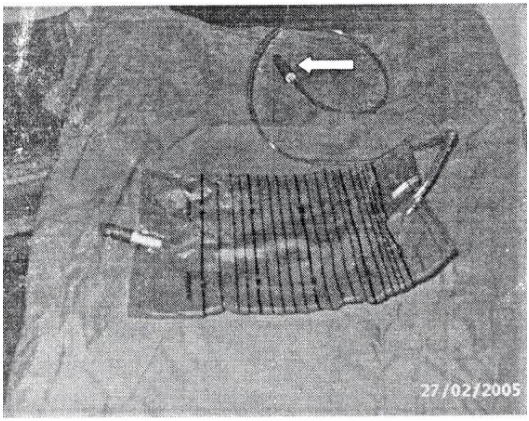


FIG 12: Uribag drain showing the blue tip.

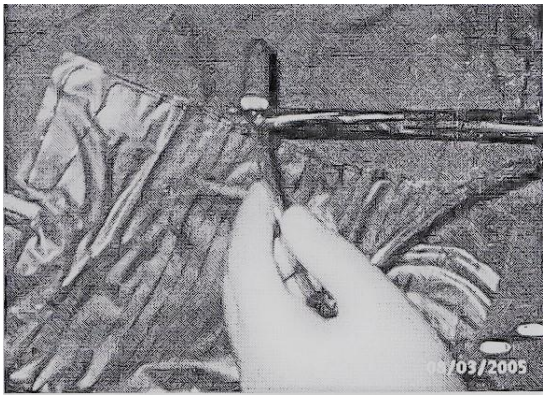


FIG 13: Blue tip of Uribag being cutoff.

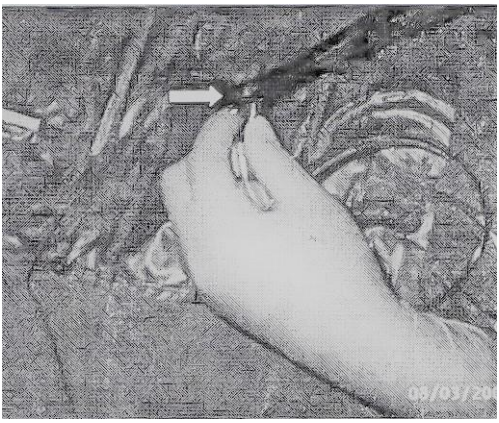


FIG 14: Fenestrations being made on tube of Uribag.

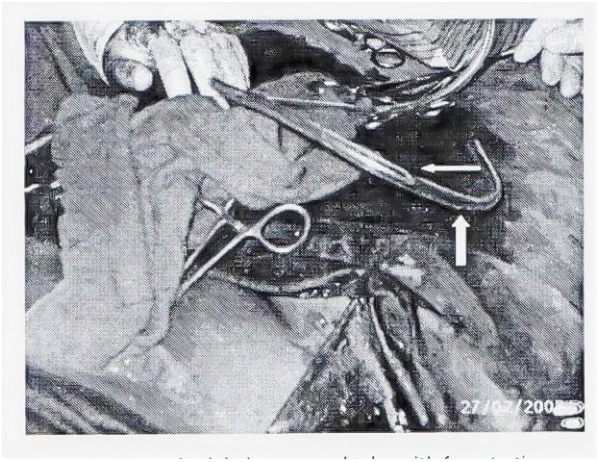


FIG 15: Improvised drain tube with fenestrations.

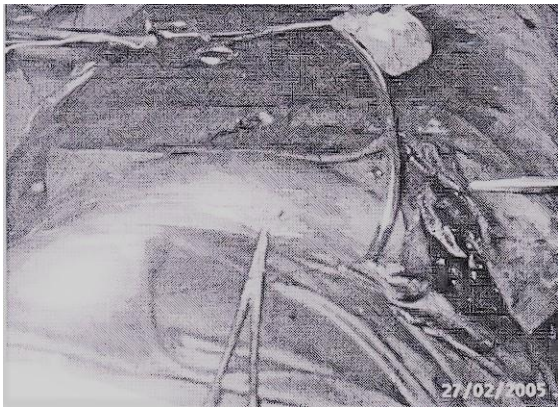


FIG 16: Drain tube being anchored.

FIG 17: Improvised surgical drain in action.

COMMUNITY SERVICE

I was actively involved in many free rural surgical outreaches in the Niger Delta under the auspices of the International College of Surgeons (Nigerian National Section). We carried out such services in collaboration with Christian Help International Foundation, Rivers State Government of Nigeria,

and Oil and Gas Free Zone Authority, Onne, Eleme, Rivers State, respectively from 2002 to 2006 when we were forced to stop by increased activities of cult groups in the region. We published our activities during the outreaches in the Sahel Medical Journal[29]. I also participated actively in a medical outreach by Greater Evangelism World Crusade and the Andoni Local Government Area under the Chairmanship of late Honourable Monwan Etete at Asarama in 2004.

SUB-SPECIALIZATION IN GENERAL SURGERY

General Surgeons are trained to perform a wide range of operations. Over the past 35 to 40 years, however, General Surgery has become increasingly fragmented following an evolution to sub-specialization. This is more prevalent in advanced economies. Diseases that, *abinitio,* were treated by General Surgeons are now being managed by 'specialists'. The sub-specialties include Colorectal, Hepato-Biliary-Pancreatic, Breast, Endocrine, Bariatric, etc. For example, a patient with a low rectal cancer is now managed by a Colorectal Surgeon; a patient with breast cancer by a Breast Surgeon; and a patient with morbid obesity by a Bariatric Surgeon.

There are a few reasons for this sub-specialization and this paradigm shift appears to have come to stay. They include:

- Insufficient preparedness for broad-based practice, with a feel of inadequacy
- Expected professional advantage to having sub-specialty training
- Improved surgical outcome. It is believed that higher surgical volumes of specific cases lead to lower

morbidity and mortality as well as shorter length of hospital stay. Recent researches suggest for example, that breast and colon cancer patients are more likely to receive standard-of-care surgical treatment from trained sub-specialists[30, 31].

- Desire to excel as well as enhanced career
- Advances in surgical knowledge, techniques, and technology, as well as patients' and physicians' preferences. An increasingly well-informed public seeks advanced and specialized care[32, 33].

In Nigeria, there is a trend towards this sub-specialization.

PROBLEMS OF SUB-SPECIALIZATION

There are usually two sides to a coin. It is believed that increasing sub-specialization of General Surgeons in their elective work may result in de-skilling and create problems in providing expert care for emergency cases. General Surgeons called upon to render service outside their own sub-specialty may encounter problems when faced with complex emergency cases[34].

While sub-specialization has its merit, the need for it should be encouraged without downplaying the importance and need for broad-based General Surgeons. There is a growing concern that increased focus on early sub-specialization by trainees will reduce interest in General Surgery as a specialty. It has been observed in the United States of America that the need for General Surgeons is increasing as community-based General Surgeons provide the majority of surgical care delivered there[33].Thus, there is a growing need in many advanced

countries for more broadly trained General Surgeons with a capacity to address a diverse array of surgical conditions[35].

There are also concerns regarding accountability for the surgical patient as a whole, as one important job of a specialist is often to determine whether a problem falls within his scope of expertise or practice. As Dr. C. M. Ferguson, former Director, Massachusetts General Hospital, Boston, cautioned, "As a Surgeon concentrates on a single disease and becomes more specialized, he or she becomes less competent in treating other diseases. The specialist becomes disease centred rather than patient centred"[36].

It is instructive that today's General Surgeons who may not have access to sub-specialization should recognize practical limitations and respond by developing focused expertise in order to take the best possible care to their patients[37].

THE PRESENT STATE OF THE ART AND THE FUTURE: LAPAROSCOPIC SURGERY, ROBOTIC SURGERY, AND ARTIFICIAL INTELLIGENCE IN SURGERY

1. Laparoscopic Surgery

Since 1910 when the first Laparoscopic Surgery in humans was performed by Hans Jacobaeus of Sweden, this surgical approach has grown rapidly in the last few decades with a plethora of abdominal surgeries now being successfully performed. It is an operation performed in the abdomen or pelvis using small incisions and incorporating videotechnology. It is a form of Minimally Invasive Surgery

(MIS). The advantages of this approach over the traditional Open Surgery include small scars; less blood loss; less pain; shorter hospital stay; reduced risk of infection; faster recovery, and early return to work.

Laparoscopic Surgery was first performed in Nigeria about 2005. General Surgeons in University of Port Harcourt Teaching Hospital started performing Laparoscopic Surgery in 2011 and with encouragement from the present Management of the Hospital more strides will be recorded. Figure 18 shows General Surgeons in UPTH performing Laparoscopic cholecystectomy.

FIG 18: Laparoscopic Cholecystectomy in progress.

2. Robotic Surgery

A Surgical Robot is a mechanically or digitally programmed tool linked to a surgical cutting device with ability to offer surgery with high accuracy compared to conventional methods. The motivation to develop Surgical Robots was predicated upon the desire to overcome the demerits of current laparoscopic technologies (like impaired haptic and visual feedback) and to expand the benefits of Minimally Invasive Surgey[38]. Surgical Robots could potentially offer more than "an equivalent-to-open operation with smaller incisions'', to one where an operation with Robot would allow a higher level of tissue discrimination, dissection, and repair.

The technical advantages for the Surgeon include : the potential for better visualization (higher magnification) with stereoscopic views; elimination of hand tremor allowing greater precision; and improved manoeuvering as a result of the "robotic wrist'' which in some systems allows up to seven degrees of freedom (angles at which surgeons can use their instruments to operate on target organs). There is improvement in kinematics where large external movements of the surgical hands can be scaled down and transformed to limited internal movements of the "robotic hands''. This in turn improves ergonomics that extends the surgical ability to perform complex technical tasks in a limited space. Here, the Surgeon is able to work in an ergonomic environment with less stress, achieving higher levels of concentration. The computerized Surgical Robot enables integration of real-time and previously recorded data utilization, so that it would accommodate complex intra-operative factors such as compensating for the beating movement of the heart, making it

unnecessary to stop the heart during Cardiothoracic Surgery[39]. There may also be less need for assistance once Surgery is under way.

The first Surgical Robot, Arthrobot, made its appearance in 1983; however, the first clinical Surgical Robot being applied to perform selective brain biopsies, PUMA 560, came into operation in 1985.

A number of Surgical Robots are in use but the most frequently used today appears to be the da Vinci Surgical System. By 2000, it provided the ability to perform Laparoscopic Surgery using a 3-D optical system. The Surgeon directs the Robot's movements, but the Robot performs the actual surgery. The Surgeon watches a high-definition display during the surgery and can actually see the operation better than being in the operating suite performing the task personally. The da Vinci System also uses smaller incisions than a regular Surgeon can, thus, reducing the risk of infection.

FIG 19: Surgical Robot

The FDA has approved the da Vinci Surgical System for both paediatric and adult surgeries of the following types:

- Urological surgeries, especially radical prostatectomy
- General laparoscopic surgeries like bowel resections and pancreatectomy
- Heart surgery
- Spinal surgery
- Orthopaedic surgery, etc.

Current Robotic surgical evidence points towards a convincing reduction in post-operative surgical and non-surgical complications, reduced blood loss, improved recovery rates, improved cosmesis and reduced length of stay in hospital in comparison with open surgery[40, 41, 42]. The comparison with Minimal Invasive Surgery (MIS), however, is equivocal, although several studies do show some advantages in length of stay, conversion rate and estimated blood loss[43, 44, 45].

PROBLEMS

The concerns associated with Robotic Surgery predominantly have to do with increased length of operation time (and prohibitive cost) although gains in improved recovery times and benefits of Robotic techniques in complex surgery and with specialist groups may go some way to counter this. One area of particular superiority over Minimally Invasive Surgery is that of a reduced conversion to open surgical techniques, which has particular benefit in obese and elderly groups[46].

Although when compared with Laparoscopic Surgery return of bowel function and discharge home is faster by 24 hours, with otherwise comparable operation time, blood loss, conversion rates, resection margins and complications, Robotic procedures do not universally demonstrate speedier results, such that increased operative times and length of stay have been found when using Robotic versus Laparoscopic techniques in Bariatric Surgery[47].

Robotic Surgery is a novel technological innovation which is still evolving. The future of Robotics in Surgery is only limited by imagination and may be cost. High profile research is required to assess and appraise well-defined clinical end-points, including specific quality of life and patient reported outcome measures combined with cost-effectiveness and economic analyses[48].

3. Artificial Intelligence in Surgery

Artificial intelligence (AI) refers to software technologies that make a Robot or Computer act and think like a human being. It is the study of algorithms that give machines the ability to reason and perform cognitive functions such as problem solving, object and word recognition, and decision making[49]. The term "Artificial Intelligence" was coined in 1955 by John McCarthy (1927-2011), an American computer and cognitive scientist.

It is believed that the future of AI lies in enhancing and assisting the Surgeon. Clinician-machine interaction has been demonstrated to augment decision making. For example,

Pathologists have utilized AI to decrease their error rate in recognizing cancer-positive lymph node from 3.4% to 0.5%[50]. Furthermore, by allowing for improved identification of high risk patients, AI can assist Surgeons and Radiologists in reducing the rate of lumpectomy by 30% in patients whose breast fine needle aspiration cytologies were considered high-risk lesions but ultimately found to be benign after surgical excision[51].

The combination of AI with Robotics has augmented surgical capability to optimize outcomes and increase access of patients to better care. Robotic arms could perform ultrasonography during Robotic Surgery, thus helping the Surgeon to identify a tumour type and take an appropriate decision. The technology of Augmented Reality, in which additional information about a patient could be fed to the Surgeon in real time during Robotic Surgery is already in practice. This can be combined with Machine Learning when the algorithm can help the Surgeon take important decisions. Algorithms can also be developed and used to read mammograms to diagnose breast cancer, MRI scans of the brain, or CT scans for colorectal cancer. All these will provide improved decision support to the Surgeon and this might change the types of surgery to be performed or even reduce the number of operations required. The potential of AI in Surgery may probably be limited by imagination and may be cost. Is a fully autonomous Surgical Robot possible (Figure 20)? Time will tell.

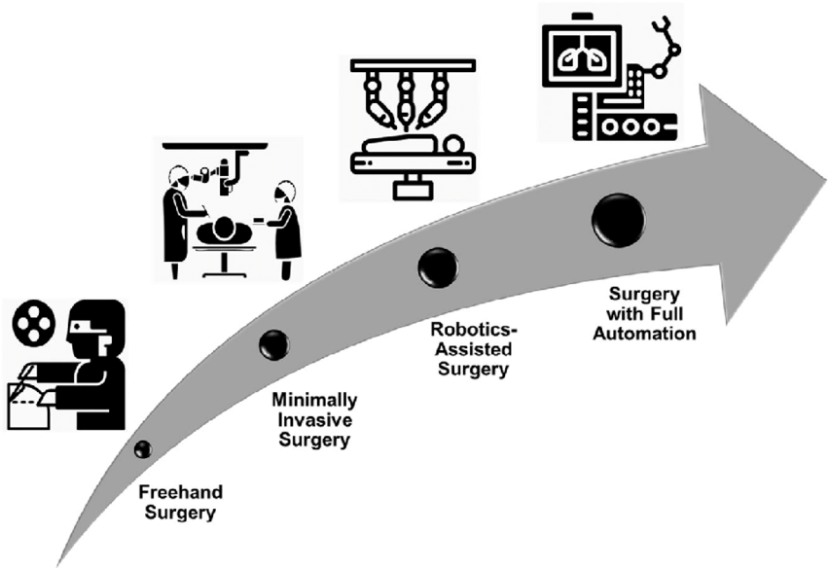


FIG 20: The History of Surgery[52]

RECOMMENDATIONS

1. Federal and State governments should as a matter of priority invest in facilities and infrastructure that are necessary for the training of Surgeons in Nigeria. The deplorable state of these in almost all teaching hospitals in the country is a cause for concern and is contributing to brain drain as doctors leave the country in droves, not only for greener pastures but also for better specialist training (and lucrative pursuits like politics). This will also reduce the huge amount of foreign exchange lost to medical tourism. It is estimated that at least 2000 medical doctors leave the country yearly for the United Kingdom, United States of America, Canada, Australia, United Arab Emirates, and South Africa, leaving Nigeria with a ratio of one doctor to 6000 patients[53] as against the

recommended ratio of one doctor to 600 patients by the WHO. A recent survey conducted by Nigerian Polling Organization in partnership with Nigeria Health Watch revealed that 8 out of every 10, representing 80% of medical doctors in Nigeria are currently seeking job opportunities abroad[54]. The reasons for this include: low work satisfaction, high taxes and deductions from salary, and poor salaries and emoluments. The one-year abroad training that used to be part of postgraduate medical training should be re-introduced. Alternatively, centres of excellence can be established in Nigeria and experts invited as visitors.

2. Governments at all levels must make conscious and concerted efforts to reverse brain drain by improving the welfare of doctors in the country and providing a conducive environment for practice. General Surgeons should be given special encouragement as sub-specialization tends to limit broad-based practice which the country cannot do without, especially in suburban and rural areas.
3. Federal and State governments should as a matter of urgency formulate and fund screening protocols for breast and colorectal cancers. This will go a long way to reduce the morbidity and mortality associated with these conditions which have assumed epidemic proportions in the country.
4. Concerted efforts should be put into health awareness campaigns so that Nigerians will begin to present early to health institutions when they fall ill. There is need to reduce the morbidity and mortality associated with

delayed presentation by Nigerians who suffer from cancer and other diseases like typhoid fever.

5. The advantages accruing from sub-specialization in different specialties of Surgery should be tapped. This can be done by the Postgraduate Colleges accrediting some Teaching Hospitals in different geopolitical zones in the country for such training. Federal and State Ministries of Health will have to cooperate and collaborate with the Colleges to achieve this. The National and State Assemblies will also need to make legislations that will give legal backing to the innovation.
6. Gunshot injuries have continued to be a menace in the country. Governments at Federal and State levels must as a matter of priority seek ways to revamp the economy in order to keep youths in gainful employment. The "trigger happy'' attitude of the Nigerian police should also be curtailed through orientation, improved welfare and education on regular basis.
7. Automobile crashes have also continued to claim the lives of many Nigerians, especially those in the most dynamic and economically productive age bracket, as revealed in our work on abdominal injuries. Federal and State governments should pay more attention to the deplorable state of many roads in the country while Nigerians should religiously adhere to the advice "Don't drink and drive". The FRSC should also consistently embark on education of motorists as regards speed limits and sanction errant persons, rather than collecting bribes on the road.

CONCLUSION

The General Surgeon is an operating physician trained to excel academically and professionally. His operative domains traverse the length, breadth and depth of the human body. As a result, he is highly sought after. Like every Surgeon, he is a doctor who works and gets glaring results.

With the level of development the practice of Surgery has attained currently, the society should feel free to engage the services of a Surgeon when the need arises and this should be done on time for the best outcome to be realized. Sub-specialization in General Surgery has its merits but no society, whether urban or rural can do without broad based general surgical training.

THANK YOU FOR YOUR PATIENCE AND ATTENTION

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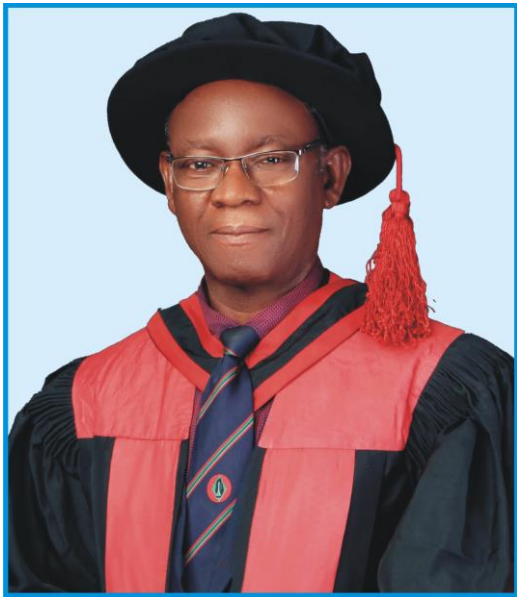

PROFESSOR NZE JEPHET JEBBIN

MB,BS, FWACS, FICS

Professor Nze Jephet Jebbin was born on the 19th of November, 1956 to Late Mr. Jebbin and Mrs. Elina Uchere in Ataba Town in present day Andoni Local Government Area of Rivers State. He lost his mother at the tender age of four and had to be raised first by his paternal grandmother's sister and then by his paternal grandmother, both of blessed memory. This onerous task was dutifully undertaken by the duo respectively until he completed his primary education in 1970 when his uncle Chief A.R. E. Osot-Ogile and his amiable wife took over the responsibility of training him.

He had his primary education at the St. James' Anglican School, Ataba from 1963 to 1970. His Secondary education was from 1971 to 1975 when he sat for his West African School Certificate Examination and passed in Division One. Providence made it that he had to attend three Secondary Schools, namely, St. Aquinas' Secondary School, Elele, Nyemoni Grammar School, Abonnema, and County Grammar School, Ikwerre-Etche, respectively.

In 1976 he sat and passed the Concessional Entrance Examination of the University of Lagos and was admitted to study Medicine and graduated with the MB, BS degrees in 1982. He did his house job in the then General Hospital, Port Harcourt and then proceeded to Sokoto University Teaching Hospital (now Uthman Dan Fodio University Teaching Hospital), Sokoto for his National Youth Service which he completed in 1984.

He worked briefly with the Rivers State Government as a Medical Officer in Omoku General Hospital from July to October 1984 before he was employed by the University of Port Harcourt Teaching Hospital (UPTH) as a Junior Resident in Surgery, a position he occupied until 1987 when he had to proceed to the University of Nigeria Teaching Hospital (UNTH) for his Residency Training in Surgery since UPTH was not then accredited for Residency Training in Surgery. He bagged the Fellowship of the West African College of Surgeons in 1995 and returned to UPTH as a Senior Registrar, a position he occupied until 1997 when the University of Port Harcourt appointed him Lecturer 1 in Surgery. He was

subsequently appointed Honorary Consultant Surgeon by the UPTH the same year. He was awarded the Fellowship of the International College of Surgeons (FICS) in AD 2000. He was a scholar of the then South Eastern State Government from 1972 to 1975 and the Federal Government of Nigeria from 1980 to 1982.

Prof. Jebbin was a beneficiary of the MacArthur Teacher Upgrade Programme of the University of Port Harcourt in 2005. He was sent to the University of Kwa-Zulu Natal, Durban in South Africa to train in Gastrointestinal Endoscopy for three months. He trained in both King Edward viii Hospital and the Inkosi Albert Luthuli Central Hospital. Unfortunately when he returned to UPTH he had no opportunity to practise what he learnt. The circumstances surrounding this turn of events are better not discussed here for conscience sake. He was also sponsored by the UPTH to Israel in 2009 for a short training in Disaster Management. The experience he acquired during this training was quite beneficial when he had to serve as Head of Department of Accident and Emergency of the Hospital.

By the dint of hard work and the grace of God Nze was promoted to the rank of Professor of Surgery in 2014 (back dated to 2011), having contributed in no small measure to the body of knowledge in Surgery through many quality researches and chapters in books, and teaching of undergraduate and postgraduate students. He has also attended many scientific conferences where he has presented many scientific papers.

Professor Jebbin has served the University and Teaching Hospital in various capacities, including Coordinator, Postgraduate Training in Surgery, UPTH, 2002-2007; Head, Accident and Emergency Department, UPTH, January 2007-April 2011; Member, Faculty of Clinical Sciences Research and Collaborative Committee, 2006-2007; Secretary, MacArthur Clerking Skills Laboratory Implementation Committee, University of Port Harcourt, 2005-2012; Head, Department of Surgery, University of Port Harcourt and University of Port Harcourt Teaching Hospital, 2015-2017. He chaired many panels of inquiry in both the University and the Teaching Hospital and served as a member in others. He represented the University of Port Harcourt at the 2010 Nigerian Universities Research and Development Fair at the University of Nigeria, Nsukka where he presented the **"Ogan-Jebbin's" surgical drain** (improvised by them) which earned the University of Port Harcourt the 3rd position at the Fair.

In community service, he was not lacking. He was involved in rendering the following: Free surgical outreach service by the International College of Surgeons (Nigerian National Section) in General Hospital, Omoku, ONELGA, Rivers State, February 20th, 2005; Free surgical outreach service by the International College of Surgeons (Nigerian National Section) in General Hospital, Nchia, Eleme, Rivers State, February 22nd-23rd, 2006; Free Medical Project in Erema, ONELGA, Rivers State, 2006 and 2007; Free medical and surgical outreach at Asarama, ANOLGA, in 2004. In 2009, he was one of the Team that took a medical outreach to a community in Kampala, Uganda, that was ravaged by HIV/AIDS. This was

under the auspices of Greater Evangelism World Crusade Ministry. The list is not exhaustive.

Professor Jebbin is a Reviewer to many peer-review journals, including: Nigerian Journal of Clinical Practice, Port Harcourt Medical Journal, Nigerian Health Journal, and Cureus. He has served and is still serving as an External Examiner to some Nigerian Universities in their Final MB, BS Examinations in Surgery. He is also a Membership Examiner to the Faculty of Surgery, West African College of Surgeons. He is a member of many academic and professional bodies, including Academic Staff Union of Universities (ASUU), Nigerian Medical Association, Medical and Dental Consultants Association of Nigeria (MDCAN), Association of Surgeons of Nigeria, and Nigerian Surgical Research Society.

Nze has contributed in training many doctors, many of whom have left the shores of Nigeria and doing the Nation proud in different specialties of Medicine. He has also trained many Specialist Surgeons. Some of them are Lecturers in the University of Port Harcourt, Rivers State University, Niger Delta University, and other Universities in Nigeria. Others are Consultant Surgeons working in General and Specialist Hospitals.

He is an ordained Pastor and Elder in Greater Evangelism World Crusade Ministry where he also serves as a Sunday School Superintendent and the Head of the Medical Unit. He is also Chairman, Healthcare Christian Fellowship (Nigeria), Rivers and Bayelsa States Chapter.

Professor Jebbin is married to Dr. (Mrs.) Ikawuru Jebbin (nee Okpom), and the marriage is blessed with four lovely adults, Eyinte, Igbanam, Jebbin, and Ugbana.

Distinguished Ladies and Gentlemen, I present to you an academic Surgeon and Scholar and child of God, Professor Nze Jephet Jebbin to deliver the 172nd inaugural lecture of the University of Port Harcourt.

Thank you.

Professor Owunari A. Georgewill
Vice-Chancellor