

ABSTRACT

Swallowing or deglutition is one of the complex functions of the body. This is often taken for granted until there is a challenge that makes this function difficult or impossible. The swallowing mechanism can be disrupted functionally or by pathological conditions of the structures that are involved in ensuring coordinated swallowing without aspiration.

The anatomy of the pathway through which food masticated is delivered to the stomach is quite complex especially at the pharyngeal level. The pharynx (throat) is a muscular tunnel that connects the mouth and nose to the oesophagus and the larynx. At this level the food is no longer under voluntary control and any pathological process that disrupts the smooth and fine coordination of muscles is complicated by aspiration.

One of the pathological conditions which severely disrupts the swallowing mechanism and at the same time threatens the airway is benign pharyngoesophageal strictures. This commonly occurs because of caustic ingestion and rarely, from radiation injury during treatment of head and neck tumours. Caustic injuries to the aerodigestive tract occur when individuals accidentally or intentionally (suicidal intent) ingest strong acid or alkali. In our environment, accidental ingestion of caustic soda is common and a serious public health issue. Caustic soda is a strong alkali and has devastating consequences when it encounters tissues; the chemical reaction that ensues leave behind chemical burns with necrosis that can penetrate very deep into tissues and organs. Victims who accidentally swallow this substance are mostly children of mothers or relative of these mothers who engage in local soap making. The caustic soda which is the main ingredient of local soap is often stored in familiar containers (cups or water bottles) by these mothers. The unsuspecting child, when thirsty, reaches out for this and drink before realizing he/she has swallowed a poison.

Patients who swallow caustic substances destroy structures in the oral cavity, pharynx, larynx, and the oesophagus. The long-term complications of fibrosis and stricture formation destroy the normal anatomy – structural distortion, lumen obliteration from stricture and loss of coordination of these structures. The outcome of these complications is dysphagia which may be absolute for life and sometimes with obliteration of the normal airway. Most patients suffer these complications downstream in the oesophagus, but a few about 0.6% to 24% of these patients have complications at the level of the pharynx.

Restoring gastrointestinal continuity in patients with caustic and radiation injury at the level of the pharynx (pharyngoesophageal strictures) is a daunting task all over the world. The challenge is at the pharyngeal phase where the

anatomy is shared by the airway and the path for food. This is well coordinated to regulate the safety of the airway during swallowing. Repair of a stricture at this level to restore gastrointestinal continuity and preserve normal functioning of the airway is the struggle for most surgeons all over the world. Repair is complicated by aspiration whenever the patient attempts to eat and often takes weeks to overcome with physiotherapy. An unsuccessful correction may commit these patients to feeding through a gastrostomy tube with or without tracheostomy for life. Currently, no standard procedure is prescribed for strictures involving the pharynx.

The National Cardiothoracic Center since 2006 started research into the management of these complex pharyngoesophageal injuries resulting from caustic ingestion. The demonstration lecture I delivered on the 20th of May 2011 as part of the procedure for my appointment as a lecturer in the University of Ghana Medical School, was my initial research work in patients with complex pharyngoesophageal strictures. The first article of work done in this regard was published by the Interactive Cardiovascular and Thoracic Surgery titled 'Colopharyngoplasty for intractable caustic pharyngoesophageal stricture in an indigenous African community – adverse impact of concomitant tracheostomy outcome' The conclusion was 'In this African community (Ghana), colopharyngoplasty provided an effective means of restoration of upper digestive tract continuity in patients with severe caustic pharyngoesophageal strictures. Tracheostomy in this setting portends a significant long term mortality risk.' Some of the patients operated who needed tracheostomy to protect the air way or presented with permanent tracheostomy suffered complications from the tracheostomy that resulted in their death. Tracheostomy care in the country has some challenges, especially in the poor. We were motivated to work on a procedure that will eliminate the use of tracheostomy in patients with severe pharyngoesophageal stricture with destroyed supraglottic apparatus. The search for a solution gave birth to the procedure I termed Colon- Flap Augmentation Pharyngoesophagoplasty (CFAP). More than 20 patients have benefited from this procedure with excellent outcomes.

In this lecture, Professor Mark Tettey will provide in-depth knowledge of the aetiopathogenesis of caustic destruction of tissues, the different presentations of the devastating effect of complications of caustic ingestion and different procedures currently used in the management of these complications. The innovative procedure developed at the National Cardiothoracic Center and a classification of pharyngoesophageal strictures yet to be published will be presented. The classification is meant to help identify the different presentations and the surgical options available for optimal treatment.

PROFILE

Professor Mawutor Mark Tettey is a cardiothoracic surgeon by training with over 20 years of experience. He completed and obtained his BSc. Human Biology and MB ChB, from the Kwame Nkrumah University of Science and Technology (KNUST) School of Medical Sciences. (SMS) His training as a cardiothoracic surgeon has been mainly at the National Cardiothoracic Center, Korle Bu Teaching Hospital Accra, Ghana. He qualified as a Fellow of the West African College of Surgeons in 2002 after successfully passing the Final Part II of the West African College of Surgeons Examination – Cardiothoracic Surgery. He was in the University of Pennsylvania Health System, Department of Surgery, Division of Cardiothoracic Surgery in 2005 for an observership training. He also trained in Video Assisted Thoracoscopic Surgery in the University Teaching Hospital, Thoracic Surgery Unit, Freiburg, Germany in 2007.

Since his qualification, he practised as a cardiothoracic surgeon and was appointed a consultant in 2007 by the Ministry of Health. His field of practice include surgery for congenital heart diseases – (patent ductus arteriosus, atrial septal defect, ventricular septal defects, atrioventricular defects, tetralogy of Fallots and double outlet right ventricle), surgery for acquired heart diseases both in children and adults (e.g. valve replacement and repair surgery), vascular surgery and implantation of permanent cardiac pacemakers. In the area of thoracic surgery, he has done several cases of lung resections and oesophageal surgeries. The others are chest wall resections and resection of mediastinal tumours.

Professor Mark Tettey as a medical practitioner, has always been interested in research into outcomes of pathological conditions that required surgical interventions. While at Agogo Presbyterian Hospital for his district rotation he treated several cases of Buruli ulcer and wrote a book on the pathology and management of this disease. The disease was quite common at the time and the pathogenesis was not very clear then. Some of the suggestions for treatment in this book are still used in the management of this disease. Understanding the pathological bases of diseases and evaluating the best management options is his passion and he continued in this line of research in cardiothoracic surgery when he qualified as a specialist. His research areas covered pathology of different organs in the chest, and this is reflected in his publications as most of them were pathology and surgical management. His current research interest is in finding solution to a complex pathological problem namely severe caustic pharyngoesophageal strictures. The solutions provided by him using innovative procedures are far reaching and a

breakthrough in patients with life threatening severe caustic pharyngoesophageal injuries who have lost hope of ever going to be able to swallow again. He has delved into research projects in cardiology, and has grant supports for these projects.

He serves on the editorial board of the Health Sciences Investigative Journal and International editorial board of the Pan African Medical Journal. He is a reviewer for many international many local and international journals.

Prof. Mark Tettey has mentored and involved in training more than 10 local and international cardiothoracic surgeons for the country and the Sub-Region. He was the principal supervisor for their fellowship dissertations. He is an examiner for the West African College of Surgeons and the Ghana College of Physicians and Surgeons.

At the University of Ghana, Professor Mark Mawutor Tettey has served on several boards and committees. These include Academic Board College of Health Sciences, Scientific Conference Committee of the College of Health Sciences, Research Committee University of Ghana Medical School, Research Newsletter Committee University of Ghana Medical School, Coordinator of Research – University of Ghana Medical School, Research Committee College of Health Sciences, Ethical and Protocol Review Committee College of Health Sciences, Department of Surgery teaching assessment committee, Academic Board University of Ghana, Committee to review basic sciences curriculum of UGMS (Royal Lee's Hotel Tutu Akuapem) and the Committee to develop syllabus for academic writing.

Outside University of Ghana, Prof. Tettey also served on boards and committees. These include Health Committee of the Global Evangelical Church, Disciplinary Committee National Cardiothoracic Center, Chairman of Local Organizing Committee to organize the First International Scientific Conference of the African Association of the Thoracic and Cardiovascular Surgeons. 30 -31st August, 2013, Faculty of Surgery Board West African College of Surgeons, Faculty of Surgery Board Ghana College of physicians and Surgeons, Vice President – Zion College of West Africa and Chairman of an adhoc committee to review the West African College of Surgeons curriculum for Cardiothoracic Surgery.

The African Association for Cardiovascular and Thoracic Surgery awarded Prof. Mark Tettey with a plaque for his outstanding contribution to cardiothoracic surgery at the 13th Annual Conference in Cote D'Voire. He is the head of Department of Surgery and the Acting Director of the National Cardiothoracic Center, Korle Bu Teaching Hospital.

Professor Mark Mawutor Tettey worships with the Global Evangelical Church, Disciplers Chapel. He is married to Dr. Mrs. Klenam Dzefi-Tettey and they are blessed with a daughter, Selorm. His hobbies are gardening and cooking.