

# Far away from the NHS – Hernia Surgery in Nigeria and Kenya

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## DESTINATION –KENYA

By Cristina Croitoru

Situated on the equator, Kenya has been described as “the cradle of humanity”. At 580,367 km<sup>2</sup>, the Republic of Kenya has a population of 46 million. The official languages are English and Kiswahili but numerous indigenous languages are also used. The most widely practiced religion is Christianity, followed by Islam.<sup>1</sup> A considerable portion of Kenya comprises wildlife habitats such as the Masai Mara.<sup>2</sup>

Kenya is ranked as a lower middle-income country by World Bank criteria. Agriculture remains the backbone of the economy, making up 35.6% of the overall GDP<sup>3</sup>. As of 2011, there were 65,000 qualified nurses, 8,600 clinical officers and 7,000 doctors. In 2013, there were 0.2 physicians and 1.4 hospital beds per every thousand patients<sup>4</sup>. Despite major achievements in the health sector, Kenya faces many challenges. According to statistics from 2012, life expectancy averages 61 years, while infant mortality rate is high at approximately 44 deaths per 1,000 children. WHO estimated that in 2011 only 44% of births were attended by a skilled health professional.<sup>5</sup>

## HERNIA INTERNATIONAL

Approximately 1-in-4 men will suffer from a groin hernia. In sub-Saharan Africa, there are an estimated 6.3 million untreated cases. In rural areas more men suffer from hernias than from HIV. Surgeons have found an anatomical susceptibility to hernia in Africa, characterised by a weakness of the inguinal wall<sup>6,7</sup>. Neglected hernias cause mortality from strangulation and physical incapacity and contribute to socio-economic problems as men from the most productive age group are often affected<sup>7</sup>.

In 2006, Professor Andrew Kingsnorth from the Derriford Hospital, Plymouth and Mr Chris Oppong founded Operation Hernia. The organisation began work in Ghana before expanding to Africa and other regions. Operation Hernia has popularised the use of mosquito net meshes to replace synthetic mesh used in developed countries. This technique was not widely known outside of India until Kingsnorth adopted the technique following a visit to India in 2006. The method has since been widely used across Africa<sup>9</sup>. Last

year, Operation Hernia covered Ghana only, with Hernia International covering all other countries on a global scale.

In 2016, Hernia International established itself as the UK’s premier hernia charity by operating on over 2000 patients - 24 international teams (consisting of over 150 volunteers) from 19 countries worldwide have operated in 15 different locations across the globe. Volunteers from Northern Ireland included Mr Terry Irwin from Belfast City Hospital who has lead several missions in the past, and Mr Aleksander Stanek from South West Acute Hospital, Enniskillen who led the 2015 and 2016 missions to Gatundu, Kenya and has additional experience working in Nigeria.

## JUNE 2016 MISSION TO GATUNDU

Our journey took us to Gatundu – 90 minutes’ drive from Nairobi. We were based at Gatundu District Hospital, a public level 4 health facility.

Our Team had 6 members: General Surgeon and team leader Aleksander Stanek, Austrian General Surgeon Leo Mittregger, Spanish General Surgeon Rocio Santos, Swiss Urologist Greg Wirth, Surgical Trainee Cristina Croitoru and Victoria Carswell, a Foundation Doctor (both from the UK). Several members were Hernia International veterans. This was the second Hernia International mission to Gatundu and with each mission, new equipment was brought along.

Over the course of 5 days we performed 48 operations on 46 patients aged between 2 and 95. Our team and the local doctors and nurses worked side by side, 12 hours a day. There were 23 inguinal hernias, 11 umbilical, 6 epigastric, and 4 incisional hernia repairs performed. Additionally, our team performed one orchietomy, one hydrocele repair, one seroma aspiration and one excision of an abdominal lesion.

## AFRICAN PUZZLES

In order to present the flavour of this work, we have made a compilation of unusual cases.

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*Case 1. Returning to the basics.*

Without a CT scan or any other type of imaging, can you make a diagnosis? If you can determine that what you see is an inguinal hernia, can you say what it contains? Having done that, can you repair it with a mosquito net and the instruments contained in just two suture kits?



Fig 1. Inguino-scrotal hernia

Figure 1 documents a 34-year old tailor, father of four children, presenting with a right inguinal-scrotal swelling which was present for all of his life. The swelling had significantly increased in size over the last few years. Poverty made him postpone treatment, gradually restricting walking and leading to pain levels which were barely manageable. He was taken to theatre and found to have a hernia containing almost the entire small bowel; it appeared to be a pantaloon scrotal hernia with one direct and one indirect congenital hernia. The right testicle was atrophied and was removed. The hernia was then repaired with a mosquito net in accordance with Lichtenstein protocol (excess skin was also removed). He made a good recovery and was discharged on day 4 postoperatively.

*Case 2. Abdominal mass*

Fig 2. Para umbilical mass –pre-operatively

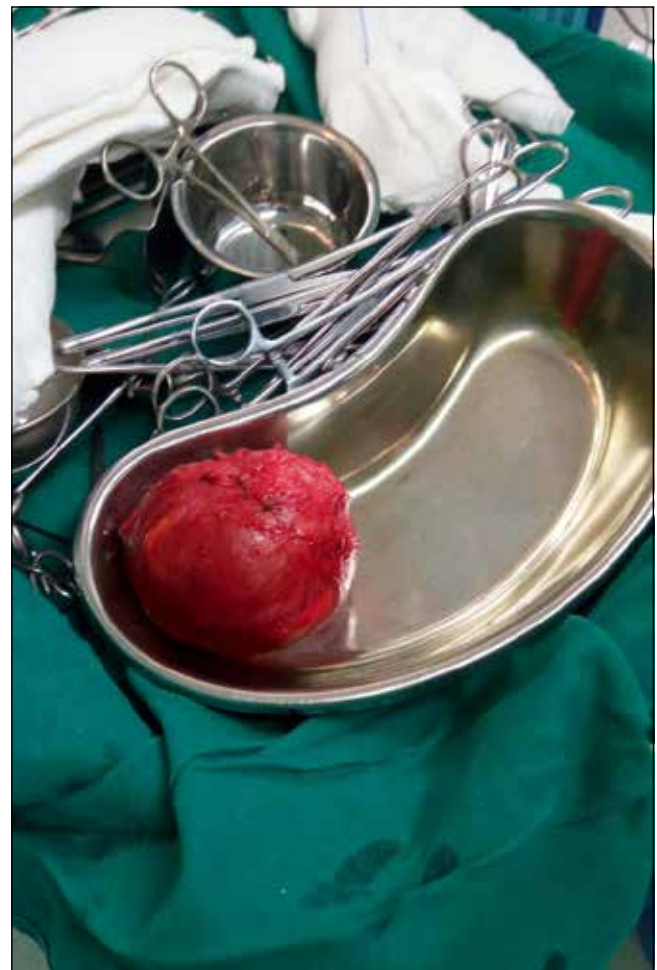


Fig 3. Para- umbilical mass - excised

The patient presented with a large firm lump just above the umbilicus which appeared a short while after she underwent incisional hernia repair in the United States. Her hernia appeared following an emergency C-section and got bigger. On examination it was well defined and irreducible. An abdominal ultrasound was inconclusive but clearly described an abdominal wall defect of 2 cm diameter, suggestive of a recurrent, incarcerated, incisional hernia. To our surprise we removed a firm mass, 7 cm in diameter. An abdominal wall defect was closed with non-resolvable stitches and covered with a mosquito net.





Fig 4. Section through the para-umbilical mass

The final histopathology report confirmed morphological features (...) of a benign simple cyst.

#### Case 3. (Six) fingers crossed for surgery

Despite our focus on hernias, some pathologies are frequently encountered in Africa. The picture below shows polydactyly, which is a common congenital abnormality - this patient has 6 fingers on both hands.



Fig 5. Bilateral Polydactyly

Through its volunteers, Hernia International has managed to bring hope to some of the most remote parts of the world.

Feeling that you are part of something that makes a difference in the global community is one of the most powerful motivators for the team. Though we come from different cultural backgrounds, we all share the same passion for our profession. Surgery is our common language and working together through 12-hour-days with great people creates unbreakable bonds.

Northern Ireland will continue to be part of the Hernia International family through some of the medical professionals working here as well as the kind donations made by local people and institutions.

### MY AFRICAN SURGICAL EXPERIENCE IN NIGERIA AND KENYA

By Aleksander Stanek

For those who lack experience of working outside the Western system, working in underdeveloped countries can seem like a different reality. I have worked in 2 African countries – Nigeria and Kenya. Many consider Africa a homogenous continent, but I found the 2 very different.

I spent 2 years in Nigeria where there is almost no public health system and most people pay for health care. In Kenya however, significant numbers in the National Hospital Insurance Fund scheme (NHIF) are treated for free, or at least have the option of public sector surgery. Being the only consultant surgeon in a city of almost 1 million was a big challenge, made more difficult by the lack of radiological and diagnostic backup. There was a poor-quality chest/abdominal X - ray and an unreliable ultrasound scanner which offered black and white patches on a 5' inch screen (it was frequently broken!). There was an extremely basic biochemical laboratory with turnaround of 24 hours for blood electrolytes. The two surgery theatres, working every day, were shared with the Gynae/Maternity ward but suffered nearly permanent blackouts covered by generators, but only if oil was available. Torches were necessary even during the day.

A shortage of surgical instruments was a serious problem at the beginning of my stay. I quickly found out that it was routine to keep all the 'sterile' instruments on one big table covered with an 'ever-sterile' drape, then take whatever was needed to prepare for the forthcoming procedure, irrespective of how long the instruments had been on the table. Thankfully the Medical Director, a German lady doctor with more than 35 years' experience of medicine in West Africa, gave me the opportunity to set up new laparotomy, hernia incision and drainage sets from high-quality German instruments, which she meticulously kept in her personal storage. Each instrument was marked to prevent them from misallocation to other sets during sterilisation, or simply 'vanishing'. Vanishing instruments are a well-known problem in African healthcare!

Other theatre resources were limited, such as the single diathermy machine. The machine was held in a massive cage with a monstrous padlock to prevent it from being stolen.

Despite such measures, the machine “vanished” within the first six months. Surgical theatres were equipped with air conditioning units, but most of the time these were either broken or switched off (particularly during the colder, rainy season). Another climate-specific problem in the OR was the ever-present equatorial African dust which is at its worst in the second half of the year because of Harmatan - a north wind from the Sahara Desert.

The staff were very devoted but there was a need to maintain a strict work etiquette so as not to lose continuity of care. Sometimes malaria, which was endemic in this region, disorganised the work in an unpredictable way. Sometimes, I was the only team member fit to work, operating through flare-ups my own malaria. The malaria prophylaxis eased symptoms, but relief was limited as I was not able to take bed rest for longer than 2 days at a time due to staff shortages. After several episodes of malaria during my stay in Nigeria, I didn't know which was worse - the malaria or the side effects of quinine, which I resorted to when other medicines failed to work.

TB and HIV were both common, often in the same patient. Surprisingly, the most common surgical procedure for TB was chest drainage for pleural effusions, resulting in liters of whitish, characteristically smelling pus. During my first ward round, I saw a junior doctor attempting tube insertion on a patient standing up in the dressing room. The patient cried out with pain as no local anaesthesia was given!

I immediately stopped this but a lack of anaesthesiologists was a serious problem. As in other less developed countries, the only available effective anaesthetic was ketamine. Unbelievably, this agent makes it possible to perform major procedures such as partial gastrectomy, cholecystectomy, small and large bowel resection without endotracheal intubation!

During my time in Nigeria, no endoscopy was available locally. The nearest service was in Lagos or Ibadan, but given a cost equivalent to 6 months' salary, endoscopies were not an option for most.

Double gloving, impermeable, thick rubber aprons, goggles and masks were all compulsory. The unlimited working time caused by permanently being on-call made this job radically different from the European Working Time Directive and NHS standards.

Does tropical surgery sub-specialisation really exist in its own right? The answer is both Yes and No!

Yes, as there are many conditions almost never seen in the West such as sickle cell disease, tropical ulcers, keloids, chronic lymphoedema and pyomyositis. Some conditions are known in the West, but in Africa, they have more diverse clinical presentations such as breast and abdominal TB, ascariasis, amoebiasis and typhoid fever. In Africa, disease and trauma related to animals are not uncommon; bites from wild animals - lions, hyenas and crocodiles, as well as peri-

domestic creatures- monkeys, snakes and rodents. In some areas, insects may cause injury by bite, sting or simply skin contact - scorpions, ticks, fire ants and spiders all inhabit the region. Another local epidemic was trauma due to road traffic accidents.

No is also correct. Regardless of pathology, surgical skills and instruments remain the same. Malnutrition, bare-foot walking, limited access to medical care influenced pre-existing conditions, and managing adverse factors was as important as managing hernias. In 2002, I had received meshes for tension free hernia procedures. A group of 30 patients was successfully operated on with the mesh. Subsequently, only one patient developed wound infection which was treated conservatively with antibiotic. This patient was a 101-year old farmer who died the next year after hip replacement. On the morning of his hernia procedure, special precautions were taken, including a shower a short while before surgery (which was not easy considering the water shortages). These inguinal hernia mesh repairs were probably the first ever performed in West Africa, several years before the Operation Hernia Project was commenced by Professor Kingsnorth and colleagues in Ghana.

My Nigerian experience was not easy, but I was rewarded immeasurably by grateful patients and medical staff. The positive reinforcement I received from patients and staff has stayed with me for the rest of my life. Of course, I have never expected to be back to Africa but....

In 2012, while reading the British Journal of Surgery, I stumbled on an advert for Operation Hernia. The Gambia mission team for December 2012 was already assembled but I organised a mission for the next year. The location was Eruwa, a big village in Oyo State, Nigeria, very close to my old hospital. Dr. Oluyombo 'Yombo' Awojobi, a well-known Nigerian surgeon, ran a Hernia Clinic and hospital there.



Fig 6. Evening surgery with DIY equipment in Eruwa, 2013.

Insects are on their way!

Based at newly built premises sponsored by Spanish surgeons, Yombo equipped his clinic with operation lamps which he constructed from basins and 150W bulbs! He used simply constructed operating tables instead of commercial ones due to limited financial resources. They did the job (Fig 6). Lack



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of proper insulation of the windows made surgery impossible after sunset due to insects flying towards the lamps and swamping the operating tables and surgeons. Lessons learnt from this experience were invaluable to us.

Most cases were performed under local anaesthetic but rarely huge ‘Nigerian’ inguino-scrotal hernias were operated under spinal anaesthesia provided by a Nigerian anaesthetist - a team member available for only two days during the mission. As no general anaesthesia was available, we did not operate on big incisional hernias. We operated on up to 18 patients a day on the 3 tables with significant help from local junior doctors from Yombo’s team. Patients underwent surgery over a period of 6 days, with 100% discharge within 24 hours and no immediate complications. We established a sound working pattern and an efficient process beginning every morning with a clinical review of all patients and producing an optimal running order according to anaesthetic requirements and pathology.

We were privileged to work with Baba Karim (Yombo’s chief theatre nurse) and his staff, without whom day to day functioning would not have been possible. In addition to providing high quality surgical care, our team also taught the local surgical registrars tension-free mesh (mosquito net) repairs. By the end of the mission, 3 of the residents could successfully perform the procedure from start to finish. We were delighted to learn that 5 surgical registrars were inspired to continue using the newly learnt techniques at the hernia centre on a weekly basis outside of their regular duties.

Accommodation in Eruwa was the best our hosts could provide but lacked even a single-star rating. Electricity and running water were quite sporadic. Thankfully mosquito nets were available to us (not just to the patients!). We survived and left Nigeria safely without being assaulted by robbers (which is not uncommon), impressed with Dr Oluyombo Awojobi’s warm attitude as well as the enthusiasm of his medical staff, and the perfect cooperation at all stages, including a simple Yoruba language lesson prior to our arrival. What else impressed me in Eruwa? The presence of 3 cash-machines in the middle of nowhere!

I also organised 2 missions to Gatundu, Kenya in 2015 and 2016. Uhuru Kenyatta (son of Jomo, the first Kenyan president, who was also incumbent at that time) owned a house in the village, as well as a large amount of land around it. The hospital in Gatundu, where the HI missions of 2015 were organised, was upgraded by the Chinese government for 2016. Generally, it looked good, but left us wishing for more facilities. For example, in one of the 2 theatres, a lamp has been attached in a fixed position one meter above the operating table without any possibility of changing this arrangement (thank God there was more than one lamp!).

Although our team left lots of instruments behind in 2015, they ‘vanished’. Luckily an English team working in April 2016 left behind a diathermy machine along with some surgical instruments. We supplemented this with the

diathermy machine donated by Tyrone County Hospital. I also received a lot of valuable medical items from manufacturers - gowns, gloves, sutures, diathermy pads and pencils. As usual, British Airways gave us a huge free baggage allowance to transport the equipment. This was greatly appreciated as many other European flight carriers refused.



Fig 7. Our “amazing” operating lamp 90 cm above the operating table in the new hospital, Gatundu

Compared with Nigeria, Kenyan infrastructure is more advanced, with an airport, buildings and roads built to a truly European standard and functioning with a high degree of safety. Our hotel was a 4-star establishment and was fenced, gated, with 24-hour security. We were charged a local rate which made our stay relatively cheap. Average temperature was around 20-25 degree Celsius. There were no issues with electricity and hot water. We commuted for 45 minutes to Gatundu hospital, ready to commence an operating day at 8.00 am.



Fig 8. Dr Ruth Muiri and Dr James Kariuki next to the diathermy machine donated by TCH, Omagh.

In Gatundu, we were privileged to work with the thoroughly professional and enthusiastic Kenyan anaesthetist Ruth Muiruri, who arranged our work very efficiently. There was only one SHO doctor – James Kariuki, who at first assisted us then went on to perform hernia repair under supervision. Quite often, a lack of scrub nurses meant we had to work alone, but this was not a problem.

For five days we were expecting to meet the Hospital Superintendent, who originally invited us out. He finally found a very brief moment to see us in his office on the top floor of the new building towards the end of our last day. His office was far away from the theatres. During this appointment we felt as though we were meeting a local Chieftain rather than a fellow doctor - far away from Yombo's attitude... far away from the NHS.

The next mission will go to Tanzania in 2017.

With special acknowledgements to Aleksandra Stanek .

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