



THE PRESIDENT'S WELCOME ADDRESS

Innovations in Surgical Service Delivery

Welcome to the 23rd scientific conference and 24th AGM of the surgical society of Kenya. As society we have prepared an international standard conference with both preconference on innovations and the main conference. You will be listening to named lectures, panel discussions, scientific sessions and hands on workshops and seminars. These are aimed at helping us understand how we can make innovations while being safe, affordable and increasing our competency as professionals.

Our main strategic plan as the surgical society of Kenya is have competent surgeons who achieves quality outcomes in a safe environment. A safe and competent surgeon must be skilled and adept in appropriate patient care and have a fundamental and grounded foundation in up to date-medical knowledge. The achievement of a safe and a competent surgeon is through a process of lifelong practice-based learning that enable us to learn and improve on every patient encounter.

Major obstacle to achieving this will encompass interpersonal skills, communication, professionalism and ability to work effectively with the system. Interpersonal skills and communication are heavily grounded on the ability to transmit to the patient that you are a caring surgeon willing to spend time with your patient. This is done by listening, prompting questions and explaining in layman language the pros and cons of the intervention. The next is breakdown in professionalism -we work is an environment of uncertainty and lack of collegiality, disruptive behaviour and the socio-economic complexities involved in the management of the patient.

How do we ensure that in this environment we bring in innovations that will enable us to have quality but affordable services using technology? It is these and many more that we hope that we will discuss both the preconference and the main conference. We welcome you to explore the preconference stream, the exhibitors stand, participate



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actively, inquisitively in every session you attend and make it worth your every shilling while at it.

Dr Daniel Ojuka

President, SSK

FROM THE SECRETARY'S DESK

Dear Members,

I would like to extend a warm welcome to our annual conference and AGM here in Mombasa. As always, this is a much anticipated and exciting learning opportunity. In addition, it is a great opportunity for re-unions and relaxation. I would like to thank all our members, invited guests, collaborators and supporters who have been able to join us for this premier society event.

As is tradition, it is also an opportunity to reflect on the past two years and the growth and achievements that we have had. It has been a pleasure to resume in person events after the covid pandemic ended and with this came many CMEs both at regional and national level, training workshops and resumptions of courses like the ATLS courses. I would like to recognize the efforts of the various chapters; Committee leads and others who have engaged in society events at multiple levels. Kenya continues to be a leader in surgery in the region both in training and provision of care and this is a reflection of our membership. As a society, we have also made quality in surgery and training our focus and this has culminated in research and training projects focused on quality.

This year is also an election year for the society and we look forward to welcoming the new council to office. It has been an absolute pleasure and honour to serve as the secretary of the society. As my time comes to an end, I would like to thank all our members for the support and enthusiasm as we have navigated the various seasons together. I would also like to acknowledge all those who have mentored and supported



the various members in leadership and service positions in the society. As many are aware, we have also have lost a number of our colleagues including Prof Yusuf Kodwawwalla and Prof George Magoha and it is my wish that we shall honour their memories and legacies by continuing to serve humanity with steadfastness, compassion, and integrity.

Finally, we have also enjoyed great collaborations and it is noteworthy that innovations and global surgery are featuring heavily not only on this conference but in prior events in the lead up to this meeting. I recognize the efforts that the scientific committee has put in preparing a robust and exciting program for the next few days. It is also my wish that we also take some time to relax and rejuvenate and enjoy the local sights, sounds and cuisine while here in sunny Mombasa.

Karibuni!

Dr Michael Mwachiro

Secretary SSK

FROM THE SCIENTIFIC COMMITTEE DESK

International and global! That is my view of the 23rd Scientific conference.

Not only did we receive a record number of papers and speakers from outside the country, our pre conference workshops have drawn international and local attendance in equal measure.

If you do not find fodder in the eclectic list of workshops under the ICIGS pre-conference, you will definitely have fun discussing quality in surgery in the other pre conference module.

The scientific program itself boasts of richness and depth by virtue of mix and scientific rigour of the works presented.



Following your feedback, last year's venue was changed to the current Sarova Whitesands. I hope you enjoy this year's venue and I look forward to your feedback by the end of the conference.

The values of diversity, equity and inclusion have not been lost on us in preparing this program. To that end, we have speakers not only from all the corners of Africa but from 4 continents. That is not all, we have 39% of the conference presentations, 40% of keynote lectures and 40% of updates in surgery series presented by women and this is a great move in our efforts as a society to encourage diversity within our rank and file.

As a global surgery enthusiast, I am excited to see global surgery as a discipline take lead in the number of original articles presented, sharing that podium with general surgery.

As usual, the Society's official journal has a 2-hour breakout workshop that will create the perfect arena for the new entrants into the game that is biomedical research.

Colleagues, the conference is never complete without us heading the words of Porter Gale: "Your Network is Your Networth". Let us each take a moment to network with colleagues and industry players even as we consume the scientific content.

It is my hope that you will enjoy the conference and develop linkages to carry home with you.

Welcome all. Karibuni!

Dr Stanley Aruyaru, MD FACS
Chair, Scientific Committee



**SURGICAL SOCIETY
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2nd International Congress on Innovation for Global Surgery (ICIGS)

Date: 24th-25th April 2023

DAY 1		ICIGS 2023	
Monday 24.4.23	8am-10am	Welcome & Introduction Of Workshop Trainings	
10am- 10:30am		COFFEE BREAK	
10:30am-1:00pm		Breakout into respective didactic sessions & live trainings (WALANT , Endoscopy, Technology innovation in Gasless Laparoscopy, Urology)	
1:00pm-2:00pm		LUNCH BREAK	
2:00pm-5:00pm		Continuation of trainings (WALANT , Endoscopy, Technology innovation in Gasless Laparoscopy, Urology)	
DAY 2		SCIENTIFIC PROGRAMME	
Tuesday 25.4.23	8:00am- 10:00am	Essential components of Surgical Innovations in LMIC	
10am-10:30am		COFFEE BREAK	
11:30am -12:30pm		Prioritizing training to increase specialist workforce (SAO)	
12:30pm-1:30pm		LUNCH BREAK	
1:30pm - 3:00 pm		Hackathon – Unmet clinical SOTA need in Eastern Africa	
3:30pm-4:30pm		Health System, Policy, Advocacy	
4:30pm- 5:30pm		Commercialization, Finance management, Supply chain, Business model for surgical care in LMIC	
Handover ICIGS 2024 & Conference Close			



ACS Surgical Quality Program

Date: 24th-25th April 2023

PLANNING A QUALITY IMPROVEMENT PROJECT COURSE



DAY 1 (APPROX. 4 HOURS)

PLANNING A QUALITY IMPROVEMENT PROJECT (TOTAL 3.5 HOURS)

- ▶ **Introductions and Review of Course Agenda** (30 minutes)
- ▶ **Opening Lecture: "Meaningful Quality Improvement"**
Dr. Haytham Kaafarani MD, MPH (30 minutes)
- ▶ **Review Quick Hits from ACS QI Online Course**
Dr Xane Peters MD (10 – 15 minutes)
- ▶ **Q&A** (10 minutes)
- ▶ **Lecture: Problem Detailing and Goal Specification**
Dr Xane Peters MD (20 minutes)
- ▶ **Various Types of Data in Quality Improvement**
Dr Haytham Kaafarani MD ,
- ▶ **Q&A/Discussion** (10 minutes)
- ▶ **Activity: Defining the Problem** (30 minutes)

15-minute Break

- ▶ **Lecture: Strategic Planning**
Dr Xane Peters MD (30 minutes)
- ▶ **Q&A/Discussion** (10 minutes)
- ▶ **Activity – The House Game** (40 minutes)
- ▶ **Closing Review**
Dr Haytham Kaafarani MD, MPH (10-15 minutes)

DAY 2

MAINTAINING AND COMPLETING A QUALITY IMPROVEMENT PROJECT (3-4 HOURS)

- ▶ **Lecture: Getting and Maintaining Buy In**
Dr Haytham Kaafarani MD, MPH (20 minutes)
- ▶ **Activity: Stakeholder Presentation Template** (30 minutes)
- ▶ **Activity: Share Stakeholder Presentation** (30 minutes)

15-minute Break

- ▶ **Lecture: Completing a Quality Improvement Project**
Dr Haytham Kaafarani MD, MPH (20 minutes)
- ▶ **Cost Evaluation** Dr Xane Peters MD
- ▶ **Knowledge Acquisition** Dr Xane Peter MD
- ▶ **End-of-Project Decision-Making**
Dr Haytham Kaafarani MD, MPH
- ▶ **Activity** (30 minutes)
- ▶ **Q&A** (10minutes)
- ▶ **Closing Remarks**



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2023 SSK Annual Scientific Conference

DAY 1: Wednesday April 26, 2023

0800 - 1000	Welcome and Registration
1000 -1100	Opening ceremony: Dr. Mwachiro Chief Guest: TBC
1115 -1215	Dr. Nelson Awori lecture: Prof Jotham Micheni
1215 - 1315	Prof. Wasuna lecture: Dr. Wekesa Masasabi
1330-1430	Lunch
1430– 1730	AGM & Elections



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DAY 2: Thursday April 27, 2023

Time	Parallel Session	Parallel Session
0800-0900	<p>Global Surgery: Surgical Systems Strengthening: B Njihia, Dr Wairimu Ndegwa</p> <ol style="list-style-type: none">1. Clinical audit of WHO safety check list at Embu Level 5 hospital. Dr Mwaniki2. Made in Mozambique- Finding Locally Available, Scalable Solutions to Hardware Deficiencies in Orthopaedic Practice. Fausto Muzila3. Biomedical Engineering for Global Health Design of a laparoscope using a USB- camera to support the global implementation of minimally invasive surgery. Roos Marieke4. Is it safe to operate in a treatment room? - A review of the evidence comparing surgical site infection rates in treatment rooms versus the operating room. Nick Jogodzinski5. Decision-to-Delivery Interval in sub-Saharan Africa: A systematic review and meta-analysis. Peter Nthumba	<p>Parallel Session: Laparoscopic surgery Karan Gandhi, Dr Joyce Chege</p> <ol style="list-style-type: none">1. Laparoscopic nissens fundoplication Dr Munguti, Dr Ndungu2. Laparoscopic adhesionlysis and ventral hernia repair. Mundhir Said3. LNF situs inversus Dr Munguti, Dr Ndungu4. Laparoscopic extraction of toothbrush. Dr Chol5. Laparoscopic mini gastric bypass. Dr Munguti, Dr Ndungu
0900-1000	Panel Discussion: Measuring Quality in Surgery	



	<p><i>Moderator: Dr. Aruyaru/Dr P Odula</i> <i>Panel: Dr Ojuka, Dr. Haytham Kaafani, Dr. Xane Peters, Dr Loise Kahoro</i></p>	
1000-1015	Sponsor talk:	
1015-1055	Group Photo and Tea Break	
1100-1200	<p>Scientific Session 1 (General Surgery) Dr Seno, Dr Philip Blasto, Dr Wamwaki</p> <ol style="list-style-type: none"> 1. Surgical suture characteristics and conformity to established standards in Nyeri Town. A suture quality market survey. Mathenge Nduhiu 2. INDICATIONS AND OUTCOMES OF OPEN ABDOMEN IN ADULTS AT A KENYAN TERTIARY HOSPITAL. Mohamed Dahir 3. Time of Day Impacts Surgical Site Infection in Emergency Gastrointestinal Surgery 4. Thyroidectomy for goiters in limited resource settings: The AIC Litein Hospital experience. Ruth Talaam 5. Management and outcome of adhesive small bowel obstruction at AIC Litein Hospital: A prospective study. Peter Opondo 	<p>Scientific Session 2 (Orthopaedics) Admani</p> <ol style="list-style-type: none"> 1. Micro C – A Novel Fluoroscopic Device that Improves Surgical Efficiency and Safety in Orthopedic Surgery. Gregory Kolovich 2. Fracture management under local anaesthesia. Amir Adham Ahmad 3. Effectiveness of circular external fixation for definitive treatment after acute tibial fracture-related infection. A comparison between hexapod vs. Ilizarov frames. Is there any difference? Oriol Pujol 4. High implant complication and mortality after distal femoral replacement for periprosthetic knee fracture in the elderly. Oriol Pujol 5. Complex distal femoral fractures of the elderly: “One-shot surgery”. Oriol Pujol
1213-1315	<p>Paediatric/Urology: Kihiko Kuria/ Dr Swaleh/ Dr Sheila Githui</p> <ol style="list-style-type: none"> 1. STANDARDIZATION OF CLINICAL CARE IN SUBSAHARAN AFRICA; A CASE FOR HYPOSPADIAS SURGERY. Mehret Desalegn 	<p>Vascular & Cardiothoracic: Dr Sore/ Dr Ruturi/ Dr Nyamai/ Dr Wanjara</p> <ol style="list-style-type: none"> 1. A snap shot survey to establish the Vascular disease burden in Nairobi, Kenya. Mustafa Musajee



	<ol style="list-style-type: none"> 2. ANATOMICAL PATTERNS OF PRIMARY AND SECONDARY CLEFT LIP AND PALATE DEFORMITIES IN A SELECTED KENYAN POPULATION. Krishan Sarna 3. ARIANT ANATOMY OF THE EXTRAHEPATIC BILIARY SYSTEM AND ITS BLOOD SUPPLY AMONG BLACK KENYANS. Dan Ndiwa 4. How WALANT is Making Surgery Safer and Affordable to Help Alleviate Poverty Don Lalonde 	<ol style="list-style-type: none"> 2. Chronic Venous Insufficiency and Venous leg Ulcers:- Current innovations and advances in management. Mustafa Musajee 3. Lower Limb Amputation: Decision to Consent Time.Waititu Wachira 4. Patient characteristics and cardiac surgical outcomes at a tertiary care hospital in Kenya, 2008–2017: a retrospective study. Bobi Kikwe 5. Device Assisted Pericardial Harvest and Preparation, a promising adjunct to neocuspidization? Ayush Balaji
1315-1415	LUNCH	
1415-1430	Sponsor talk:	
1430-1530	<p>Open Abstracts : Okanga/ Dr Mohammed Ali Omar</p> <ol style="list-style-type: none"> 1. IMPROVED CLASSIFICATION OF THE DIGASTRIC MUSCLE & ITS IMPLICATION BASED ON A SELECTED KENYAN POPULATION. Khushboo Sonigra 2. THE CLINICAL PATTERNS AND MANAGEMENT OF ENCEPHALOCELE AT KENYATTA NATIONAL HOSPITAL. Steph Apondi 3. IDENTIFYING RISK FACTORS AND FACTORS INFLUENCING ENCEPHALOCELE THERAPY AND CARE IN PATIENTS PRESENTING TO KENYATTA NATIONAL HOSPITAL Faisal Mohamed 	<p>Annals of African Surgery Workshop: Foundational Principles of Surgical Research Dr Kigera</p>



	<ul style="list-style-type: none">4. Anti-Diabetic Peptide Predictor using Biotransformers and Machine Learning. Elvis Anumwa5. Experience of Neuroendoscopic surgeries at Coast General Hospital. Stephen Katana	
1530 - 1630	<p>Plastics: Dr Said Shabaan, Dr Michael Ongas</p> <ul style="list-style-type: none">1. A new venture: joint plastics and breast specialty clinics for reconstructive breast surgeries. Karen Mbaabu2. A training phantom for vesicovaginal fistula repair. Jenny Dankelman3. A prospective clinical trial comparing three different dressing materials for donor site wounds in elderly patients undergoing split-thickness skin graft surgery. Mandur Sativik4. The use of the foot fillet to avoid an above knee amputation in trauma. Peter Nthumba5. The pre-expanded supraclavicular flap in fascial reconstruction: utility in sub-Saharan Africa - Peter Nthumba	Annals of African Surgery Workshop
1700-1715	Closing remarks	
1845-late	Gala Dinner	



2023 SSK Annual Scientific Conference

DAY 3: Friday April 28, 2023

Time	Parallel Session	Parallel Session
0800-0900	<p>General Surgery: Ralph Obure/ Karen Mbaabu</p> <ol style="list-style-type: none">1. Cost-benefit analysis of the implementation of routine instrument and glove change to reduce surgical site infections in emergency abdominal surgery. Mercy Mitei2. Pattern of Presentation, Management and Outcome of Colorectal Cancer in Kenya: A Multi-Site Audit. Mugure Githae3. Advances in The Ambulatory Management of Pneumothorax: A systematic Review and Meta-Analysis. Vincent Kipkorir4. What are the influences of delayed presentation of breast cancer patients at Kenyatta National Hospital? Daniel Ojuka5. The implementation of a volume limited zero-hour fasting policy decreases NPO time without increasing adverse respiratory events. Dimingo Gomez	<p>Global Surgery: Surgical training Macleod / Dr Janan Malik</p> <ol style="list-style-type: none">1. ASSESSMENT OF THE CLINICAL LEARNING ENVIRONMENT FOR DOCTORS IN KENYA. Aurelia Brazael2. MENTORSHIP IN UNDERGRADUATE SURGICAL TRAINING AT KENYATTA UNIVERSITY. Aurelia Brazael3. Innovations for global surgery – Overview from Delft University of Technology Jenny Dankelman4. The practice of surgery in 2050: a scoping review of artificial intelligence. John Nthumba
0900-1000	<p>RECENT ADVANCES LECTURE SERIES : Dr Chavda/</p> <ol style="list-style-type: none">1. Prof Macharia: Entrepreneurship in health2. Dr Andrew Wandera: Liver resections for HCC and the HepWek Project.3. innovations in anaesthesia to make for safe efficient surgery –?Dr Okelo4. The African Surgeon and research – opportunities and challenges Dr Miriam Mutebi5. Incorporating gaming technologies and extended realities in surgical training and practice: impact, access and possibilities	



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1000-1015	Sponsor talk:
	Tea Break
1015-1100	Invited Guest Lecture: ? Dr Miriam Mutebi/ Dr Kigera The African Surgeon in the era of Precision Medicine Dr Mumba Chalwe
1100-1200	Keynote lecture: Moderator (Dr Aruyaru) The surgeon at the centre of system advocacy, beyond NSOAPS Prof Emmanuel Makasa
1200-1300	Closing Ceremony and awards Dr. Odula



SURGICAL SOCIETY
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ANNALS OF AFRICAN SURGERY PUBLISHING WORKSHOP

APRIL 28TH, 2023

Venue:
Sarova Whitesands,
Mombasa

Time:
2:00 - 4:00 pm

Topics

1. Study designs in surgery
2. Study variables and outcome measures
3. Literature search
4. Statistics for the surgeon
5. Responding to reviewer comments

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Name: Adili Wobenjo

Institution: Kenyatta University

Presenting Author: Aurelia Brazeal

Co- Authors: Adili Wobenjo, Kizito Shisanya, Allan Sajabi

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Title of Abstract ASSESSMENT OF THE CLINICAL LEARNING ENVIRONMENT FOR DOCTORS IN KENYA.

Introduction: Clinical learning environment is important in medical education outcome and quality of patient care. Knowledge on the perception of clinical learning environment by junior doctors is useful in quality assurance and improvement. We aim to assess the clinical learning environment of doctors in Kenya

Methods A descriptive cross-sectional survey was done by administering an online questionnaire. Data was collected on demographic factors, autonomy, teaching support, social support, patient safety and teamwork and professionalism. D-RECT and PHEEM scores were calculated to determine the state of the clinical learning environment. The construct validity of the study instruments was done using confirmatory factor analysis and reliability was evaluated using Cronbach's alpha. The data analysis was done using jamovi 2.3.18 statistical package. In all analyses, confidence interval and significance level of P value was be 95% and 0.05 respectively.

Results The study cohort comprise of 176 participants with mean age of 30.4 (SD 5.5). The clinical learning environment in Kenya using the PHEEM cores were 92.2 (SD 27.8) and 3.2 (SD 0.839) respectively. There was no statistically significant difference in the perception of the clinical learning environment across the different cadres of doctors. ($p = 0.591$ for PHEEM and $p = 0.317$ for D-RECT). The reliability (Cronbach alpha) of the study instruments was good (> 0.7). The construct validity for PHEEM was acceptable while for D-RECT was a good fit.

Conclusion: The clinical learning environment in Kenya was more positive than negative with room for improvement. The areas in need of improvement are counselling for junior doctors and protected educational time. The study assists in the appraisal of the psychometric properties of the PHEEM and DRECT in new contexts and populations.



Name: Adili Wobenjo

Institution: Kenyatta University

Presenting Author: Aurelia Brazeal

Co- Authors: Adili Wobenjo, Moses Kimani, Gathaiya Jumbi

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Title of Abstract MENTORSHIP IN UNDERGRADUATE SURGICAL TRAINING AT KENYATTA UNIVERSITY

Introduction: Mentorship improves student confidence, academic productivity and has a positive impact in career planning. However, many institutions do not offer formal mentorship program to medical students. The aim of the study is to evaluate the student's perception of mentorship in undergraduate surgical education at Kenyatta university.

Methods An online questionnaire (through google forms) was distributed to medical students at Kenyatta University via email and WhatsApp. The questionnaire consisted of four- point Likert scale, true or false, multiple choice questions, exploring perceptions of mentorship and role models, as well as rating the most important mentor characteristics. Descriptive statistics and student t - test and ANOVA were used for numerical data and Pearson Chi square used in categorical dats.

Results A total of 93 students participated in the survey. Most students (87.1%) perceived that consultants were the best role models. Seventy-four students (79.6%) identified a role model during the surgical rotation. Despite this, only Fifteen students (16.1%) had a mentor during their surgical rotation with 9 (60%) of these students having regular meetings. The student rated physician and teacher qualities as the most important characteristics in a mentor.

Conclusion: Mentorship during surgical rotation needs improvement. The low uptake low deprives mentors, mentees and the institution the advantages offered by mentorship programs. Development of formal mentorship programs and active participation by the surgical faculty will assist in achieving this objective.



Name: Amir Adham

Institution: Prince Court Medical Centre

Presenting Author: Amir Adham Ahmad

Co- Authors:

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Title of Abstract Fracture management under local anaesthesia

Introduction: Imagine having closed fracture cases of the upper limb in the ward waiting to be operated on. Open fractures will be done first, followed by closed fractures of the lower limb as these patients will be either bed or wheelchair bound without the surgery.

Methods "In my hospital, closed upper limb fractures were deemed as having lower priority as compared to closed lower limb fractures such as femur or tibia fractures. This leads to long waiting time for surgery as we have limited operating time for cases needing general or regional anaesthesia.

This lead me to think, is it possible to do fixation of radius or ulna fractures under local anaesthesia. Dr Lalonde has demonstrated successfully that fracture fixation of the hand is possible. Fixation of wrist fractures has been done and published so why not fractures proximal to the wrist?
"

Results Since then, I have started doing midshaft radius and ulna fractures, distal radius fractures and even wrist fusions under local anaesthesia. Waiting time for fixation of upper limb fracture in my centre has improved significantly. These patients do not need any admission as the operation was done as a day-care surgery.

Conclusion: Bony fractures are safe to be done under local anaesthesia.



Name: Ayush Balaji

Institution: Hull York Medical School, University of York, England

Presenting Author: Ayush Balaji

Co- Authors: Hammad Chishti, Rishab Makam, Adhya Maithrani, Aman Sanghai, Grace Ruggins, Gracie Hempshall, Manish Chauhan (Supervising Author)

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Title of Abstract Device Assisted Pericardial Harvest and Preparation, a promising adjunct to neocuspidization?

Introduction: This study aimed to develop an ergonomic and time-effective approach to pericardial harvest, such as in the Ozaki procedure, an alternative to valve replacement. The Ozaki procedure requires pericardial harvest with specific parameters. Currently, pericardium is explanted, and a stencil is used to mark and hand-cut neo-leaflets.

Methods "The pericardial harvest stage of Ozaki procedure was analysed for its limitations, which found an increase in operation time, variability, and risk of pericardial damage due to handling. We aim to demonstrate a cost-effective design for a harvesting device, "The Neo-cutter", with the ability to reduce cross-clamp time and adapt to the current workflow. The study aimed to shorten and improve the quality of the harvesting and preparation stage through device assistance. "

Results Successful demonstration of the marking and cutter device design and its usage in clinical workflow was presented. Using inspiration from paper cutters used in art, the Neo-cutter design was developed. The existing leaflet template, including the marking requirements and wing extension, was mapped and rendered onto the device to operate with a marking and blade unit. The Neo-cutter's compatibility with the existing sizer system is vital to reduce training necessities and costs.

Conclusion: Compared to the usual process of using a template for tracing and manually cutting out the cusps, this tool would significantly reduce harvest time, provide uniformity of harvested leaflets, improve reproducibility and harvest quality. Future work will involve studying device serializability, longevity, and its testing under different use cases.



Name: Bob Kikwe

Institution: PCEA Kikuyu hospital

Presenting Author: Bob Kikwe

Co- Authors: Chavez-Lindell T, Odoi A, Gikonyo A.

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Title of Abstract Patient characteristics and cardiac surgical outcomes at a tertiary care hospital in Kenya, 2008–2017: a retrospective study

Introduction: Mortality rate for all surgical patients in Africa is twice the global mortality rate (Biccard et al., 2018), lack of access to surgical procedures is an equally important problem. Specialized surgical care in LMIC with accurate identification of patients at greatest risk of post-surgical complications is critical.

Methods Patient characteristics and post-surgical complications were abstracted for all cardiac surgical patients treated at a tertiary care hospital in Kenya from 2008 to 2017. Descriptive analyses of demographic factors, co-morbidities, peri-operative conditions, and post-surgical complications were conducted for adult and pediatric patients. Cochran-Armitage trend test was used to assess temporal trends in risk of death. Multivariable ordinary logistic and Firth logistic models were used to investigate predictors of surgical outcomes.

Results "The study included a total of 181 patients (150 adult and 31 pediatric patients). Most (91.3%) adult patients had acquired conditions while 45.2% of the pediatric patients had congenital defects. Adult patients tended to have co-morbid conditions including hypertension (16.7%), diabetes mellitus (7.3%), and nephropathy (6.7%). 70% of adult and 54.8% of the pediatric patients experienced at least one post-surgical complication including mediastinal hemorrhage, acute kidney injury and death. Significant predictors of 30-day mortality were age (OR = 1.05; p = .015) and atrial fibrillation (OR = 4.12, p = .018)."

Conclusion: The findings of this study indicate that patient characteristics and, most importantly, co-morbidities, may provide some clues regarding the likelihood of developing post-surgical complications, whereas intra-surgical factors play a much more circumscribed role



Name: DANIEL KINYURU OJUKA

Institution: University of Nairobi

Presenting Author: Ojuka K Daniel

Co- Authors: Musibi Alice Muthoni, Njoki Njiraini , Marilyn Omondi, Eric Hungu , Mburu Nyakio, Aseta Bonareri, Githambo Wambui

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Title of Abstract What are the influences of delayed presentation of breast cancer patients at Kenyatta National Hospital?

Introduction: Late stage presentation is often the norm for solid, however, there have been questions as to whether the lit is due to delays on the patient part of health system issues. Furthermore, there is a scanty literature from Kenya exact delay in the care of breast cancer.

Methods "This was concurrent mixed-method research carried among breast cancer who presented to Kenyatta National Hospital in 2018. Data collected included age, sex, histological diagnosis, duration of symptoms, time to presentation, diagnosis and treatment, number of visits before diagnosis, causes of delay, and stage of cancer at referral. Statistically significant relation was taken to be p-value less than 0.05 at 95% confidence interval. This was followed by an in-depth interview of every fifth patient on causes of delay until themes were saturated. It was recorded using tape recorder , transcribed, coded, entered into NVivo for analysis into themes.
"

Results "A total of 386 patients participated in the study. The mean age was 50.7 (SD 11.3), females were 98%. 44% attained primary level of education, 57% were unemployed and average family earnings of the majority (74.6%) was less than 5000 KES. Average number of visits before diagnosis was 5.4 (SD=4.6). Average time to presentation, diagnosis and treatment was 34.3 weeks, 37.2 weeks and 10 weeks respectively. In interviews, themes were around lack of funds, misdiagnosis or misinformation by health care providers, ignorance from the patients and strikes by the healthcare providers.
"

Conclusion: Patients with breast cancer experience long health care system delays before diagnosis; these delays increase the likelihood of more advanced-stage presentations. Educating communities and healthcare providers about breast cancer and facilitating expedited referrals could potentially reduce delays and hence mortality from breast cancer in Kenya.



Name: Deepa Ranpara

Institution: University of Nairobi School of Medicine

Presenting Author: Deepa Ranpara

Co- Authors: Michael magoha, Kavisha Jobanputra, Tracy mureithi

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Title of Abstract Hypothalamic Hamartomas in the African Context - A clinical Review.

Introduction: Hypothalamic Hamartomas are benign tumour-like malformations that occur during foetal development. HH has different presentations based on their anatomical location, the most common being gelastic seizures and precocious puberty. HH presents as mood disorders, aggression, behavioural anomalies, speech impairment and learning disabilities.

Methods "A review of published research over the last 42 years was carried out. The papers containing data on surgical approach, gelastic seizures and precocious puberty were identified, read and summarised. The articles are based on prospective and retrospective case studies. Most of the articles studied paediatric patients, but a few studied older patients who had HH since childhood.
"

Results The hamartoma is currently recognized as the cause of GS in patients diagnosed with HH. The clinical evidence includes the following: a) the production of GS and laughter from stimulation of the HH with depth electrodes; b) the recording of ictal fast activity from the HH during GS using intracranial recordings and c) the observation of ictal HH hyperperfusion and hypermetabolism with single-photon emission computerised tomography (SPECT) and positron emission tomography (PET) and d) the cessation of seizures following HH resection, ablation, or radiation

Conclusion: Hypothalamic hamartoma is a non neoplastic mass of normal nervous tissue whose manifestations vary. Magnetic resonance imaging is essential in correct diagnosis of hamartomas. Of note is the lack of data from many regions of the world, Currently there are no published papers on Hypothalamic hamartomas (HH) in Kenya.



Name: Dimingo Gomez

Institution: AIC Kijabe Mission Hospital

Presenting Author: Dimingo Gomez

Co- Authors: Alexander Mina, Jason Axt MD, MPH, Matthew Kynes, MD

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Title of Abstract The implementation of a volume limited zero-hour fasting policy decreases NPO time without increasing adverse respiratory events

Introduction: "Guidelines for preoperative fasting in children have shifted supporting 6-hour fast for solid food, 3-hour breastmilk, and 1-hour clear liquids (6-3-1). Reports support zero-hour clear liquid fasting requirements. We suspected that children at our institution were experiencing prolonged NPO with 6-4-2 policy."

Methods "After a baseline observation of 75 patients, we implemented a 6-3-1 fasting guideline and after sixty patients initiated a 6-3-0 guideline. During the 6-3-0 phase, we allowed water alone of 30 ml hourly for patients <3-year-old, 60 ml hourly for those 3-8 years old, and 120 ml hourly for those >8-years-old. Water was supplied in the surgical waiting room and volume assured using marked cups. Designated data collectors entered data on paper forms and then into REDCap for secure password-protected storage."

Results The NPO time for clear liquids during the baseline observation period was 14.4 hrs (CI 13.2-15.6), 6.7 hrs (CI 5.1-8.4) in phase 1 and 3.8 hrs (CI 2.1-5.4) in phase 2. 77% of children in the baseline group reported thirst, while 29% in phase 1 and 14% in phase 2 did. There were no aspiration incidents, but one vomiting event in phase 1, with no hospitalization needed.

Conclusion: "Implementation of a new NPO guideline allowing volume limited water up to the time of operation reduced mean NPO time from 14.4 hours to 3.8 hours, resulted in less reported thirst and was associated with no clinically significant aspiration events."



Name: Donald Lalonde

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Title of Abstract How WALANT is Making Surgery Safer and Affordable to Help Alleviate Poverty

Introduction: "Three changes are improving surgery.
1) Minimal pain injection of large areas of the body with dilute local anesthesia is eliminating sedation for many operations.
2) Epinephrine hemostasis is replacing the tourniquet
3) Evidence based sterility let's us move surgery out of the operating room with no more infections.
"

Methods The innovations were driven in Canada by a lack of anesthesiologists. No access meant patients had to wait days for urgent main operating room time. When epinephrine was proven safe in the finger, we started doing limb surgery without a tourniquet. Because we did not need a tourniquet, we did not need sedation. Because we did not need sedation, we did not need an anesthesiologist. We then proved that moving soft tissue procedures and K wiring of fractures to minor procedure rooms had no increase in infections. Minimal pain tumescence of large body areas enabled more complex surgery.

Results " Pure local anesthesia is much safer than sedation in patients with severe medical comorbidities. The wide awake approach has progressed to complex surgery at a much reduced cost. We are doing the following types of procedures in minor procedure rooms; K wiring fractures, excision of large nasal cancers and forehead flap reconstruction, air dermatome large skin grafts from the thigh, triple tendon transfer for radial nerve palsy. Examples of WALANT procedures in the main operating room examples are plating of upper and lower limb long bone fractures, below knee and below elbow amputations, hernia repair, mastectomy and lymph node dissection. "

Conclusion: Thousands of surgeons in over 50 countries in 5 continents now perform wide awake surgery because it is safer, less expensive, and produces better results with fewer complications. Most importantly, it is increasing access to those who could previously not afford important surgery that saves lives and preserves function.



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Title of Abstract Anti-Diabetic Peptide Predictor using Biotransformers and Machine Learning

Introduction: This study developed a state-of-the-art model to predict anti-diabetic peptides using the Bio transformers package and machine learning methods. The approach used amino acid composition and pre-trained transformer models to extract features.

Methods The BioDADPep database was used for acquiring dataset comprising of 472 peptides;, 236 of which were anti-diabetic and 236 were non-anti-diabetic. The Biotransformers package was used to extract features and the deep learning method to train and fit the model. The model evaluation was done to calculate the accuracy of the developed model and compared it to the only available anti-diabetic peptide predictor (AntiDMPred).

Results "The developed model achieved an accuracy of 74% after 20 epochs, comparable to AntiDMPred, the only current bioinformatics tool for anti-diabetic peptide prediction (77.12%). The model's performance was evaluated using a test set of 94 peptides and showed that the "esm1_t12_85M_UR50S" backend had the highest accuracy. However, it's important to note that the test set used in this study was small, and more research is needed to evaluate the model's performance on larger datasets."

Conclusion: The study showed that using Biotransformers and machine learning methods was effective in developing anti-diabetic peptide predictor. The model can accelerate discovery of new peptides and medications. Future research will focus on improving performance on larger dataset.



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Title of Abstract IDENTIFYING RISK FACTORS AND FACTORS INFLUENCING ENCEPHALOCELE THERAPY AND CARE IN PATIENTS PRESENTING TO KENYATTA NATIONAL HOSPITAL

Introduction: Encephaloceles are congenital birth defects that involve the herniation of intracranial tissue through a defect in the skull. The risk factors for the condition include maternal infections and folate deficiency, encephaloceles have a significant effect on the quality of life of the infants born with the condition and their caregivers.

Methods A prospective cohort study method was used; participants included caregivers for patients who presented to Kenyatta National Hospital between 2015 and 2021 (6 years); participant data was obtained from patient files at the hospitals and telephone interviews were conducted using a standardized questionnaire, the study attempted to assess the risk factors for encephalocele including presence of maternal disease, maternal nutrition, method of diagnosis, Knowledge about the condition, outcome of treatment. interviews were recorded and analyzed.

Results "The KNH database yielded 101 cases who fit the inclusion criteria. The majority of these patients were from Nairobi county, followed by Kiambu , and the most prevalent type encephalocele was occipital. Hydrocephaly, microcephaly, and craniofacial abnormalities were also present in the many patients. Caregivers' interviews revealed that the majority of mothers did not receive folate supplementation prior to pregnancy , the majority of caregivers did not have a clear understanding of their child's condition when they were diagnosed and referred to KNH, and that caregivers also complained of delayed neurosurgical intervention at the hospital.
"

Conclusion: Encephaloceles are rare, however , they have a major impact on caregivers' mental health, this is often brought on by delays in diagnosis and management, high costs of care, a lack of social support, poor quality of life of the affected infant and a lack of knowledge about neural tube defects.



Name: Gregory Paul Kolovich

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Title of Abstract Micro C - A Novel Fluoroscopic Device that Improves Surgical Efficiency and Safety

Introduction: Large fluoroscopic C-arms are cumbersome and excessive for the distal extremity, where relevant anatomy is smaller and more moveable by the surgeon. A novel apparatus that combines a lightweight, hand-held x-ray emitter with a movable digital x-ray sensor has been created called the Micro C.

Methods We hypothesized that the Micro C would provide quicker, easier access to fluoroscopic images and a significant reduction in radiation exposures to the patient and surgeon. Aim 1 examines whether the Micro C delivers x-rays faster and more efficiently than the standard intraoperative fluoroscopy device – the Mini C. Aim 2 compares radiation exposures between the Micro C device and standard intraoperative fluoroscopy to determine the reduced magnitude of radiation exposure such a hand-held device has on both the patient and surgeon.

Results Total intraoperative time usage of the Micro C device was compared to a Mini C arm in a series of independent distal radius fracture surgical fixations. Total usage time was reduced an average of 50% in cases where Micro C was used intraoperatively. In laboratory testing, the Micro C showed an effective radiation dose 80% lower than a comparable Mini C arm. Micro C emits an effective dose of 6.11 mSv/hr of radiation. The effective dose of an analog Mini C arm is 650 mSv/hr and a digital Mini C arm is 510 mSv/hr.

Conclusion: "The Micro C device offers greater operative efficiency leading to reduced fixed costs, greater diagnostic accuracy, and a safer radiation exposure profile than standard fluoroscopic units.
"



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Title of Abstract A triplicated bladder with complete diphallia; rare variant of duplicate exstrophy

Introduction: Exstrophy variants are well described urologic anomalies. They are characterized by atypical anatomical and physical findings than those found in patients with classic bladder exstrophy and epispadias malformation. The combination of these anomalies with duplicated bladder and phallus is a rare occurrence.

Methods case report

Results one day old male neonate who was born at term was found to have lower abdominal wall defect and open bladder plate with no visible ureteral orifices. There were two completely separate phalluses with penopubic epispadias and urethral orifices with urine output. He was prepared and operated with intra operative finding of complete bladder duplication in the sagittal plane each having its own ureter. The open bladder plate which was dry with no connection with the ureters and also the urethra was excised. The pubic symphysis was approximated and abdominal wall was closed. He had uneventful post-operative course

Conclusion: The occurrence of bladder duplication along with a third bladder with features of exstrophy and complete diphallia is exceptionally rare urologic anomaly. As a number of variations are possible in this spectrum, the management of neonates with this anomaly should be individualized.



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Title of Abstract Participatory Approach to Development of E-learning Programmes for Surgical Workforce in Sub-Saharan Africa

Introduction: Inadequate surgical workforce is one of the reasons for lack of access to surgical care in low-resource settings. To contribute to scaling up that workforce, organisations from high-income countries partnered with local training partners to collaboratively create context specific e-learning programmes for paediatric surgeons and perioperative nurses.

Methods "The objective of the study is to present the process of participatory curriculum development, analyse usage and identify strengths and weaknesses of the programmes using trainees' feedback. Data relating to trainee usage is collated in collaboration with colleges via their Moodle platforms. Trainees' feedback is collected both via Moodle platform and by conducting an evaluation survey. "

Results "Pan-African Paediatric Surgery E-Learning Programme is in its second year of usage and the trainee engagement is satisfactory with more COSECSA than WACS trainees engaging with the weekly modules. Trainees' feedback via Moodle platform is largely positive while the conducted survey has identified some of the motivations and barriers for using the programme. Perioperative Nursing E-learning Foundational Programme opened for trainees at the beginning of the year and is designed to support continuing professional development of in-service perioperative nurses and to provide foundational knowledge for pre-service trainees. Preliminary usage and feedback are satisfactory. "

Conclusion: The data shows that programmes are well integrated with needs of local training partners and welcomed by both trainees and trainers. They are models of participatory curriculum development where partners collaboratively decide on the structure of the academic programme. There is potential to grow learning communities across Sub-Saharan Africa.



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Title of Abstract Development of a free online training course on Biomedical Equipment: Repairing and Maintaining Biomedical Devices

Introduction: A main driver for unavailability of medical devices in the global south is the lack of trained biomedical equipment technicians. Therefore, in a close collaboration between Delft University of Technology, and Nick Simons Institute in Nepal, we developed a freely accessible online training course on a selection of medical devices.

Methods A Massive Open Online Course (MOOC) was developed on the working principles, maintenance and troubleshooting of 18 medical devices, covering diagnostic, therapeutic and analytical devices. The course had a mixture of reading, videos, background material, discussion boards, and quizzes. The complete course is freely accessible, but a USD 50 verified track is offered to receive a certificate on completion. Discounts up to 95% are available for learners applying for subsidy. Access to the course can be obtained through a search on EdX website, or through this direct link: <https://www.edx.org/course/biomedical-equipment-technician-training-maintenance-repair> .

Results The first run of the MOOC had 1609 enlisted students from 137 countries across the world during its 8 weeks of running. The second run is open since May 18th 2022 and had already 3000 learners enrolled (287 verified) from 154 countries. From all learners, 19% had high school or lower degree, 62% a college degree, and 17% an advanced degree, and 70.6/29.4% was male/female. Future runs will be launched every year. Student feedback is very positive. More than 95% s found the course unique, interesting and useful. The difficulty was graded about right by 79%.

Conclusion: Our free online course so far successfully reached 4595 biomedical enthusiasts in 154 countries across the world, including the global south. The high number of learner enrollment indicates a clear need for this course which aims to increase the availability of working medical equipment in hospitals.



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Title of Abstract Innovations for global surgery – Overview from Delft University of Technology

Introduction: For widespread implementation of safe surgical care, appropriately adapted technical solutions are needed. In the past 5 years we addressed the engineering challenges to develop versatile, affordable, reusable, reliable and safe surgical equipment needed during surgical procedures in low-income countries.

Methods Together with PhD and master students from our Biomechanical Engineering department of the Delft University of Technology and with support from the Dutch Organisation for Scientific Research, the University Fund Delft, Delft Global Initiative, INF Green Pastures Hospital and Rehabilitation Centre, and Nick Simon Institute Nepal, several affordable and reusable prototypes and support systems have been developed and tested in different hospital settings. Different design methods, such as the Bare Minimum Design and Component Interaction Analysis were created to develop advanced surgical devices for challenging environments.

Results Examples of prototypes of reusable and affordable devices under development that will be presented are, a video laryngoscope, a vacuum delivery device, steerable MIS instruments, special trocars for rural laparoscopy, disinfectant for laparoscopic instruments, a mould to shape ear implants, a negative pressure wound therapy device, an autonomic innervation assessment device, and a needle destroyer. Other types of innovation are training phantoms e.g. for vesicovaginal fistula repair, calibration devices, a MOOC (Free Massive Open Online Course) to educate to maintain and repair medical devices, and a hospital medical technology management system that are suitable for smaller hospitals in LMICs.

Conclusion: Our work shows that affordable high quality reusable medical devices can be developed. Hence, we need to stimulate collaboration between global surgeons and engineers to work together in this challenging field, because lack of working equipment is one of the essential factors hampering widespread implementation of safe global surgical care.



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Title of Abstract A training phantom for vesicovaginal fistula repair

Introduction: It is estimated that a total of 3 million women suffer from vesicovaginal fistulas worldwide. The most common cause is obstructed labor. Aim of this study is to develop a phantom model which can be used to train doctors in the treatment of simple fistulas by the transvaginal approach.

Methods The phantom consists of 3D printed PLA parts and silicone parts. The framework and the molds for the organs were 3D printed with PLA, and silicone was poured into the molds. Tensile tests were performed to determine which silicone material best mimicked the tissue elastic and rupture behavior. Different combinations of Dragon Skin 10/silicone oil/slacker were investigated to make the organs, and glue was used to connect the organs. The fistula had a thickened edge representing the fibrous ring. A clinical validation test was performed by two gynaecologists to validate the phantom, including a water-tightness test.

Results For vaginal tissue, Dragon Skin10 with 10% silicone worked best. The use of Dragon Skin10 with Slacker resulted in watertight suturing of the bladder. The cervix, the vulva, and a plate that closes off the bladder, were all made with Dragon Skin10 without an additive, and the urethra was made of natural rubber. Clinical validations showed that all procedural steps; excising, dissection and suturing of tissue, could be performed on the phantom model without problems, including watertight suturing. The material costs for the permanent parts of the phantom are approximately 5\$ (excluding labor costs) and for the replaceable parts approximately 5\$.

Conclusion: A training phantom for fistula repair was designed to train all procedural steps of vesicovaginal fistula repair. Since 3D printing is often available in LMICs, it is possible to produce the molds and organs locally and keep the costs of the production and the use of the training phantom low.



Name: Job Mwaniki

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Title of Abstract Clinical audit of WHO safety check list at Embu Level 5 hospital

Introduction: Low and middle-income countries have a lack of enforcement of standard operating procedures, and guidelines. Poor communication has been demonstrated to contribute to up to 70% of medical errors in studies. Implementing the surgical safety checklist has been shown to improve surgical outcomes.

Methods We plan a prospective review of the utilization of the WHO surgical checklist across three two-week periods between August 2022 to December 2022. Baseline data would be collected in the 1st survey. A survey tool would monitor if there were no use, partial use, or full use of the WHO surgical safety checklist during any procedure. .

Results A total of 102 cases were recorded between 31st August 2022 and 31st December 2023. They comprised both major and minor general surgery cases. Initial data revealed that out of these only 20.79% of the cases recorded the WHO checklist was utilised and 79.21% the tool was not utilised. The survey would be followed by a qualitative interview of a minimum of 5 staff from each cadre (anaesthesia, nursing, and surgeons) to determine knowledge and attitudes towards the WHO surgical safety checklist.

Conclusion: Staff training and introduction of a champion would be implemented as an intervention, followed by the second survey within a month of the intervention. A final survey would be conducted after one month to assess the sustainability of changes in utilization of the WHO safety checklist.



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Title of Abstract The practice of surgery in 2050: a scoping review of artificial intelligence.

Introduction: The recent explosion in artificial intelligence (AI) has led to major changes in the almost every industry globally. The use of this disruptive technology in surgery is not new, and one must wonder what our practice will look like in 2050.

Methods We performed a limited scoping review of the internet and peer-reviewed journals for articles describing the use of artificial intelligence in surgery.

Results "We found references and reviews on the use of AI in surgical education, the treatment of surgical pathology in both children and adults, anesthesia, and post-operative care, including follow-up. The use of AI was particularly useful in reducing the time taken to diagnose and treat patients; this provided time for surgeons to spend more time with patients.
The multiple ethical dilemmas introduced by the inclusion of AI in patient care form an important component of the development of these technologies. "

Conclusion: Individualizing patient treatment is a core objective of medicine, but has remained elusive, and expensive. The recent explosion in the use of AI will disrupt the surgical discipline as we know it. Robots will perform surgery with skill and precision, bioprinting will overcome the immunological difficulties faced in organ transplant.



Name: KAREN MBAABU

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Title of Abstract A NEW VENTURE: JOINT PLASTICS AND BREAST SPECIALTY CLINICS FOR RECONSTRUCTIVE BREAST SURGERIES

Introduction: "Oncoplastic breast surgery is a relatively new field in Kenya. Many of the techniques used by oncoplastic breast surgeons originate from plastic surgery. MDT working offers the best outcomes for breast cancer patients.

"

Methods We describe our experience to overcome the above challenges, we present our case series of patients managed jointly as a fellowship trained oncoplastic breast surgeon and a fellowship trained microvascular plastic surgeon working in a tertiary urban private hospital. We present data describing patient population, patient selection criteria, workflow, data tools, results and patient reported outcomes (PROMS).

Results The most common operation performed was therapeutic mastoplasty for gigantomastia followed by symmetrizing reduction for breast cancer therapeutic mastoplasty. There were 3 patients who underwent reconstruction with local perforator flaps. The average number of outpatient consultations was 4. The average operating time was 180min for bilateral cases. Patient feedback indicated satisfaction with the joint approach.

Conclusion: "Collaborative working is essential in ensuring best outcomes for breast cancer patients. As work continues improving the surgeon /patient population ratios, joint clinics between various subspecialties offer a feasible and scalable option to increase number of complex breast surgeries available to our Kenyan breast cancer patients.

"



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Title of Abstract IMPROVED CLASSIFICATION OF THE DIGASTRIC MUSCLE & ITS IMPLICATION BASED ON A SELECTED KENYAN POPULATION

Introduction: The digastric muscle is an important surgical landmark whose anatomy exhibits diverse variations that may lead to iatrogenic injuries to neurovascular structures that are intimately related to the muscle bellies during surgery. Thus, this paper provides a sound understanding of these variations and describes new variants not encountered previously.

Methods A total of 41 bilateral neck dissections were performed whereby morphologic observations and morphometric measurements were carried out to characterize and classify various presentations of the digastric muscle. A digital vernier caliper was used to measure the morphometric parameters. Descriptive statistics such as mean and standard deviation were calculated and analyzed using SPSS (IBM version 27). Depending on the normality of the data, a Kruskal-Wallis test was performed for morphologic data and a t-test was performed for morphometric data to assess for significant differences between the right and the left sides.

Results No missing bellies of the digastric muscle. Accessory muscles were seen in 68.3%. The mean length and width of both bellies and IT did not differ with side and gender. Morphologically, the most prevalent type of anterior belly was Type I followed by Type II, Type III, Type V and Type IV. In the posterior belly, the majority was Type I followed by Type II. Four variations regarding the relationship of the stylohyoid with the IT were observed: the piercing type (65.9%), the lateral type (26.8%), the medial type (4.9%), and the inferior type (2.4%).

Conclusion: This study establishes baseline morphologic and morphometric data of the digastric muscle in the Kenyan population, following which an improved classification is proposed. It highlights different variations that are of clinical relevance during diagnosis and surgical procedures.



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Title of Abstract ANATOMICAL PATTERNS OF PRIMARY AND SECONDARY CLEFT LIP AND PALATE DEFORMITIES IN A SELECTED KENYAN POPULATION

Introduction: Cleft lip and palate deformities are considered one of the most common birth defects of the head and neck that pose significant medical, psychosocial, and financial burdens on the affected individuals and families, especially in low-income communities. The anatomical patterns and their distribution in Kenya remain largely unknown.

Methods A retrospective cross-sectional analysis of cleft lip and palate cases managed during the surgical outreach programs undertaken by the Belarisu Foundation in Kenya between 2018 to 2022. Ages ranged between 1 month to 78 years. All data were analyzed using SPSS version 29.0 using which all descriptive statistics including means, ranges, frequencies, and percentages were calculated. Furthermore, a comparative analysis between various age groups and gender was performed to elucidate the patterns and distribution of clefts of the lip and palate in the Kenyan population.

Results A total of 647 cases were managed over this period. Primary defects constituted 561 cases (86.71%) while the remainder were secondary defects (n=72, 11.13%), Tessier clefts (n=8, 1.24%), and midline cleft lips (n=6, 0.93%). Of the primary defects, isolated cleft lip contributed to 236 cases (36.47%), isolated cleft palate contributed to 159 cases (24.57%), while combined cleft lip and palate contributed to 166 cases (25.66%). With the exception of midline clefts, males were generally affected more than females. The mean age of repair was higher in Kenya compared to literature.

Conclusion: Patterns of cleft lip and palate are crucial in estimation of the burden of disease as well as the availability of care in low-resource settings. Such information can aid in formulation of a birth-defect registry in order to address gaps in the accessibility of healthcare in Kenya.



Name: Linda Thure

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Title of Abstract Time of Day Impacts Surgical Site Infection in Emergency Gastrointestinal Surgery

Introduction: Surgical site infections (SSIs) are a substantial cause of morbidity, mortality and increased healthcare costs. Various factors contribute to SSIs with time of operation previously associated with SSIs. Therefore, we aimed to examine the impact of case timing (weekday compared to weeknight and weekends) on SSIs in our setting.

Methods We investigated the impact of time of day on (SSIs) in a previously described cohort undergoing emergency gastrointestinal operations. We excluded laparoscopic cases (N=28) and mortality (N=49) to limit bias. The timing exposure was defined with the operation occurring either during a weekday (8:00AM to 5:00PM) or non-peak hours of weeknights and weekends. A logistic regression model was created for the SSI outcome controlling for wound classification and surgical risk using the Africa Surgical Outcomes Study Risk Score. Sensitivity analyses were performed including other potential confounders: surgeon number, illness duration, prior facility, and procedure duration.

Results 400 patients were reviewed with 136 weekday and 264 off-peak cases. Patient demographics and characteristics were similar between weekday and off-peak cases. 58 (14.5%) patients developed SSI with an increase during weekdays (19.9%) compared to off-peak cases (11.7%) (p=0.029). When adjusting for wound classification and risk score, the odds of developing SSI were 2.0 times (95CI:1.1-3.6; p=0.021) greater during weekday cases than off-peak cases. None of the variables assessed in sensitivity analyses changed the finding that daytime operations resulted in higher odds of SSI.

Conclusion: "Weekday cases had more SSIs compared to off-peak cases, even when controlling for potential confounding factors. Further investigation into other potential differences, specific to these time periods, would be prudent to elucidate what factors contribute to SSIs at our institution."
"



Name: Mathenge Nduhiu

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Title of Abstract Surgical suture characteristics and conformity to established standards in Nyeri Town. A suture quality market survey.

Introduction: Due to their long history of use, sutures are not subject to the rigorous pre-market regulatory processes new medical devices undergo. During normal working we noted differences in suture characteristics that we postulate could have a major impact on surgical outcomes. The study aims to document these variations.

Methods This was a post market cross sectional survey with a laboratory study. Major hospitals within Nyeri were requested to give samples from sutures in common use in their theatres. The study focused on sutures used in gut anastomosis. Theatre staff were asked to submit what was used in their theatres. The commonest sizes submitted were 2/0, 3/0, and 4/0. Sutures were categorised in terms of brands. The selected sutures were subjected to standard physical tests as established by the United States Pharmacopoeia (USP), and the obtained measurements compared with USP standards.

Results This is an ongoing study to be completed by end of February 2023. Preliminary results show significant variations in needle diameter/suture diameter ratios compared to the standard for some of the brands. Suture strength and needle attachments compared favourably.

Conclusion: The preliminary results show significant differences in needle diameter to suture diameter ratios. The effect of this will be followed up with a further study in a wet lab set-up as a surrogate for potential clinical impacts particularly for intestinal anastomotic integrity and risk of anastomotic leakage.



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Title of Abstract extensive anogenital warts in a HIV Patient with remarkable response to combined therapy

Introduction: Anogenital warts can range from a single curious lesion to extensive lesions with significant morbidity causing serious disruptions to a person's daily activities and social interactions. We present a case of a 17 yr old HIV positive male on HAART from birth, with extensive anogenital warts.

Methods Counselling for ARV adherence was done, and planned for excision. First excision the perianal warts were so extensive the decision was made to excise in a cloverleaf pattern to reduce risk of anal stenosis in case of scarring. Other warts were excised except the urethral meatal. One month after excision the warts had re-grown and with consultations with a urologist and gynaecologist the decision was made to re-excise, give anti-HPV vaccination and use imiquimod immunotherapy. Re-excision was done a month later and another two months after.

Results With the first excision the warts recurred aggressively. Following the institution of combined therapy the recurrence reduced and after the third excision there was no recurrence. The entire treatment period was 6 months.

Conclusion: The case demonstrates anogenital warts can cause serious morbidity and social disruption especially for the immunosuppressed. Treatment is challenging but viral load suppression, surgical, and immunotherapy promises excellent results in the short term.



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Title of Abstract STANDARDIZATION OF CLINICAL CARE IN SUBSAHARAN AFRICA;
A CASE FOR HYPOSPADIAS SURGERY

Introduction: Hypospadias is the second most common congenital urologic anomaly in boys. Corrective surgery has a complication rate ranging from 5-60%, related to multiple factors. Many strategies have been used to improve outcomes worldwide. To address this, a standardized protocol was developed and implemented.

Methods The study was a retrospective review with pre- and post-intervention phases. The intervention was a protocol composed of preoperative, intraoperative and post operative standardized interventions. The protocol was thought and implemented. The preintervention phase consisted of data from the six years prior to implementation (n1). The comparison group was comprised of patients in the two years after the protocol was instituted (n2). A total of 424 operations were included in the study. Of these 284 were in the pre-intervention phase and 140 in the post-intervention phase (n2). Data was analysed using STATA software.

Results Mean age in years was 4.1 ± 3.9 [0 – 23.9yrs] in n1 and 4.7 ± 4.55 [0 – 19.4 yrs], $P=0.13$, respectively. 89% (252/281) were phenotypically male; and 29 (10%) had DSD (differences of sexual development). The overall complication rate was 51.4% for n1 and 25% for n 2 ($p=0.001$). Among the complications, urethrocutaneous fistula (UCF) was the most common (27.3% Vs 10.2 %, $p=0.001$). There was a cost reduction of 8684 KES [(CI:5335,12034 KES), $p=0.001$] in the post-intervention phase compared.

Conclusion: "The use of a standardized protocol in hypospadias care significantly reduces the post operative complication rate and cost for the patient."
"



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**Title of
Abstract** Cost-benefit analysis of the implementation of routine instrument and glove change to reduce surgical site infections in emergency abdominal surgery.

Introduction: There is a significant burden of surgical site infections globally. SSIs increase the overall cost of surgery. The recently published ChEETAh trial demonstrated the impact of routine change of gloves and instruments for wound closure on reducing SSIs. We aim to provide a cost-benefit analysis of ChEETAh trial implementation

Methods We performed a hypothetical cost-benefit analysis for the introduction of routine instrument and glove change for closure to reduce surgical site infections. Using a previously described cohort of patients who underwent emergency gastrointestinal operations at our institution accounting for total costs summed from variable and fixed costs, we examined the theoretical benefit from applying the findings of a randomized, controlled trial. Costs necessary for implementation were estimated from prior reports and current prices. For appropriate comparisons, we converted all currency to international dollars (\$) using purchasing power parities with the base year of 2017 and adjusted for inflation.

Results In the cohort, 484 patients underwent gastrointestinal surgery, 63 developed SSI. Their costs were 4307 I\$PPP from 2563 I\$PPP without SSI, an 1744 I\$PPP increase with each SSI. Cheetah trial results reduced SSI by 13%, theoretically reducing our cohort to 55 patients (11%) with SSI, saving 10942 I\$PPP. Necessary costs for increasing instruments and gloves would be 10.32-18.46 I\$PPP per case, or 4994-8932 I\$PPP. The average estimated cost-benefit ratio is 2.0 and each case can save an estimated 14 I\$PPP (580 KSH) with routine implementation.

Conclusion: Our findings demonstrate a benefit-to-cost ratio, indicating a positive return of investment for implementing the ChEETAh trial. These findings could inform the integration of the routine change of gloves and instruments to the SSI prevention bundle thus mitigating against the astronomical cost of managing a post-operative SSI.



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Title of Abstract INDICATIONS AND OUTCOMES OF OPEN ABDOMEN IN ADULTS AT A KENYAN TERTIARY HOSPITAL

Introduction: The open abdomen (OA) is a time-honored technique employed by surgeons when dealing with abdominal catastrophes. The objective of this study was to determine the indications and early outcomes of open abdomen

Methods This was a retrospective descriptive study of adults managed with open abdomen over a 5-year period (2016-2021). A predesigned questionnaire was used to collect socio-demographic and clinical data of the subjects. The associations were tested using Chi-square with a p-value of <0.05 being a significant association factor.

Results The majority (60%) of participants in this study were male and presented emergently with either abdominal sepsis (60%) or abdominal trauma (24%). Fascial closure was attained in less than 50% of patients. On average, patients had 4.4 re-interventions after the index operation with average length of hospital stay of 49.1 days. The in-hospital mortality in this cohort was 24%.

Conclusion: "The major indications of open abdomen were abdominal trauma and sepsis. OA continues to be associated with high morbidity, longer hospital stays and significant in-hospital mortality."
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Title of Abstract Pattern of Presentation, Management and Outcome of Colorectal Cancer in Kenya: A Multi-Site Audit

Introduction: "Colorectal cancer is a frequent oncologic source of mortality globally with a gradual increase in its incidence observed in adults aged less than 50 years. Some countries have thus adopted an earlier age of commencement of screening. There is paucity of comprehensive data in Kenya of our colorectal cancer patterns."

Methods We conducted a retrospective cross-sectional review of patient medical records with histologically confirmed colorectal cancer, as a census, across 4 public tertiary hospitals in Kenya. ICD 10 diagnostic codes for colon, rectosigmoid and rectal cancer were used to electronically identify and retrieve files for patients who were diagnosed with colorectal cancer between 1st January 2016 & 1st January 2020. Thereafter, data was retrieved from the patient files and entered directly into REDCap™ software. Statistical analysis of the data collected was done on SPSS software version 21.

Results A total of 994 patient records were included in the study, with 45.3% of our study population aged less than 50 years and almost one-third aged less than 40 years. Majority of our patients (95%) were symptomatic on presentation. We observed an average of 65 days from diagnosis to initiation of treatment, with an overall cumulative survival of 49% at 60 days, 12% at 120 days, and 4% at 180 days from diagnosis to treatment. There was a 1- year mortality rate of 14% which had significant association with cancer stage at presentation, age and duration to treatment.

Conclusion: The age at diagnosis of colorectal cancer in Kenya is decreasing similar to the trend noted internationally. Prognosis of colorectal cancer in Kenya is negatively affected by age, longer duration to treatment, increase in tumour depth, lymph node involvement and metastatic spread.



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Title of Abstract Lumbar Hernia: Case Report

Introduction: Lumbar hernias are a rare form of abdominal wall hernias which can be easily misdiagnosed or left untreated. We present our case of a spontaneous lumbar hernia that was repaired in an open technique with a mesh.

Methods "A 71 year old man was seen at our clinic with a right lumbar swelling and pain for six weeks which gradually increased in size. The pain was dull, mild and non-radiating. He's a chronic smoker with 53 pack years with a chronic cough. He has no prior history of trauma, flank surgery, constipation, urinary straining or lifting heavy loads.
Examination revealed a right lumbar mass (8cm by 6cm) which was soft, non-tender, reducible with a positive cough impulse. Bowel sounds were heard over the swelling.
Abdominal ultrasound confirmed the diagnosis of a right lumbar reducible hernia."

Results "The patient was put in a left lateral position. A subcostal incision was made and the oblique muscles were split to reveal a hernia sac in the superior lumbar triangle containing preperitoneal fat attached to the transversus abdominis and fascia transversalis.
Separation was done and the hernia sac was entirely reduced from the defect which was then closed primarily. A retro-muscular plane was dissected and a polypropylene mesh (15cm by 10cm) placed in this plane. The wound was then closed in layers. The immediate post operative period was uneventful with symptom resolution at two-month follow up."

Conclusion: Lumbar hernias are usually asymptomatic, otherwise may present with a flank swelling with pain. High index of suspicion will help in diagnosis and repair should be planned with imaging. Repair is surgical and should be done laparoscopically or open depending on expertise, resources and defect size.



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Title of Abstract Gastric Outlet Obstruction Following Acid Ingestion

Introduction: Caustic ingestion is a rare cause of Gastric Outlet Obstruction. Frequently attributed to alkaline agents, however acidic agents are now common in the developing world due to easy availability. We present our case of a suicidal ingestion of Car Battery Acid that resulted in isolated Gastric Outlet Obstruction.

Methods A 25 year old Male with suicidal tendencies presented to our facility with a two week history of post-prandial bilious vomiting, epigastric pain, constipation and unquantifiable weight loss after intentionally ingesting Car Battery Acid one month prior. On examination, he was wasted with a scaphoid abdomen. OGD showed isolated gastritis and pyloric obstruction with no esophageal involvement. An exploratory laparotomy was done and revealed pyloric and duodenal thickening with 3 separate jejunal strictures. A gastrojejunostomy was conducted and patient discharged to continue follow up at the psychiatry clinic for Depressive Mood Disorder.

Results Isolated GOO has been reported mostly following acid ingestion compared to Alkaline agents. Acids are less viscous and thus have a faster transit time to the stomach causing antral spasms and pooling of the agent at this location causes more damage. Typically occurs two weeks to one month following ingestion, the condition can be diagnosed via OGD and Abdominal CT scan. Surgical options depend on intraoperative findings and include pyloroplasty, Bilroth 1 and Gastrojejunostomy. Endoscopic Balloon Dilatation can also be done for temporary relief.

Conclusion: It is important to note the possibility of caustic ingestion causing GOO and specifically acids causing Isolated GOO. A good history and examination including psychiatric assessment can be helpful in diagnosing the condition.



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Title of Abstract Pediatric Central Venous Catheters: One Year Experience in a Rural Kenyan Referral Hospital

Introduction: Pediatric central venous catheter placement is becoming common in low- and middle-income countries. However, there are few reports of indications and complications of CVCs in these countries, including central line associated bloodstream infection (CLABSI) rates. We analyzed indications and complications, including the CLABSI rate, at our institution.

Methods We performed a single institution prospective cohort study of patients less than 18 years old in whom a CVC was placed from July 1, 2021 to June 30, 2022 at a tertiary referral hospital in East Africa. Patient demographics, catheter placement specifications, CVC uses and reason for removal were collected via REDCap survey. Additional chart review was performed after patient discharge or death. Blood cultures were performed as clinically indicated. CLABSI was defined by US CDC criteria and all positive blood cultures were reviewed. The data were analyzed in STATA using Chi-squared, Fisher's exact and Mann-Whitney tests.

Results Total of 34 CVCs were inserted in 28 patients, the majority in the first 28 days of life. The most common indication was long-term antibiotic use, followed by TPN administration. Median catheter dwell time was 11 days (range 1-24). 8 CLABSI events occurred in a total of 378 catheter-days, for rate of 21.2 per 1,000 catheter-days. Median catheter dwell time was longer in those with CLABSI vs without (13.5 vs 11 days, $p=0.03$). TPN and central line dwell time were two variables associated with mortality ($P=0.002$, $P=0.008$ respectively).

Conclusion: Our CLABSI is higher than reported in other low-middle income countries. The risk of mortality is higher in patients who receive TPN and had a longer catheter dwell time. A larger multi-institutional study is needed to elucidate other predictors of mortality and factors that contribute to CLABSI.



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Title of Abstract Chronic Venous Insufficiency and Venous leg Ulcers:- Current innovations and advances in management.

Introduction: Chronic venous disease and venous leg ulcers has a great impact on patients quality of life associated with considerable health care costs. Management of varicose veins and venous leg ulcers has progressed in the past 2 decades with dramatic changes in treatment with the introduction of percutaneous endovenous ablation techniques.

Methods This is an ongoing observational study, conducted at a single private healthcare facility in Nairobi. Data has been prospectively collected over the last three months and includes patient demographics, diagnosis at presentation, interventions performed.

Results Over the last 3 months we have treated 20 patients with chronic venous disease at a single centre between October to December 2022. Thirteen patients were female (65%) and 7 (35%) were male. Eleven patients(55%) had varicose veins associated with skin changes classified as C3 whilst 9 patients(45%) had an active or recently healed venous leg ulcer C5/6 as per the CEAP classification. All patients had an intervention with 85% having radiofrequency ablation and 15% had foam sclerotherapy. 3 of the patients had combined RFA and FS. 80% of the procedures were done under local anaesthesia.

Conclusion: Treatment of superficial vein reflux has been shown to greatly decrease recurrence of venous leg ulcers, with the current advances in endovenous surgery and the outcome of the landmark trial of early endovenous ablation in venous ulceration, endovenous ablation techniques should be widely used in management of chronic venous disease.



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Title of Abstract A snap shot survey to establish the Vascular disease burden in Nairobi, Kenya.

Introduction: Sub-Saharan Africa is facing a transition due to progressive urbanisation. There's an increase in cardiovascular disease and associated risk factors recently. Burden of vascular diseases in Kenya remains poorly defined. The aim of this preliminary study was to assess the volume and nature of vascular disease in Nairobi.

Methods This was an observational study, conducted as a snapshot prospective audit across 3 centres in Nairobi, spanning both government and fee paying sectors. Data was prospectively collected over three months and included patient demographics, diagnosis at presentation, interventions if performed, reasons for no intervention if applicable, and funding of care.

Results Ninety patients who presented with a vascular diagnosis to 3 health centres between January-June 2022. Fifty patients were female (55%) and 40 (45%) were male. Vascular diagnoses were infrarenal aortic aneurysm 25 patients (28%) chronic limb threatening ischaemia 12 patients(13%) carotid body tumour 10 patients(11%), traumatic vascular injury 11 patients(12%), acute limb ischemia 3(3%), chronic venous disease 11 patients(12%), vascular access related complications 4(4%), aortic dissections 2 patients, chronic iliofemoral DVT 2 patients, lymphoedema 2 patients, other vascular conditions 8 patients. Seventy patients (77%) were offered an intervention the remaining 23% were managed conservatively.

Conclusion: This preliminary data suggests a complex varied burden of vascular disease presenting to hospitals in Nairobi, 77% of patients benefitted from surgical intervention. Further work is needed to assess the pattern of disease in detail and understand the training and resources to provide comprehensive vascular surgery care in this region.



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Title of Abstract HISTOPATHOLOGICAL PATTERNS OF CERVICAL CANCER AMONG FEMALES PRESENTING TO MAKERERE UNIVERSITY PATHOLOGY CORE REFERENCE LABORATORY. A 5-YEAR REVIEW

Introduction: Cervical cancer global burden is heavy in LMICs. It is the leading cause of cancer morbidity and mortality in Ugandan women (4607 deaths in 2020). Histopathological pattern of cervical cancer is a major determinant in the management but there is paucity of data. The study aimed at determining this.

Methods A retrospective cross-sectional study employing the use of quantitative methods of data collection was conducted within Makerere university pathology core reference laboratory. Information on patients with cervical cancer diagnosis by histology from 2017-2021 was obtained and analyzed using SPSS version 18.

Results A total of 120 patients from 2017-2021 were recruited. The mean age was 47.5(SD 13.1), the youngest and oldest patients were 21 and 80 years respectively. Cervical cancer was more prevalent in women aged between 35 to 54 years 77(64.2%) and women with HIV 26(21.7%). Squamous cell carcinoma presents in 102(85%) patients was the most prevalent pattern of cervical cancer. This was followed by adenocarcinoma 7(5.8%) and adenosquamous 5(4.2%).

Conclusion: Cervical cancer is predominant among women with HIV and women aged 35-55 years. Squamous cell carcinoma is the most prevalent pattern of cervical cancer in Uganda present in every 9 out 10 patients. Routine screening of all HIV positive women and women aged 35 and above is recommended



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Title of Abstract VARIANT ANATOMY OF THE EXTRAHEPATIC BILIARY SYSTEM AND ITS BLOOD SUPPLY AMONG BLACK KENYANS

Introduction: Anatomical variations of the human body including the extra hepatic biliary system exist across various individuals. Understanding the variant anatomy of the extrahepatic biliary system and its blood supply should aid surgeons in avoiding iatrogenic injuries. We described the anatomic variation among Kenyans.

Methods This was a cross-sectional study conducted at Moi University's Anatomy Laboratories among 42 adult cadaveric specimens. Specimen dissections were conducted as per the fifteenth edition of Cunningham's manual of Practical Anatomy. The variant anatomy data collected were filled in a structured data collection form, analyzed and presented using descriptive statistics.

Results 66.7% of the cadavers had the confluence of the right and the left hepatic duct outside the liver. There were no cholecystohepatic ducts in this study. 71.4% had a normal pattern of the extrahepatic supply. Normal origin of the right hepatic artery from the common hepatic artery was seen in 81% while 19% had an aberrant origin from the superior mesenteric artery. Right hepatic artery was anterior to common hepatic duct and common bile duct in 26.2% the cadavers. 43% had a caterpillar hump of the right hepatic artery occupying the Calot's triangle.

Conclusion: The study determined the existence of surgically important variant anatomy of the extrahepatic biliary system and its blood supply among black Kenyans. The caterpillar hump of the right hepatic artery occupying the Calot's triangle was the most frequent variation.



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Title of Abstract Is it safe to operate in a treatment room? - A review of the evidence comparing surgical site infection rates in treatment rooms versus the operating room

Introduction: It is cheaper and more efficient to operate under WALANT in a clinic-based treatment room (TR) than it is an operating theatre (OT), but is it safe? Over a 10 year period, I have examined and challenged the evidence for surgical site infection rates (SSIs) in these settings.

Methods An initial systematic review (SR) published in 2016 looked at 1200 abstracts and 46 full-text articles. Six were selected for final review. The BSSH invited an update to this systematic review in 2021 ahead of producing UK national guidelines for what procedures are safe to perform outside of the OT setting. We examined a further 606 abstracts, 95 full-text articles and 9 studies were included. Both SRs follow PRISMA guidelines with 3 independent reviewers. I have also performed a randomised, controlled audit of SSIs in my TR versus OT over 3 years keeping all other variables constant.

Results Poor quality evidence and heterogeneity of study design was common in both SRs, but improved with time. Documentation of sterility measures for each study permitted more meaningful analysis. Most studies examined soft tissue procedures, or K-wiring of fractures, rather than complex bony work. The mean SSI rates over all studies, with over 20,000 patients, was 0.74%. This is comparable to historic SSI rates in OTs. Few comparative studies have been published to date. A 3-year RCT of my TR versus OT shows no significant difference in SSI. Consequences of superficial infection in the hand are minimal.

Conclusion: Surgeons should consider performing surgery in TRs to increase efficiency, save costs, reduce waste and carbon foot-print and free up theatre and anaesthetic time for others. The safety profile appears to be the same in TR versus OT. UK guidelines published in June 2022 highlight which procedures are safe.



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Title of Abstract Bilateral fracture of anterior tibial tuberosity with patellar tendon rupture in an adolescent patient: case report

Introduction: Anterior tibial tuberosity (ATT) fracture-avulsion is an uncommon injury, usually seen in adolescent patients. A concomitant patellar rupture is even more scarcely encountered.

Methods Case Report. To the authors knowledge, no other cases of bilateral presentation of both lesions have been reported so far in the literature.

Results We report the case of a 14-year-old male patient who suffered a bilateral anterior tuberosity fracture with concomitant bilateral patellar tendon rupture. Both lesions were treated in a one-stage repair surgery performing an open reduction and internal fixation of the tibial tuberosity with a cannulated cortical screw and a primary tendon suture following Krakow technique.

Conclusion: ATT fractures with concomitant patellar tendon tear have a very low incidence and a high clinical suspicion is required. A viable option would be the use of ultrasound imaging to avoid undiagnosed concomitant patellar tendon tears. In our case, a prompt and adequate surgical technique allowed for good clinical results.



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Title of Abstract Complex distal femoral fractures of the elderly: "One-shot surgery"

Introduction: Complex distal femoral fracture (DFF) in the elderly patient is an infrequent but challenging scenario. In these fragile patients, DFF is associated with a high rate of medical complications and mortality. Its optimum treatment remains controversial.

Methods Here, we describe three cases of elderly and fragile patients with multiple comorbidities who suffered a complex DFF after low energy trauma

Results They were successfully treated through a distal femoral replacement (DFR). All the three patients presented prompt mobilization and good functional outcome.

Conclusion: Primary arthroplasty (DFR) is a good therapeutic option for complex DFF in elderly patients, in whom a single definitive procedure is the only choice. It restores functionality rapidly, allowing immediate post-operative mobilization, full weight-bearing and relatively short hospital length of stay.



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Title of Abstract High implant complication and mortality after distal femoral replacement for periprosthetic knee fracture in the elderly

Introduction: Complications after knee arthroplasty, such as periprosthetic fractures, do not have an easy solution. Sometimes we will be confronted with the need for distal femoral replacement (DFR)

Methods We performed a retrospective case series study of eleven elderly patients who underwent DFR due to a periprosthetic fracture. Minimum follow-up was 36 months. Demographic, clinical and radiological data were reviewed. A descriptive analysis and a study of survival were performed.

Results Implant complications were presented by 36% of patients (75% infections). This risk increased with a longer time between fracture and surgery ($p=0.02$). The 36.4% died during the follow-up. Older age ($p=0.04$), need of blood transfusion ($p=0.01$) and shorter time until implant complication ($p=0.006$) had statistical significance with mortality.

Conclusion: DFR could be a valuable option for knee periprosthetic fractures in elderly patients. However, surgeons should be aware of the high implant complication rate and mortality.



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Title of Abstract Effectiveness of circular external fixation for definitive treatment after acute tibial fracture-related infection. A comparison between hexapod vs. Ilizarov frames. Is there any difference?

Introduction: Acute tibial fracture-related infection (FRI) is one of the most feared and challenging complications after a tibial fracture. Circular external fixators (CEFs) offer multiplanar control and minimize soft tissue injury using temporary implants far from the infected area.

Methods A retrospective study at two specialized limb reconstruction centres identified all patients with an acute tibial FRI. Primary outcomes: fracture healing and infection eradication rate with a minimum FU of 12 months after frame removal. Secondary outcomes: to investigate the differences between the two types of circular frames regarding final post-treatment deformity magnitude.

Results We included 31 patients : 18 with hexapod-type and 13 with Ilizarov-type. Average age was 45.5 ± 16.56 years. Fracture healing and infection eradication were achieved in all patients (31/31) after a mean follow-up of 24.7 ± 17.9 months. Patients treated with Ilizarov presented shorter time to fracture union (5.54 ± 2.23 months vs. 9.28 ± 6.04 months; p-value 0.021). Hexapod system presented less residual coronal translation deformity (p-value 0.034) and better callus quality. No significant differences were seen in pain, RTW or functionality.

Conclusion: Definitive CEF is an excellent treatment for acute tibial FRI. Both Ilizarov and hexapod offer a very high rate of fracture healing and infection eradication. Although both presented very low radiological post-operative residual deformity, the hexapod system showed less residual coronal translation deformity and better callus quality.



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Title of Abstract Decision-to-Delivery Interval in sub-Saharan Africa: A systematic review and meta-analysis

Introduction: "The year 2015 was etched into the history of surgery: three landmark publications freed surgery from the stranglehold of the 1978 Alma Ata Declaration. These publications resulted from focused and sustained research, and have led to a complete transformation of global perspectives on surgery, within the public health arena."
"

Methods "EACH Research is a non-profit that provides research skills and mentorship to surgical residents from the COSECESA region, pro bono. The authors advertised the program mostly by word of mouth. The course was run virtually during the COVID-19 pandemic. The first in-person workshop was held in January 2023."
"

Results A total of 179 trainees registered for five cohorts – two in 2021, and two in 2022; only 4% of the initial four are engaged. Sixteen registrants in cohort III of 2022 all dropped at the developing a question development stage. An in-person workshop in January 2023 drew 27 residents, in a program supported by the Smile Train.

Conclusion: The high attrition rates amongst participants in this program are concerning. The reasons given by those who discontinued are varied, but include: the rigor of the program, and discouragement by academic supervisors' preference for different research topics or design.



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Title of Abstract The use of the foot fillet to avoid an above knee amputation in trauma

Introduction: Lower extremity trauma can have devastating effects on the quality of the life of trauma patients; in order avoid an amputation, many patients spend years undergoing treatment of chronic wounds. While preservation of knee function is desirable, and poor skin envelope over the leg may lead to above-knee amputations.

Methods A series of four patients who suffered lower extremity trauma presented to our unit: an acutely mangled lower third of the leg with a completely degloved proximal leg, chronic leg ulcers resulting from a degloving leg injury, a poorly developed post-burn lower extremity with a complex contracture, and a degloved lower third of the leg. All the patients had normal feet, but were not able to ambulate with the injured legs. Each patient underwent a BKA that was reconstructed with a foot fillet to provide durable skin envelope.

Results Three of the patients have successfully gone on to receive prostheses, while the fourth is awaiting stump maturation before fitting prosthesis.

Conclusion: Foot fillet flaps provide robust durable tissue for the BKA stump.



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**Title of
Abstract** The pre-expanded supraclavicular flap in fascial reconstruction: utility in sub-Saharan Africa

Introduction: Facial defects requiring full thickness reconstruction have limited options. The supraclavicular flap provides thin pliable skin of an acceptable color match with that of the face. The author reports a series of patients who underwent facial reconstruction using a pre-expanded supraclavicular flap.

Methods A retrospective review of all patients managed in our unit with the pre-expanded supraclavicular flap between 2012 and 2021 was performed. Patient demographics collected included sex, age, cause of burn, and region affected. We also noted any complications relating to the expander(s) or surgery.

Results Thirteen patients underwent flap pre-expansion with fourteen expanders during the period under review. The main complications were scar hypertrophy and implant infection and exposure (in three patients). Ten patients underwent reconstruction for burn-related complications, two had orbito-facial plexiform neurofibromas, while one had suffered from cancrum oris.

Conclusion: Facial reconstruction using the supraclavicular artery flap gives excellent esthetic and functional results are similar to free flaps. The attendant costs and potential complications associated with free flaps are completely avoided. Flap pre-expansion provides extra tissue adequate tissue for defect reconstruction, and primary closure of the donor site.



Name: PETER OUMA OPONDO

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Title of Abstract Management and outcome of adhesive small bowel obstruction at AIC Litein Hospital: A prospective study

Introduction: Intra-abdominal adhesions are an important cause of small bowel obstruction (SBO). There is a paucity of data regarding management of adhesive SBO from rural health facilities in Kenya. This study aimed to describe the presentation, management and outcome of patients admitted with adhesive SBO at AIC Litein Hospital (AICLH).

Methods A prospective observational study was conducted at AICLH from February 1, 2020 to October 31, 2022 that included all consecutive patients with adhesive SBO that was diagnosed as features of SBO in a patient with a history of abdominal surgery, and/or presence of adhesions as cause of SBO noted at surgery. Patients who declined consent, or had other cause of bowel obstruction were excluded. Ethical approval was obtained from the institutional Ethics and Research Committee (IREC). Data were collected on demographics, clinical presentation, management and outcome. Patients were followed up to one-month post discharge.

Results During the study period, 57 cases (35 males, 22 female) were included. They had a median age of 34 years (range 1-82), a median symptom duration of 3 days (range 1-14) with 51 (89%) having a history of prior laparotomy. Non-operative management was initiated in 38 cases (23 were successfully managed conservatively, while 15 subsequently underwent laparotomy after failed conservative management), while 19 underwent emergency laparotomy at admission due to acute abdomen or concern for bowel ischemia. The median duration of admission was 5 days (range 2-24). There two surgical site infections and no mortalities.

Conclusion: Adhesive SBO, in this series, was predominantly noted in patients with prior abdominal surgery, with a majority of those who were initiated on non-operative management, being managed successfully without surgery. In addition, a significant proportion of patients required emergency surgery.



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Title of Abstract Jack in a box in peripheral tumor diagnosis - case series in peripheral setup

Introduction: The peripheral swellings in Global surgeons' practice is always a challenge, dealing with benign or seemingly benign ones. Here is being presented a case series of interesting 7 such patients over 6 months in a moderately busy, high volume, single surgeon, remote Hospital surgical unit in Maharashtra, India.

Methods Based on the available data collected over 6 months for the period of April to September 2022, from the Operation theatre registry in Hospital, using convenient data sampling technique, random sampling, arranged from youngest to the oldest in the group. Then the data was analyzed based on age, sex, demographic information, various pre-op, Intra-op and post-op diagnoses, affecting the outcome, based on cure rates and eventual final diagnosis.

Results In a semi-urban or rural set-up like ours, without instant Histopathological support, and with none but you alone to deal with them all, when in doubt. However I found that the challenge and trueness is very close to the intra operative findings, establishing it in some cases, than the pre-op assessment and pre-emptive/ pre-operative diagnosis.

Conclusion: This small series with slight male prepondence, and intra op findings eventually superseding the Histopathological diagnosis in some cases, in the final outcome of the patients with peripheral, superficial swellings excised for various reasons.



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Title of Abstract Made in Mozambique- Finding Locally Available, Scalable Solutions to Hardware Deficiencies in Orthopaedic Practice

Introduction: "
Deficiencies in equipment required to correctly treat Orthopaedic patients is a substantial problem in Sub-Saharan African countries. With a little bit of local innovation, a good part of these equipments can be produced locally, at a reasonable cost with no compromise in the quality of the product."

Methods "A private-public partnership of sorts between the Association of Orthopaedic Surgeons of Mozambique (AMOT), The College of Orthopaedic Surgery of Mozambique and an importer of surgical implants and equipment (Pulse-Moz Healthcare) was set up in 2020, with the intention to produce Orthopaedic equipment within the country. A dedicated team of 8 individuals which included 2 Orthopaedic surgeons, 2 experienced Orthopaedic Scrub nurses, a metallurgical engineer, an iron-smith, and a person in charge of logistics, was created from within the participating organizations.

"

Results "Clinical use began in January of 2022. More than 300 surgeries have already been performed using the 3 drills in use. Multiple modifications were made during the initial months. The final product has been approved by AMOT, and also an independent panel of Orthopaedic surgeons.

Production of 50 drills for use in the rest of the country is to start in January 2023.

"

Conclusion: "Not only is it possible to locally address a very large part of the equipment requirements in Orthopaedics within developing Sub-Saharan countries, but it is imperative for this to be done in order to remove the unnecessary dependence if imports of vital equipment.

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Title of Abstract Biomedical Engineering for Global Health Design of a laparoscope using a USB- camera to support the global implementation of minimally invasive surgery

Introduction: There is a growing interest in laparoscopic surgery in most low- and middle-income countries, but its widespread adoption has been challenging. We, therefore, see a huge opportunity for biomedical engineers to develop innovations that tackle specific challenges in these regions to increase global uptake of laparoscopy.

Methods One of our studies (1), revealed that the light source and cameras used during laparoscopy are prone to breaking, we are therefore developing a laparoscope using a USB-Camera connected to a laptop or tablet that provides enough light for diagnostic purposes and small laparoscopic surgeries. In the past years, we have developed and tested our context-driven design approach (2) which strongly endorses intensive collaboration between engineers, surgeons and other stakeholders that work in the context where this equipment will eventually be used. This project is therefore a collaboration between Dutch engineers and Indian, Kenyan and Dutch surgeons.

Results With this interdisciplinary and international team, we are currently working on a comprehensive list of design requirements that will soon be used as the base for one or two different prototypes. This design will be evaluated in our lab on characteristics such as cleanability, robustness, image accuracy, contrast and sharpness. However, we look forward to obtaining feedback from the visitor of the annual meeting of the Surgical Society of Kenya on the design, that we will incorporate into the next iteration.

Conclusion: With this project we aim to contribute to the widespread implementation of laparoscopy across the world. Additionally, we aim to pave the way for collaborative projects between different disciplines such as engineers and surgeons originating from different continents to combine the best of all worlds.



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Title of Abstract Minimal Pain Tumescant Local Anesthesia Injection for Wide Awake Modified Radical Mastectomy

Introduction: "The advent of minimal pain tumescant local anesthesia injection has improved patient safety by eliminating the need for sedation or general anaesthesia for many wide awake operations, especially in patients with significant medical comorbidities. We present a case of a left MRM & ALND under local anaesthesia."
"

Methods We performed a wide awake MRM and ALND after tumescant minimal pain local anesthesia injection in a 78yr male with left invasive ductal breast carcinoma and cardiac failure. We used 300mls of solution having 50mls of 1% lidocaine with 1:100 000 epinephrine and 5mls of 8.4% bicarbonate diluted in saline. Infiltration was done with a small needle followed by larger needles which were advanced in clearly tumescant tissue to avoid any further pain. The breast and axilla were tumescant with visible local anesthesia 2cm beyond dissection planes and bipolar electrocautery was used to eliminate monopolar cautery conduction pain.

Results The procedure took 40 min with a blood loss of 50 mL. The patient experienced the surgery with minimal discomfort. Was discharged on Day 2 post operatively with drains in situ. Drains were removed on Day 7 Post op and patient had unremarkable follow up from thereon.

Conclusion: The use of minimally painful injection of tumescant local anesthesia can be a good option to increase availability and safety for this life saving operation. This technique may be applicable in other patients where similar factors and lack of resources limit the use of safe general anesthesia.



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Title of Abstract A prospective clinical trial comparing three different dressing materials for donor site wounds in elderly patients undergoing split-thickness skin graft surgery.

Introduction: Skin grafting is a well-established procedure using skin or skin substitute to cover non-healing wounds or burns. Management of donor site wounds with a suitable dressing material in high-risk patient groups is crucial.

Methods The aim of this study was to compare Biatain Ibu, Mepilex Ag or Suprathel in donor site wounds in a prospective clinical trial in a patient cohort aged 55 or older with one or more comorbidities. The grafts were harvested in a standardized procedure and wounds were dressed under sterile conditions. Dressing changes were scheduled day 10 to 14 when re-epithelialization was expected. Wound healing was photo-documented and evaluated using the Hollander Wound Evaluation Scale. Pain scores were evaluated daily according to the Visual Analogue Scale and pain medication used by patients was recorded.

Results Patients with Biatain Ibu dressing ($p < 0.001$) and Suprathel ($p < 0.004$) showed a statistically significant pain reduction up to two weeks postoperatively. No statistically significant difference was observed in re-epithelialization time, ease of use and patients' satisfaction between the foam dressings and Suprathel. Six patients (three each with Mepilex Ag and with Suprathel) required extra pain medication.

Conclusion: The results of this study indicate that Biatain Ibu and Suprathel should be used as a standard dressing in elderly patients to reduce postoperative pain effectively. No statistically significant difference in handling and patient comfort, as well as patient satisfaction, was observed in the study.



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Title of Abstract THE CLINICAL PATTERNS AND MANAGEMENT OF ENCEPHALOCELE AT KENYATTA NATIONAL HOSPITAL

Introduction: Encephaloceles are congenital deformities caused by a failure of skull bone fusion, allowing structures within the skull such as the brain and its coverings to protrude. Encephaloceles are classified based on their location, such as occipital or frontal, and are avoidable with food fortification.

Methods The study was a retrospective cross-sectional study; participants were acquired from Newborn Unit, the pediatric wards, the pediatric intensive care unit and the child health clinic in the national hospital. Data was obtained from patient files using closed question questionnaires, the study attempted to assess the prevalence and distribution of encephaloceles in patients presenting at Kenyatta National Hospital, the proportion of the different types of encephaloceles, the demographic characteristics of patients suffering from encephaloceles, its association with ethnicity and to analyze post-operative complications, number of clinic visits post-operatively and further imaging.

Results The KNH database provided 83 instances that satisfied the inclusion criteria, with the majority of patients coming from Nairobi County and occipital encephalocele being the most prevalent kind. The majority of the patients were females who were diagnosed within a week of birth.

Conclusion: Encephaloceles cause significant developmental problems in infants, resulting in decreased quality of life and higher mortality. There is a need to improve neurosurgical care across to allow for early management and prevention of complications.



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Title of Abstract Experience of Neuroendoscopic surgeries at CGTRH*

Introduction: "Neuroendoscopy surgery represent propensity of modern technology in neurosurgery with aim of minimalism,i.e access and visualization through the narrowest corridor and maximum effectiveness at the target point with least disruption of tissue
Aim of this study is to present our experience in neuroendoscopic surgeries at CGTRH. "

Methods All patients undergoing neuroendoscopic at CGTRH from November 2019 upto December 2022 were included in the study and a follow-up of 3yrs. A case series of 17 patients. Data including detailed intra operative data, post-operative outcome, length of hospital stay and complications.

Results "15patients underwent ETV 90% with a median age 12 (4months - 30yrs) , 10% underwent transhenoidal endoscopic excision median age 35 (30-59yrs), the most common etiology for the EVT was obstructive hydrocephalus secondary to aqueductal stenosis, 3rd ventricular cyst, pineal tumor and posterior 3rd ventricular tumors
Surgery were successful in all patients, no complications noted post surgery, length of hospital stay was 3days to all patients."

Conclusion: "The experience with neuroendoscopic technique for treatment of obstructive hydrocephalus or sellar, parasellar and pituitary lesions is a success with minimal complications and short duration of hospital stay.
Assessing the potential long-term benefits of neuroendoscopic techniques has to await results of the ongoing studies"



Name: Talaam Ruth C.

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Title of Abstract Thyroidectomy for goiters in limited resource settings: The AIC Litein Hospital experience.

Introduction: Thyroidectomy for goiter is indicated for compressive symptoms, hyperthyroidism or risk of malignancy. While thyroid surgery is feasible and safe, there is a paucity of data from facilities with limited resources. This study aimed to describe the indications, outcomes and challenges of thyroid surgery at AIC Litein Hospital (AICLH).

Methods "A six year (January 2017 to November 2022) prospective study was undertaken at AICLH, a faith-based institution located in rural South-Western Kenya. Cases were defined as any consecutive patient undergoing elective thyroid surgery, while those who declined consent were excluded.
Data were extracted using a standardized questionnaire on demographics, clinical presentation, surgical management and outcome. Ethical approval was obtained from the Institutional Ethics and Research Committee (IREC). Consent was obtained during evaluation for surgery at the surgical clinic. Patients were then followed up for at least one-month post-operatively. "

Results A total of 375 cases were included. They had a mean age of 44.65 years and median symptom duration of 4 years. The majority of goiters were euthyroid (n=316) and unilateral (n=256). The mean duration of admission was 2.87 days. Thyroidectomy was completed as lobectomy (n=256), total (n=102) and subtotal (n=17). Pathologies were present in a minority of cases (n=55, 43 goiters, six adenomas and nine carcinomas). The most important complications were post-operative hematoma (n=4), altered voice (n=10), tracheomalacia (n=3), permanent hypocalcaemia (n=3) and mortality (n=1).

Conclusion: In this study, thyroidectomy was conducted with low levels of morbidity. The low percentage of pathologies (that were paid out-of-pocket) represents significant limitation in the level of care. Thyroidectomy can be safely offered in resource limited settings in the presence of proper surgical skills, patient selection and preparation



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Title of Abstract ROLE OF LAVAGE IN PERITONEAL TUBERCULOSIS

Introduction: Tuberculosis is an infectious disease that can cause a multisystem disease although it primarily involves the respiratory system. Abdominal tuberculosis presents with non-specific signs and symptoms and could often be misdiagnosed as an acute surgical abdomen or even an abdominal malignancy.

Methods We present 2 cases of patients with peritoneal tuberculosis who presented with abdominal distension and weight loss with features suggestive of intestinal obstruction. They were initially started on anti-tuberculosis medication but showed no improvement however upon undergoing laparotomy and lavage they showed much improvement.

Results "Case 1:
A 11 year old male with abdominal distension and constitutional symptoms deteriorating on anti-Tb therapy. Imaging was inconclusive laparotomy was performed revealing matted bowel.
Case 2:
A 17 year old male with peritonitis. Unresponsive to 2/12 of anti-Tb medication. Laparotomy and washout was performed showing matted small bowel with pus collection. "

Conclusion: Our experience with these 2 cases suggest that there could be a role for peritoneal lavage in pharmacologic therapy resistant peritoneal tuberculosis. We recommend more research into this question.



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Title of Abstract Advances in The Ambulatory Management of Pneumothorax: A systematic Review and Meta-Analysis

Introduction: "Despite several advancements, there still remains a lack of consensus in the management of pneumothorax, with the ambulatory alternative gaining wide traction owing to its associated low morbidity, mortality and enhanced mobility of patients. We make a comparison of the clinical benefits and complications between ambulatory and conventional management."

Methods "A search of literature was performed through PubMed, SCOPUS and ScienceDirect in order to identify eligible studies. A pooled analysis of 24 studies was conducted to calculate the pooled success rates and the pooled relative risks. Head to-head comparison and subgroup analysis was done comparing ambulatory vs. conventional treatment of pneumothorax."

Results "A total of 1,211 records were identified, with only 26 studies meeting the criteria for inclusion. The overall pooled success rate was approximately 84% (95% confidence interval (CI) of 79-88%). Five studies included in the treatment failure rate observed a pooled relative risk (RR) of 0.75 (95% CI 0.47-1.20). Ambulatory treatment carried an increased relative risk of pneumothorax enlargement (RR 4.84, CI 1.10-21.29). Four studies identified an iatrogenic (post-biopsy) pneumothorax and had a pooled success rate of 90% (CI 78-96%)."

Conclusion: "Ambulatory treatment of pneumothorax demonstrates favorable and non-inferior success rates, especially in cases of iatrogenic pneumothorax, with comparable outcomes to standard care. "



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Title of Abstract Lower Limb Amputation: Decision to Consent Time.

Introduction: Data on traumatic amputations is easy to come by. It is another matter altogether to find data on urgent and elective amputations arising from metabolic diseases of modern life. We therefore sought to establish whether the time to consenting was related to age, gender, procedure offered and comorbid conditions.

Methods "We utilized a retrospective quantitative method with data gleaned from combing through electronic medical records. Inclusion criteria was a 16-month time period from June 2021 to December 2022: trial of conservative management (without access to revascularization therapy for limb preservation). Included patients were either direct admissions to the surgical service or transfers-in from different departments but within the hospital.
Exclusionary criterion was trauma and/or mangled limbs.
Presence or absence of imaging (angiography) was not a factor.
Factors looked at for correlation were age, gender, procedure offered and comorbidities."

Results "Total number of patients meeting inclusion criteria was 34.
Mean age was 59.23 (Range of 22 to 96 years). Average decision to consent time was 6.88 days (Range of 0 to 44 days). Being male and being offered an A.K.A appeared to result in longer consent times.
Almost all participants had gangrenous limbs. DM, HTN, PAD from long term smoking, Osteomyelitis were the leading comorbidities in that order. All had had attempted conservative management with intent to spare the limb with failure indicated by worsening clinical status – pain, gangrenous extension, septic shock.

Conclusion: "Data-guided guidelines would help establish a standard of care for non-emergent amputation. Gender and procedure offered dramatically impact disclosure to consent time.
The impact of age requires a larger sample size. Male gender, A.K.A and multiple comorbidities result in longer consent time with possibly poorer prognostication.