Panel Discussion

Surgical Care as Development:
Background
Experience
And
Interests related to this theme

Panelist: Michael Ohene-Yeboah
Background- Health care

- Every nation and all populations have in place some form of arrangement to provide what is necessary for the health, welfare and protection of the people.

- The quality and effectiveness of any such arrangements vary with the level of wealth of the nation and its people.
Background-Development

- As nations grow, expand and build up over time it is expected that the level of wealth should increase, providing for more effective health care systems.
Background-Surgical care

• As the medical specialty that uses operative manual and instrumental techniques on patients with certain conditions and injury, surgery can strengthen health care.

• Surgical care should not be an overlooked entity in health systems.
It is possible to understand that improvements in surgical care can stimulate rapid economic development.
Indicators of Surgical Care

• 2015 the Lancet Commission on Global Surgery developed some indicators for measuring Surgical Care.

• 1. The surgical workforce of a nation
• 2. The surgical volume of the health system
• 3. % of the population who cannot afford to pay for surgical care
Indicators of Development

- Life expectancy
- Gross Domestic Product
- Per Capita Income
Surgical workforce per 100,000 population.

There are large gaps in the number of surgical workers serving populations in different income groups.

Specialist surgical workforce (per 100,000 population)

- Low income: 1
- Lower middle income: 10
- Upper middle income: 40
- High income: 69

Source: World Development Indicators
Indicators of Development

- Life expectancy:
- tends to be higher in countries with a surgical workforce higher than 20 workers per 1000 000 population or people.
- And in countries with surgical volume greater than 5000 procedures per 100 000 population
A role for surgeons

- Train more surgeons to increase the surgical workforce.
- Perform more operations to increase the surgical volume of the health system.
- But the system has to provide the facilities and the motivation for surgeons.
Our experience- Ghana Hernia Society

- The Ghana Hernia Society is a grouping of surgeons based in the teaching and regional hospitals.
- These surgeons have a special interest in abdominal wall surgery with emphasis on groin and other abdominal hernias.
Mesh repair of inguinal hernia

- The Ghana Hernia Society in collaboration with the Ghana Health Service developed an MoU.
- This MoU provides the basis for
- Surgeons of the Ghana Hernia Society to train all district medical officers in the technique of mesh repair of inguinal and other hernias.
The surgical Mesh
Outcomes After Low-cost Mesh Repair of Inguinal Hernia Performed by Surgeons and Non-surgeons in Ghana

M. Ohene – Yeboah, J. H. Beard
S. Tabiri, F. Abantanga and others.

Ghana Hernia Society
Collaborations

• Ghana Health Service
  Volta Regional Hospital, Ho.
  Ghana Hernia Society
  Americas Hernia Society

Funding source: Raymond C. Read Fellowship

• Swedish Research Council
Ethical Clearance

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE
Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax: +233-302-683424
Email: ghserc@gmail.com

Professor Michael Obeng-Yeboah
Associate Professor of Surgery and Head of Surgical Unit 3:
Korle Bu Teaching Hospital/University of Ghana
P. O. Box K52, Korle-Bu
Accra, Ghana

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

<table>
<thead>
<tr>
<th>GHS-ERC Number</th>
<th>GHS-ERC: 01/10/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title</td>
<td>“Outcomes after Low Cost Mesh Repair of Inguinal Hernia performed by surgeons and non-surgeons in Ghana”</td>
</tr>
<tr>
<td>Approval Date</td>
<td>15th February, 2017</td>
</tr>
<tr>
<td>Expiry Date</td>
<td>14th February 2018</td>
</tr>
<tr>
<td>GHS-ERC Decision</td>
<td>Approved</td>
</tr>
</tbody>
</table>

This approval requires the following from the Principal Investigator:

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months.
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol.

SIGNED
DR. CYNTHIA BANNERMAN
(GH-ERC CHAIRPERSON)

The Director, Research & Development Division, Ghana Health Service, Accra
Inguinal Hernia Surgery

• Inguinal hernia is the most common general surgical condition globally.
  - 10.8% prevalence of inguinal hernia in adult men in Ghana

• Surgical output for inguinal hernia repair remains low in LMICs.
  - Backlog of 1 million hernias in need of repair by 2020

• High burden conditions that can be successfully treated by surgery should be prioritized.

Mesh hernia repair in Ghana

- Tension free repair with mesh is not widely available in Ghana or other LMICs.

Barriers to mesh repair in Ghana:

<table>
<thead>
<tr>
<th>Patient</th>
<th>Workforce</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Education</td>
<td>• Training</td>
<td>• Mesh supply</td>
</tr>
<tr>
<td>• Fear</td>
<td>• Supply</td>
<td>• Distribution</td>
</tr>
<tr>
<td>• Cost</td>
<td></td>
<td>• Facilities</td>
</tr>
<tr>
<td>• Distance</td>
<td></td>
<td>• Government support</td>
</tr>
</tbody>
</table>
Surgical workforce in Ghana

Ghana Medical and Dental Council

Medical Officer

Ghana College of Surgeons/West African College of Surgeons

Member (3 years)

Fellow (6 years)

Choo S et al. Surgical training and experience of Medical Officers in Ghana’s district hospitals. Academic Medicine 2011.
Low-cost mesh training program

- Funded through the Raymond Read Fellowship
- Partnership with the Ghana Hernia Society
- 3 expert Ghanaian hernia surgeon trainers
- 2 experienced surgeons and 3 non-surgeon physicians trainees
- Initial plan to use LDPE mosquito net
Mesh hernia repair in Ghana

- Tension free repair with mesh is not widely available in Ghana or other LMICs.

- Barriers to mesh repair in Ghana:

<table>
<thead>
<tr>
<th>Patient</th>
<th>Workforce</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Education</td>
<td>- Training</td>
<td>- Mesh supply</td>
</tr>
<tr>
<td>- Fear</td>
<td>- Supply</td>
<td>- Distribution</td>
</tr>
<tr>
<td>- Cost</td>
<td></td>
<td>- Facilities</td>
</tr>
<tr>
<td>- Distance</td>
<td></td>
<td>- Government support</td>
</tr>
</tbody>
</table>
## Trainee information

<table>
<thead>
<tr>
<th>+</th>
<th>Age</th>
<th>Experience (years)</th>
<th>Lifetime IHRs</th>
<th>Lifetime mesh IHRs</th>
<th>Observed/Assisted</th>
<th>Performed under close supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO #1</td>
<td>38</td>
<td>9</td>
<td>500</td>
<td>0</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>MO #2</td>
<td>32</td>
<td>7</td>
<td>200</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MO #3</td>
<td>29</td>
<td>5</td>
<td>60</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Surgeon #1</td>
<td>39</td>
<td>13</td>
<td>&gt;500</td>
<td>150</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Surgeon #2</td>
<td>38</td>
<td>11</td>
<td>500</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

**MO**=Medical Officer  
**IHRs**=Inguinal Hernia Repairs
Low-cost mesh training program

- Lectures
- Hands on training
- Independent operations
Proficiency exam

• All participants were graded by two examiners using the American Board of Surgery Operative Performance Assessment

• Scores of 4-5 passed the exam

Identification of Anatomic Landmarks for Mesh Placement

<table>
<thead>
<tr>
<th></th>
<th>Poor 1</th>
<th>Fair 2</th>
<th>Good 3</th>
<th>Very Good 4</th>
<th>Excellent 5</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not identify landmarks until prompted or directed to do so</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifies landmarks after some prompting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accurately identifies medial, lateral landmarks without prompting for attachment of mesh in region of deep ring and/or inguinal floor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mesh Insertion

<table>
<thead>
<tr>
<th></th>
<th>Poor 1</th>
<th>Fair 2</th>
<th>Good 3</th>
<th>Very Good 4</th>
<th>Excellent 5</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrated inconsistency in accurate placement of mesh sutures, redundancy of mesh or too much tension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good placement of sutures to secure mesh with only occasional inaccurate bites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent securing of mesh with consistently appropriate tissue bites, and appropriate tension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Substantial Direction 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Minimal Direction 5</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Study

- Each of these trained and certified MOs and surgeons then performed 40 mesh repairs under rigorous research study conditions.
- A review of the patients operated two weeks post-op. revealed comparable outcomes in the two groups.
- Long one–year follow-up coming up this September
## Primary outcomes of study participants

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Surgeon (N=35)</th>
<th>MO (N=49)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any complication - no. (%)</td>
<td>8 (22.%)</td>
<td>15 (30.6%)</td>
<td>0.432</td>
</tr>
<tr>
<td>Distribution of postoperative complications - no. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hematoma</td>
<td>2 (5.7)</td>
<td>3 (6.1)</td>
<td>0.938</td>
</tr>
<tr>
<td>Superficial infection</td>
<td>2 (5.7)</td>
<td>7 (14.3)</td>
<td>0.210</td>
</tr>
<tr>
<td>Seroma</td>
<td>3 (8.6)</td>
<td>2 (4.1)</td>
<td>0.391</td>
</tr>
<tr>
<td>Severe pain</td>
<td>1 (2.9)</td>
<td>2 (3.9)</td>
<td>0.766</td>
</tr>
<tr>
<td>Other complication</td>
<td>0</td>
<td>1 (2.0)</td>
<td>0.393</td>
</tr>
<tr>
<td>Difference between pre and post-op quality of life measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inguinal Pain score</td>
<td>-2.3 ± 2.0</td>
<td>-2.2 ± 1.8</td>
<td>0.808</td>
</tr>
<tr>
<td>Self-assessed health score</td>
<td>19 ± 17</td>
<td>13 ± 20</td>
<td>0.132</td>
</tr>
</tbody>
</table>
Our interests

Low-cost commercial mesh ($11) now available in Ghana

Results will represent the largest and longest systematic follow up of mesh hernia repair in Africa

• Pending results, further training courses led by the Ghana Hernia Society will include MOs and surgeons.

• Funding for our work
Future Directions

• Comprehensive public health plan to increase access to mesh repair

• Advocacy for the addition of funds to cover mesh repair by the Ghana’s National Health Insurance

• Evaluation of outcomes after mesh repair performed by non-physician (MA) clinicians

• Investigation of outcomes after mesh repair for strangulated hernias
THANK YOU ALL.