

### Laparoscopy in a Semi-Urban Nigerian Hospital: An Outcomes-Focused Comparative Analysis of Laparoscopic and Open Surgery



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**INTRODUCTION:** Patient benefits and cost savings of laparoscopic surgery are well described in the surgical literature. However, laparoscopic surgery is rare in some regions of the world. Few studies have characterized its impact in low-income settings. We present one of the largest general surgery case series in Sub-Saharan Africa.

**METHODS:** A retrospective chart review identified 261 patients who underwent open or laparoscopic cholecystectomy, appendectomy, or biopsy of intra-abdominal mass at the Obafemi Awolowo Hospital in Ile Ife, Nigeria. Primary outcome was length of stay, secondary outcomes included mortality, wound complications, analgesic use, and cost. Patient medical record data were limited, but included age, sex, and preoperative diagnosis. Univariate comparison of laparoscopic vs open outcomes was assessed for statistical significance using Student's *t*-test, Wilcoxon rank-sum test, and chi-square test.

**RESULTS:** Of 261 cases, 151 were laparoscopic, 7 (4.6%) converted to open. Average age for laparoscopic was 39.1 years (SD 15.4), vs 37.9 (SD 15.0) for open. Length of stay was lower in the laparoscopic group, 4.7 days vs 11.5 for open ( $p < 0.001$ ). Overall complication rates were 19.9% for laparoscopic vs 22.7% for open ( $p = 0.576$ ) (Figure). Overall mortality was low (8 deaths), with significantly more in the open group (6.4% vs 0.7%,  $p = 0.008$ ). Total costs to patients were lower with laparoscopy: \$188 USD vs \$249 ( $p < 0.001$ ), although savings equalized on multivariate analysis.

	Laparoscopic n (%)	Open n (%)	p-value
Any complication	30 (19.9)	25 (22.7)	0.576
Death	1 (0.7)	7 (6.4)	0.008
SSI	19 (12.6)	11 (10.0)	0.518
Dehiscence	0	2 (1.8)	0.096
Skin separation	2 (1.3)	4 (3.6)	0.218
Incisional hernia	0	0	--
Hypertrophic scar	11 (7.3)	12 (10.9)	0.308

Figure.

**CONCLUSIONS:** Laparoscopic general surgery allows for shorter length of stay, modest cost savings, and equivalent complication rates in the Nigerian population.

### Loma Linda Global Surgery Elective: First 1,000 Cases



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**INTRODUCTION:** The world desperately needs well-trained general surgeons to care for the billions of people who lack access to safe surgery. Since 2012, Loma Linda University has been sending general surgery residents to a rural mission hospital in Malawi, Africa. We report the first 1,000 ACGME-accredited cases performed by these residents.

**METHODS:** A retrospective review of the case log was performed starting with the first ACGME-accredited resident rotation in August 2012. The cases were categorized in accordance with ACGME case log protocol.

**RESULTS:** The first 17 residents performed a total of 1,063 cases. Two-thirds were in the discipline of general surgery. The next most represented disciplines were urology with 15%, obstetrics/gynecology with 11%, and orthopaedics with 7%. Nearly one-half of the general surgery cases fell into the category of skin, soft tissue, and breast procedures. The next most common procedures were categorized as endoscopy (19%); abdominal (14%); alimentary tract (7%); head, eyes, ears, nose, throat (5%); vascular (4%); trauma (2%); and thoracic (1%) cases. In the disciplines of gynecology and urology, adominal hysterectomy (60%) and transvesical prostatectomies (23%) were the most common procedures performed. Common orthopaedic cases were manipulation under anesthesia of forearm bones and open reduction, internal fixation procedures (36% each).

**CONCLUSIONS:** This series demonstrates that global surgery electives with dedicated faculty can provide excellent surgical variety and volume to enhance the training of residents. We hope this information will assist other programs in deciding how best to integrate global surgery into their curricula.

### Long-Term Outcomes after Humanitarian Surgical Missions: Are Patients Still Satisfied?



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**INTRODUCTION:** Short-term humanitarian surgical missions are often criticized for the uncertainty regarding long-term outcomes. The International Surgical Health Initiative performs annual week-long general surgical missions to rural Ghana. Our goal was to obtain long-term outcomes data for quality assurance and improvement.

**METHODS:** Surgical patients from missions to Ghana in 2013 to 2015 were contacted by the local nursing staff and surveyed to assess long-term outcomes and Likert scale-based self-reported satisfaction.

**RESULTS:** Thirty of 142 patients (21%) responded. Mean age was 44.5 years ( $\pm 2.9$ ), with 18 females (60%), mean wait time for surgery was 6.9 years ( $\pm 1.1$ ), and median follow-up 2 years (range 1 to 3 years). Three patients (10%) had complications (wound infection, recurrence, and pseudo-hydrocele) (Table). The most common operations were inguinal (38%) and ventral hernia repair (19%). All patients reported improvement in symptoms and activity level, and 87% reported complete satisfaction (5/5). Factors associated with reduced satisfaction (<5/5) included increased age, male sex, complications, later return to work, and less satisfaction with pain control. No significant differences were found between patients responding and those unable to be reached.

**Table.**

Variable	<5/5 Satisfaction (n = 4)	5/5 Satisfaction (n = 26)	p Value
Age, y (SD)	60.3 ( $\pm 13$ )	42.1 ( $\pm 15$ )	< 0.05
Male, n (%)	3 (75)	9 (35)	< 0.05
Complication, n (%)	2 (50)	1 (4)	< 0.05
Condition prior to surgery, y (SD)	7.8 ( $\pm 2.8$ )	6.8 ( $\pm 6.4$ )	0.38
Return to work, mo (SD)	8.3 ( $\pm 3.2$ )	4.5 ( $\pm 2.6$ )	< 0.05
Pain control satisfaction (SD)	4 ( $\pm 0$ )	4.7 ( $\pm 0.1$ )	< 0.05

**CONCLUSIONS:** To our knowledge, this is one of the first studies looking at multiple years of follow-up after short-term general surgery missions. Though with modest numbers initially, long-term follow-up is challenging, but achievable. Symptom improvement and overall satisfaction are high, and complications manageable. Greater focus on routine long-term follow-up is needed to better track outcomes and improve care. This can be facilitated by repeat missions and developing long-term partnerships.

### Operative Volume, Case Distribution, and Associated Drivers in Uganda's Public Health Sector



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**INTRODUCTION:** The majority of Ugandans seek health care from public facilities, but relatively little is known about operative volume, case distribution, and capacity of this system to deliver essential surgical services.

**METHODS:** A standardized hospital assessment survey and retrospective 30-day operative logbook review were completed at 17 randomly selected hospitals serving 64.0% of Uganda's population.

**RESULTS:** A total of 3,014 operations were recorded, annualizing to a surgical volume of 36,670 cases/year, or 144.5 operations/100,000 people/year. Absolute surgical volume was greater at regional referral than general hospitals ( $p < 0.001$ ); however, relative surgical volume/catchment population was greater at the general vs regional level ( $p = 0.03$ ). Most patients undergoing operations were women (78.3%) with a mean age of 26.9 years. The overall case distribution was 69.0% obstetrics/gynecology, 23.7% general surgery, 4.0% orthopaedics, and 3.3% other subspecialties. Cesarean sections were the most common operation (55.8%), followed by skin/soft tissue (9.2%), laparotomy (7.5%), and herniorrhaphy (5.0%). The case distribution and anesthesia type varied significantly by hospital level and region ( $p < 0.001$  for all). Operative volume was strongly predicted by number of surgical, anesthetic, and obstetric physician providers ( $n = 13.0$ ,  $p < 0.001$ ) and presence of trainees ( $n = 108.6$ ,  $p = 0.01$ ); this multivariate regression analysis was statically significant ( $F[2,13] = 36.98$ ,  $p < 0.001$ ,  $R^2 = 0.828$ ). Notably, operative volume was not correlated with availability of electricity, oxygen, blood, instruments, suture, intravenous fluid, or antibiotics.

**CONCLUSIONS:** A detailed understanding of case volume and distribution is essential in facilitating targeted interventions to strengthen surgical capacity. These data suggest that innovative strategies are being used to maintain operative volume despite extreme infrastructural and supply constraints in Uganda.

### Outcomes after Exploratory Burr Holes for Traumatic Brain Injury in a Resource Poor Setting



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**INTRODUCTION:** Traumatic brain injury (TBI) is a leading cause of death and disability worldwide. Low- and middle-income countries (LMICs) suffer from a high incidence of and mortality from TBI. Computed tomography scan is the diagnostic method of choice, but is often inaccessible in LMICs, where exploratory burr holes (EBH) remain a necessary diagnostic and therapeutic procedure.

**METHODS:** We performed a retrospective review of prospectively collected data at Kamuzu Central Hospital (KCH), a tertiary care center in Lilongwe, Malawi. All trauma patients presenting between June 2012 and July 2015 with a deteriorating level of consciousness and localizing signs, who underwent EBH, were included. Additionally, we included all admitted TBI patients requiring higher-level care during 2011. Because there was no neurosurgeon on staff in 2011, no patients underwent EBH. We performed logistic regression to identify predictors of mortality in the total population of TBI patients.