RETHINKING CHRONIC PAIN AFTER INGUINAL HERNIA REPAIR:
Evidence From Rural Uganda

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BACKGROUND

The Global Burden: Chronic post-surgical pain (CPSP) is the primary complication of inguinal hernia repair, affecting 15–30% of patients in high-income countries (HICs).[1]

The Barrier to Care: In low-resource settings, fear of functional impairment and chronic pain deters patients from seeking essential surgical repair, perpetuating physical and economic disability.

Economic Necessity: For manual laborers in rural Uganda, postoperative recovery is a critical economic metric; any degree of CPSP directly threatens household productivity and food security.

The Knowledge Gap: While Western literature assumes a high baseline of CPSP, the incidence and cultural perception of chronic pain in sub-Saharan Africa remain largely undocumented.

Objective: To evaluate CPSP prevalence and functional limitations at Kyabirwa Surgical Center (KSC) using the Carolina Comfort Scale (CCS), establishing a baseline for outcomes in rural Eastern Uganda.[2]

METHODS

Study Design & Setting: A cross-sectional study of adult patients who underwent inguinal hernia repair at **Kyabirwa Surgical Center (KSC)**, a rural ambulatory facility in Eastern Uganda.

Inclusion: Patients were surveyed at ≥ 3 months postoperatively to ensure assessment of chronic rather than acute pain.

Instrumentation: Outcomes were measured using the **Carolina Comfort Scale (CCS)**, a validated 23-item instrument. To ensure validity, structured interviews were conducted by trained staff in **Lusoga** and **English**.

Primary Metrics: CPSP was defined as a cumulative CCS pain score of ≥ 16/40 **[3]**. Secondary metrics included mesh sensation and movement limitations.

Data Analysis: Demographic and clinical variables were extracted from surgical records and supplemented by interviews.

Statistical Approach: Bivariate associations (age, sex, education, occupation) were tested via Chi-square or Fisher's exact tests. Variables with $p < 0.20$ were identified for multivariable logistic regression, contingent on the number of positive pain events.

RESULTS

Patient Demographics and Preoperative Risk	
Characteristic	**Value**
Mean Age ± SEM	61.6 ± 2.1 Years
Male Sex	153 (82%)
No/Primary Education	125 (67%)
Manual Labor Occupation	104 (56%)
Preoperative Chronic Pain	158 (85%)
Received Discharge Pain Education	184 (99%)
Mean Follow-up Time (Days)	241 (Range: 59–457)

Table 1: Patient Demographics and Preoperative Risk (n=186). Baseline characteristics of the study cohort (n=186). High-risk indicators, including preoperative pain (84.9%) and manual labor (55.9%),

CPSP Prevalence: Clinical chronic post-surgical pain (CCS ≥ 16/40) was identified in **1.1%** (n=2) of the cohort.

Symptom Severity: 100% of reported symptoms were categorized as **"mild awareness"** (score of 1). No reports of moderate or severe pain were recorded.

Functional Activity: Reporting of awareness during physical activity was low, specifically appearing during walking (**4.3%**) and bending (**3.2%**).

Preoperative Profile: Although **84.9%** of patients presented with preoperative chronic pain, this did not translate to postoperative chronicity.

Patient Education: Access to preoperative pain and recovery counseling reached **99.5%** of the study population.

Uniformity of Recovery: No significant statistical associations ($p > 0.05$) were found between pain scores and age, sex, or education level.

CCS Domain Score Distributions

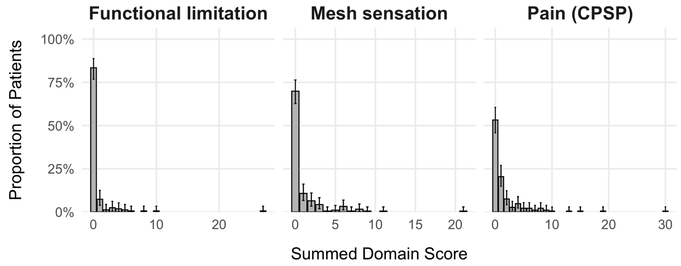

Figure 1: CCS Domain Score Distributions
Distribution of cumulative CCS scores for pain, sensation, and limitation. A vast majority reported zero or near-zero scores. Only 1.1% (n=2) met aggregate thresholds for clinical pain or limitation.

Symptom Frequency and Functional Impact by Activity			
Activity	**Pain% [95% CI]**	**Mesh Sensation% [95% CI]**	**Movement Limitation% [95% CI]**
Daily Activities (ADLs)	8.6% [5.0–13.6%]	2.2% [0.6–5.4%]	1.1% [0.1–3.8%]
Lying Down	7.5% [4.2–12.3%]	5.4% [2.6–9.7%]	1.1% [0.1–3.8%]
Bending Over	7.0% [3.8–11.7%]	1.6% [0.3–4.6%]	3.2% [1.2–6.9%]
Walking	5.9% [3.0–10.3%]	1.1% [0.1–3.8%]	4.3% [1.9–8.3%]
Exercising	5.4% [2.4–10.4%]	2.7% [0.7–6.7%]	2.0% [0.4–5.8%]
Coughing / Deep Breathing	4.8% [2.2–9.0%]	2.2% [0.6–5.4%]	2.7% [0.9–6.2%]
Walking up Stairs	4.0% [1.5–8.4%]	2.0% [0.4–5.7%]	1.1% [0.1–3.8%]
Sitting Up	1.6% [0.3–4.6%]	1.6% [0.3–4.6%]	1.1% [0.1–3.8%]

Table 2: Symptom Frequency and Functional Impact by Activity
Prevalence and 95% CI for CCS domains across eight activities. While only 1.1% (n=2) met clinical CPSP criteria (16/40), 100% of reported symptoms were "mild" (score of 1). Triggers varied by domain: pain was most frequent during ADLs (8.6%), while mesh sensation peaked during rest (5.4%).

CONCLUSIONS

Clinical Incidence: The study identified a 1.1% prevalence of clinical CPSP, suggesting that the vast majority of patients achieve a near pain-free recovery.

The "Awareness" Threshold: 100% of reported sensations were categorized **as "mild awareness"** (score of 1). These were likely perceived as normal postoperative sensations rather than pathological complications.

Functional Prioritization: Despite high physical demands, movement limitations were most likely overshadowed by the successful restoration of the ability to perform manual labor.

Educational Impact: The near-total reach of preoperative counseling (99.5%) could be a driver in aligning patient expectations with surgical realities.

Clinical Relevance: Accurately measuring CPSP in rural settings is critical for validating ambulatory surgical models and ensuring that surgical interventions provide lasting economic and physical relief.

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