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Report on the Laparoscopic Masterclass Training in Ziguinchor

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Abstract

Objective: The aim of the study was to assess and analyze the implementation of a masterclass-style training program in laparoscopic surgery in Ziguinchor. **Materials and Methods:** This was a descriptive cross-sectional study conducted as part of the masterclass-style training program in laparoscopic surgery in Ziguinchor. We organized five training workshops in partnership with the "Partenaire Santé Chirurgie (PSC)" translated as "Surgical Health Partner" in Geneva since 2021. The activities were carried out in five days. **Results:** 37% of participants were residents in surgery. They considered the Masterclass to be very useful (75%) and useful (15%). A total of 80 patients were operated. The sex ratio was 2.75. The average age was 47.29 years [7 - 73 years]. The surgical procedures performed were 85% for hernia repairs. **Conclusion:** This model is a relevant alternative for learning laparoscopy, especially in our resource-limited regions.

Keywords

Laparoscopic Surgery, Masterclass, Ziguinchor

1. Introduction

Scientific advances aim to constantly improve the quality service of surgical practice. As a result, laparoscopic surgery, a modern minimally invasive surgical technique, is rapidly advancing in terms of diagnostic and therapeutic indications. In addition, it is driving significant standardized technical development to provide better patient care. Thus, technical expertise in laparoscopic surgery requires new

learning models. The aim of this study was to report on the educational benefits of training surgeons in laparoscopy through training sessions as part of a masterclass in parietal and digestive laparoscopic surgery in Ziguinchor, and to assess their mastery of the technique.

2. Materials and Methods

This was a descriptive cross-sectional study conducted in five training sessions, each lasting five days, between November 2022 and January 2025. It was carried out in the form of a masterclass at the Peace Hospital, in Ziguinchor as part of the objective of "Health Partner of Surgery project with the Geneva team". The expatriate contributors were: two digestive surgeons, an anesthetist, a pathologist, a laparoscopic scrub nurse, and a media coordinator. The training was conducted in a bimodal format (face-to-face and online). The program was as follows: the first day was devoted to theory from 9 a.m. to 1 p.m. (laparoscopic anesthesia, surgical anatomy of the abdominal wall, hernia repair by laparoscopic total extraperitoneal approach (TEP) versus TAPP, eTEP and TAR for hernia repair and epigastric hernias, laparoscopic instrumentation) (**Figure 1**) and from 3 p.m. to 5 p.m. simulation (basic skills, suturing) with laparoscopic trainers (**Figure 2**). We did the practical part from the 2nd to the 5th day using the hand-to-hand technique. This practical part was only for experienced surgeons (**Figures 3-6**). Among the participants, four surgeons specializing in laparoscopy surgery participated in the operations. Each performed a TEP procedure from start to end, with difficulties mainly related to the size of the hernia. The surgical procedure fees by patients were 180 USD, but the training was free of charge for the participants. In order to provide an overview of the evaluation, a satisfaction questionnaire was administered with 5 items (organization, scientific interest, practical value, general appreciation of the training and general remarks) were sent to the participants via email address at the end of each training session.

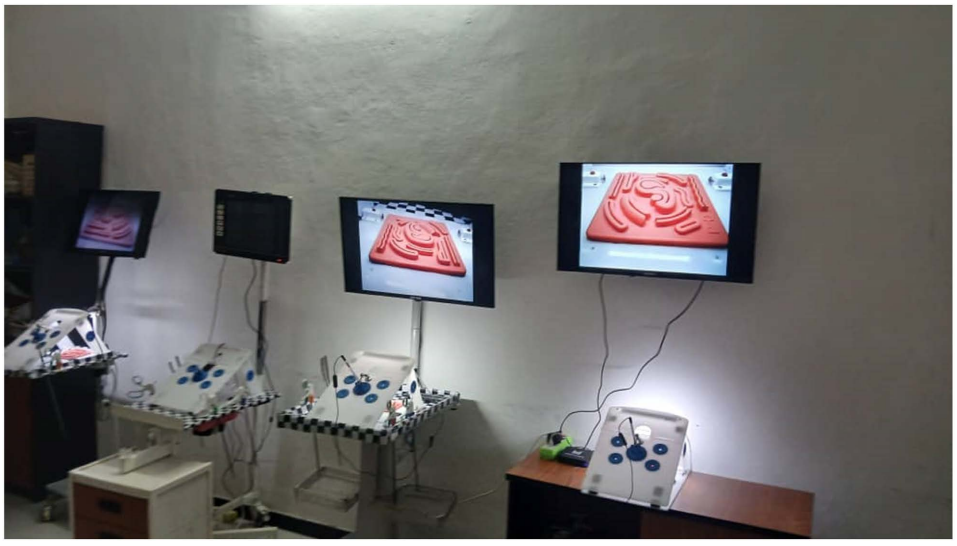

Figure 1. Simulation center with pelvitrainers.

Figure 2. Simulation on pigs.

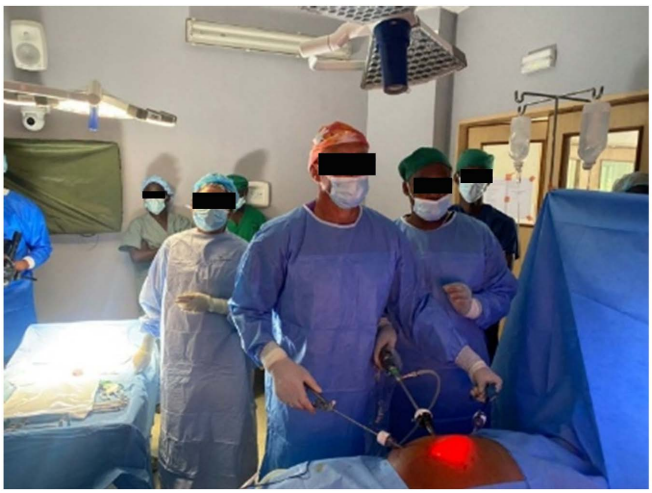

Figure 3. ETEP for epigastric hernia.

Figure 4. Hernia repair by TEP for inguinal hernia.

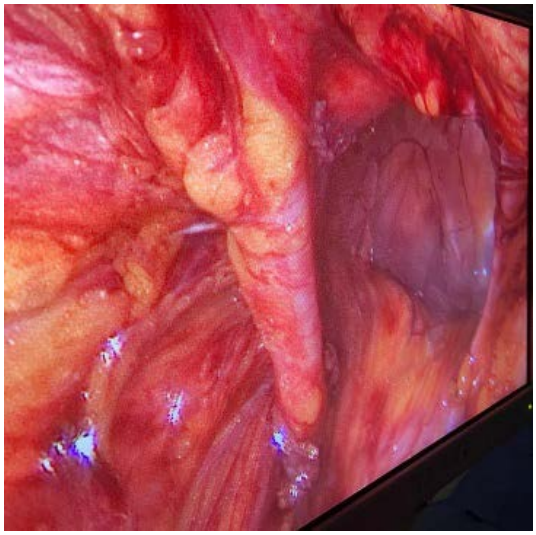

Figure 5. Dissection area for hernia repair.

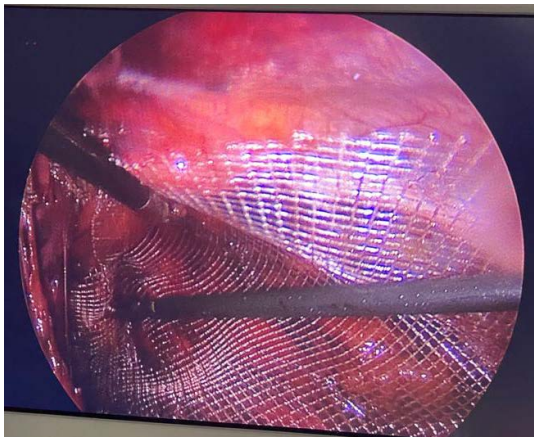

Figure 6. Placement of the mesh inguinal repair.

3. Results

There were 98 participants (28 in person and 70 online). 75% considered the Masterclass very useful for their professional activity and 15% considered it useful. A total of 80 patients were operated. The average age of patients was 47.29 years [17 - 73 years] with a ratio sex 2.75. The pathologies found were: 61 reducible inguinal hernias; 7 gallbladder stones; 8 reducible epigastric hernias; 2 adenocarcinomas of the sigmoid colon; 1 previously detorsioned sigmoid colon volvulus; and 1 splenomegaly. The surgical procedures performed were: 61 totally extra peritoneal (TEP) repairs, 8 extended totally extra peritoneal repairs (eTEP), 7 laparoscopic cholecystectomies, 3 left laparoscopic segmental colectomies + transanal mechanical colorectal anastomosis, and 1 total laparoscopic splenectomy. One laparoscopic conversion was performed following eTEP procedure due to insufficient dissection space. One mortality was recorded. This was a 20-year-old female patient with sickle cell anemia SS who died on postoperative day 1 following a laparoscopic cholecystectomy.

4. Discussion

Laparoscopy is an essential approach in modern surgical practice and requires specific skills. The Societal evolution declares that learning on patients is becoming less and less acceptable. Therefore, the implementation of structured teaching in laparoscopy outside the operating room is a necessity, as evidenced by the participants who considered the Masterclass to be very useful (75%) and useful (15%) for their professional activity and the increase in publications on the subject [1]. Healthcare simulation involves "the use of equipment (such as a manikin or procedural simulator), to carry out virtual reality, or a standardized patient to reproduce healthcare situations or environments, to teach diagnostic and therapeutic procedures, and to enable healthcare professionals or teams of professionals to rehearse processes, clinical situations, or decision-making [2] [3]". The use of laparoscopic trainers makes it possible to reproduce situations that are very close to reality in terms of topography [4]. The procedural simulation used in our study allows participants to familiarize themselves with 3D vision, develop basic skills, acquire theoretical and practical knowledge on the coordination of simple movements (tying a series of knots, suturing, using instruments correctly, etc.), more complex movements (dissection, organ resection, etc.) and self-confidence. At an advanced stage, it focuses on surgical tactics when faced with difficulties encountered by the most experienced [5] [6]. This allows each participant, in a relaxed atmosphere, to repeat the movement or procedure until they have mastered it and correct their shortcomings at their own pace. Debriefing, an essential step, allows for the evaluation of learning progress and the filling of any gaps. Furthermore, simulation promotes what is known as "active or hands-on" learning [7] [8]. It enables learners to acquire knowledge and skills, build self-confidence, and consolidate group thinking. The realistic learning environment created by the simulator is conducive to learning. In our study, the relevance and usefulness of the training was recognized by participants, who appreciated the practical sessions conducted by senior surgeons on various indications in the operating room. All participants wanted more training of this kind. Given this increased demand from participants, the limited number of simulators, and the lack of facilities in our hospital and university structures, this learning method has limitations in terms of its widespread use over time.

5. Conclusion

Traditional surgical training through apprenticeship, as defined by William Halsted in the 19th century and based on immersion and gradual responsibility, is now facing increasing limitations linked to both changes in surgical practice and the functioning of the university hospital system. These limitations have led to the development of surgical simulation and hands-on masterclasses.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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