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Special article

How the silent mentor program improves our surgical level and safety and nourishes our spiritual life

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ABSTRACT

We briefly share our experience of using the silent mentor program in the Medical Simulation Center (MSC) of Tzu Chi University (TCU), Hualien, Taiwan, to improve our minimally invasive surgical level and patient's safety. The silent mentor program, established in 2000 by the Department of Anatomy of TCU, is a pioneering clinical skill training program based on unembalmed bodies. This program provides three valuable advantages for surgery. The first is the comprehensive understanding of the deep or rarely observed but crucial structures of the human body, which is normally difficult to achieve in living humans. The second is gaining the first experience of a novel procedure or surgery on silent mentors rather than on living humans, which is essential for young surgeons to begin their careers. The third is evaluating the safety and feasibility of a novel surgical method. In addition to surgical techniques, the most valuable point of the program is the humane ceremonies conducted for silent mentors to nourish our soul. After the workshop, all the incision wounds on every silent mentor were carefully checked and sutured in the same manner as in closing surgical wounds in a patient. Subsequently, encoffining, cremation, and thanksgiving ceremonies were solemnly held, in the hope that the medical students or trainees would imperceptibly understand their responsibility to society and the silent mentor's expectations. The Asia-Pacific Association for Gynecologic Endoscopy and Minimally Invasive Therapy, or the Taiwan Association for Minimally Invasive Gynecology Therapy, or both can consider initiating a regular silent mentor program in the MSC of TCU. It is not only intended to improve the skills of surgeons but also to allow them to participate in the interactive ceremony and thus refresh their humanitarian knowledge.

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The Medical Simulation Center of Tzu Chi University

The Buddhist Compassion Relief Tzu Chi Foundation respectfully refers to those who dedicated their bodies to medical education as silent mentors.¹ In 2000, the Department of Anatomy of Tzu Chi University (TCU), Hualien, Taiwan, pioneered a clinical skill training program based on unembalmed bodies.² In 2008, TCU established the Medical Simulation Center (MSC), and since then, approximately five to six silent mentor programs have been conducted annually.³ To ensure that the silent mentors closely resemble living

bodies, the mentors are not embalmed because embalming causes fibrosis in the body, and nerves and vessels cannot be dissected. The silent mentors are preserved by rapid freezing and are warmed prior to surgical simulation training. "The condition of a silent mentor is similar to that of a living body without breathing, heartbeat, and pulse beat," the current director of the MSC, Tseng Guo-Fang, said. According to a questionnaire survey by the MSC, the students or trainees were satisfied with the stimulation degree and silent mentor condition, with an average of 66.7% of students rating them as "very good," 31% stating that they are "good," and 2.3% considering them as "normal." The laparoscopic instruments of the MSC, although not the latest, are modern, more than adequate, and in good condition. In addition to the equipment listed in [Table S1](#), which can be accessed on the Internet, eight sets of medical-grade

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high definition (HD) camera heads with a 26-inch HD monitor (Sony, Tokyo, Japan) for each set are available.

Silent mentor program improves our surgical level and patient's safety

According to our experiences, the silent mentor program provides three valuable and helpful points to learn about a surgery or develop a novel surgical approach. First, we can have a comprehensive understanding of the deep or rarely observed but crucial structures of the human body, which would normally or practically be difficult to achieve in living humans. Second, we can get the first experience of a novel procedure or surgery on silent mentors rather than on living humans. This is essential especially for young surgeons to begin their careers. Third, we can evaluate of the safety and feasibility of a novel surgical method.

Gynecologic surgery using a minimally invasive approach is a surgical trend not only in Taiwan but also worldwide.^{4,5} The survival outcome of cancer patients obtained through laparoscopy is not inferior to that obtained through laparotomy.^{6,7} To provide an international standard of surgical care for female cancers, the gynecologic cancer team of Tzu Chi General Hospital initiated laparoscopic staging surgery in 2010 and laparoscopic radical hysterectomy in 2011. Since then, the proportion of laparoscopic gynecologic cancer surgery rapidly increased annually and reached 100% in 2016. We would not have been able to achieve this result if we did not have the anatomic dissection and experimental gynecologic cancer minimally invasive surgery on a silent mentor at the beginning. We also performed radical aortic and pelvic lymph node dissection. As massive bleeding or organ damage would not happen in a silent mentor, we could achieve a high level of confidence when dealing with the renal vein and explore around the related vital tissues and organs without anxiety. Moreover, we performed bilateral ureter dissection beginning from the renal pelvis to the bladder entrance. An understanding of the core anatomy of the related vital organs can help avoid or reduce complications during gynecologic cancer surgery. In our opinion, it is highly helpful for a

new surgeon to learn the following surgeries on silent mentors: pelvic lymph node dissection, tubal reanastomosis, pelvic reconstruction surgery, and deep infiltrative endometriosis surgery (pelvic floor dissection). Furthermore, when we perform nerve-sparing radical hysterectomy for a patient, it is difficult to dissect the inferior hypogastric plexus extensively (the origin and innervation of nerve fibers). The stress of longer surgical time and risk of potential complications does exist when pausing the surgery for teaching. Silent mentors provide a favorable teaching environment and enough time for trainees to learn these surgeries. Therefore, the silent mentor program can reduce stress for teachers and trainees, shorten the learning curve, and increase the safety of patients.

The pioneers of microinvasive surgery can establish a novel approach on silent mentors prior to applying it to patients. For example, in 2014, we first created the novel two-phase laparoendoscopic single-site cervical ligament-sparing hysterectomy,⁸ specimen removal concept by containing prior to transection and morcellation,⁹ or advanced laparoendoscopic single-site surgical techniques¹⁰ on silent mentors; this approach can markedly contribute to the development of minimally invasive surgery. Our minimally invasive surgery team intended to introduce single-port laparoscopic sacrocolpopexy to patients last year; however, the first surgical experience with silent mentors revealed that it was not the appropriate time because of many technical problems requiring resolution. Silent mentors can be used to solve these problems shortly.

Taiwan Association for Minimally Gynecology Therapy experience

The Taiwan Association for Minimally Gynecology Therapy (TAMIG) and the Tzu Chi International Medical Association held a silent mentor course on September 28, 2012. A total of 64 gynecologists participated in the program, which included 15 instructors and 49 trainees, and eight female silent mentors were used in the hands-on workshop (Figure 1). The young trainees

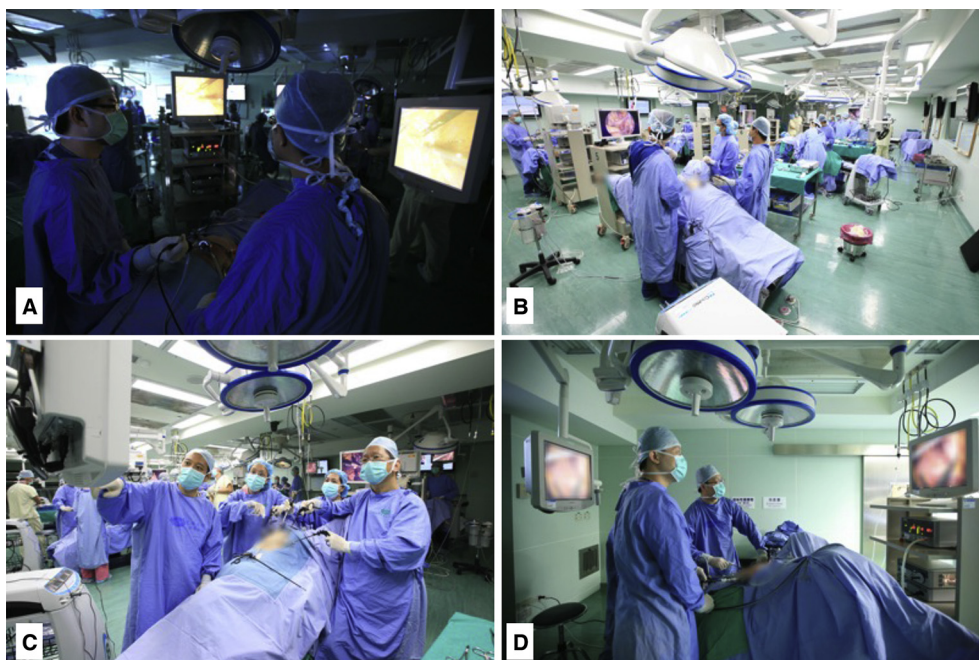


Figure 1. Photographs depicting the silent mentor program. (A) Two students working on laparoscopic surgery. (B) Panoramic view of the training center. (C) Dr Ding instructs students for laparoscopic para-aortic lymph node dissection. (D) A scene of group practices on the silent mentors.

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