



2021 Annual Report of Department of Gynecology, West China Second University Hospital of Sichuan University

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Abstract: This is annual report published by the Department of Gynecology of West China Second University Hospital of Sichuan University (WCSUH-SCU) to document the achievements of the gynecologic surgery teams at WCSUH-SCU in 2021. Patients who received gynecologic surgeries between January 1, 2017 and December 31, 2021 in the Department of Gynecology were retrospectively collected. Separately, detailed information on surgical volume and procedures for different gynecologic diseases (cervical cancer, endometrial cancer, ovarian cancer, and endometriosis) were analyzed. Accomplishments of research and education of our department's surgical teams in 2021 were also declared. In the year 2021, 69 doctors (15 senior doctors, 17 associate senior doctors, 33 attending doctors, and 4 residents) performed 14,709 surgical procedures for 1,102 cervical cancer patients, 563 endometrial cancer patients, 454 ovarian cancer patients, and 4,066 endometriosis patients. The total surgical volume increased by 1,721 (13.25%) over 2020. The team also made significant progress in scientific research, education, and other areas in 2021. In the future, all members in the department will continually offer quality care to patients, promote the development of the discipline, and increase the department's academic impact.

Keywords: Gynecologic procedures; surgical volume; scientific research; education

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West China Second University Hospital of Sichuan University (WCSUH-SCU) was originally Yan Chai Women's Hospital, founded in 1896. Today, WCSUH-SCU operates two campuses locally, Huaxi and Jinjiang, both with Obstetrics & Gynecology, and Pediatrics as its two major disciplines.

The motto of WCSUH-SCU, "*Fraternity, Professionalism, Innovation, and Dedication*", and the core values of the hospital, "*patient-centered and staff-respected*", were practiced in the Department of Gynecology. The department currently runs 288 beds across the Huaxi and Jinjiang campuses, with allocated and exchanged staff members and supplies, which improve the operation efficiency notably.

In 2021, Jinjiang campus ran all three gynecology inpatient wards, including two standard wards offering

154 beds and one VIP ward offering 28 beds for public use. Meanwhile, the department offered 106 beds for gynecology inpatients with two standard wards in Huaxi campus. For all patients, the standard operating procedures (SOPs) developed before, for the smooth operation of the wards were using and optimizing in Jinjiang campus insistently. The department also ran its VIP ward well in the year, offering "one-stop", continuous medical services with humanistic care.

In 2021, a total of 16,082 patients were admitted, and 14,709 surgical operations were performed. The number of surgical patients increased by 13.25% over 2020, which return to the pre COVID-19 epidemic level in 2019 (*Figure 1*). The department currently has 69 doctors including 15 senior doctors, 17 associate senior doctors, 33 attending doctors,

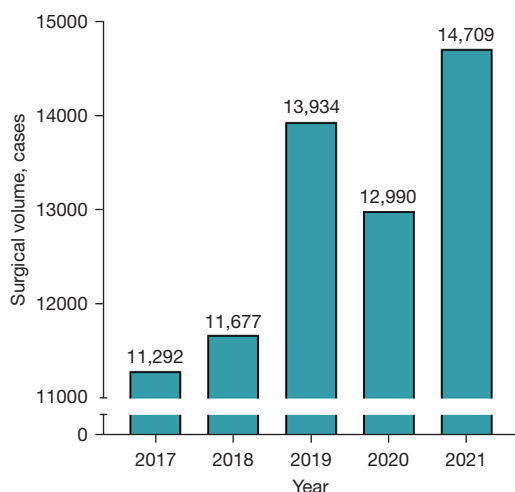


Figure 1 Annual surgical volume in WCSUH-SCU from 2017 to 2021. WCSUH-SCU, West China Second University Hospital of Sichuan University.

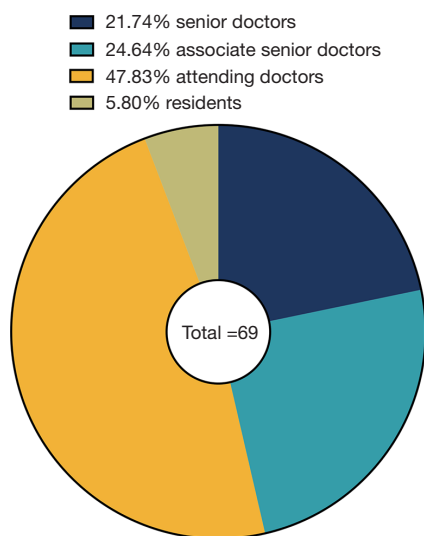


Figure 2 Staff structure in the Department of Gynecology.

and 4 residents (*Figure 2*).

The gynecologic surgery teams in the department have extensive experience in performing radical resection surgery for primary and recurrent malignant tumors, fertility-preserving surgery in patients with malignant tumors, laparoscopic surgery, and treatment for endometriosis, as well as various interventional therapies for complex reproductive tract malformations, reproductive tract fistulas, and pelvic floor diseases. The team's success and expertise in these surgeries have garnered an excellent reputation across

a full range of subspecialties. Since minimally invasive surgery is a safe and effective treatment that can provide satisfactory cosmetic outcomes and rapid recovery for the patient, it has been widely applied in the department. Most doctors have become skilled in minimally invasive techniques. Moreover, our department has adopted the Enhanced Recovery After Surgery (ERAS) protocol and has implemented safe and effective perioperative transitional care programs and clinical pathways in an attempt to accelerate postoperative physical and mental recovery, improve patients' quality of life and save medical resources.

Methods

Materials

Data from patients who received gynecologic surgeries between January 1, 2017 and December 31, 2021 in the Department of Gynecology were retrospectively collected. Detailed data on surgical volume from procedures for different gynecologic diseases (cervical cancer, endometrial cancer, ovarian cancer, and endometriosis) were analyzed separately.

Statistical analysis

Categorical variables are expressed as percentage frequency. The data from 2021 were compared with the data from 2017 to 2020. Statistical analysis was performed by Prism software (version 8.2.1, GraphPad, USA) and Excel (version 2021, Microsoft, USA).

Results

Cervical cancer

In 2021, 1,102 patients with cervical cancer underwent surgery, representing an increase of 6.37% from 2020. Surgical approaches included open surgery (n=505, 45.83%), multi-port laparoscopic surgery (n=483, 43.83%), and single-port laparoscopic surgery (n=114, 10.34%) including vaginal natural orifice transluminal endoscopic surgery (vNOTES, *Figure 3*). Laparoscopic surgeries without uterine manipulation were performed in 87 cases and included 65 cases of multi-port laparoscopy and 22 cases of single-port laparoscopy.

Among all patients who received surgery for cervical cancer, 14 patients underwent extensive cervical resection, including fertility-preserving surgery for six young patients (laparoscopic and open surgery in five cases and one case,

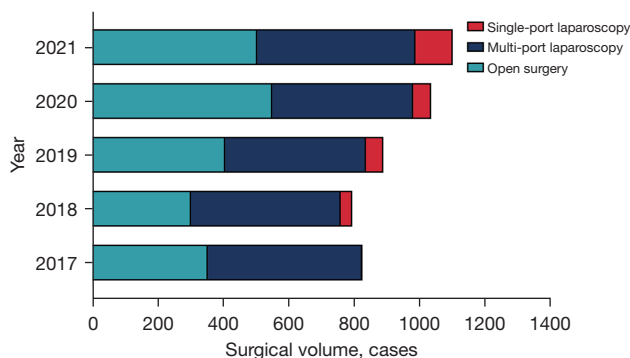


Figure 3 Surgical procedures for cervical cancer in 2017 to 2021.

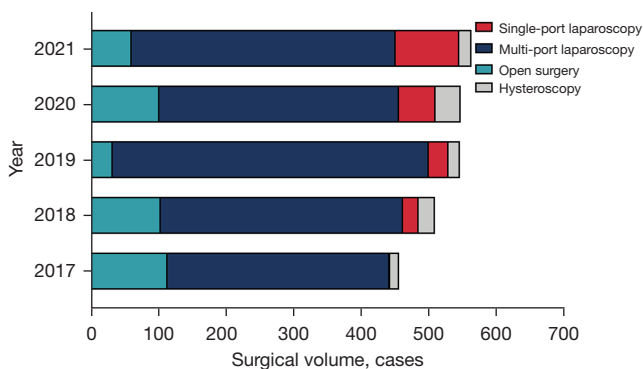


Figure 4 Surgical procedures for endometrial cancer in 2017 to 2021.

respectively) and surgery for cervical stump cancer in eight other patients with (laparoscopic and open surgery in three and five cases, respectively). The remaining patients received radical resection of cervical cancer.

According to the Laparoscopic Approach to Cervical Cancer (LACC) study published in the *New England Journal of Medicine* in 2018, for women with early-stage cervical cancer, the risks of recurrence and overall death at 3 years in patients treated with minimally invasive surgery were 3.74-fold and 6.00-fold higher, respectively, than in those who underwent open surgery. The findings of the LACC study had a significant impact on the healthcare community. Soon after the study issued, till Version 1.2022, the U.S. National Comprehensive Cancer Network (NCCN) Guidelines for Cervical Cancer had emphasized that the standard and recommended approach for radical hysterectomy is with an open abdominal approach. The International Federation of Gynecology and Obstetrics (FIGO), Society of Gynecologic Oncology (SGO), European Society of Gynecological Oncology (ESGO), American Gynecological & Obstetrical

Society (AGOS), American Society of Clinical Oncology (ASCO), and the British Gynecological Cancer Society (BGCS) also made statements that open surgery should be deemed the ‘gold standard’ operation with a higher rate of survival than minimally invasive surgery in cervical cancer, and this standpoint has already or will be issued in some of their newest guidelines. To date, the same as the LACC study, many studies have demonstrated that patients treated with minimally invasive surgery have worse oncological outcomes than those who undergo open surgery.

Based on these findings and announcements, the outpatient department at WCSUH-SCU aims to fully inform women with cervical cancer and their families of the benefits and risks of open surgery versus minimally invasive surgery before surgery approach is elected, and the indications for minimally invasive surgery have been applied much more strictly by the surgical team.

The proportion of cervical cancer suffering patients treated with open surgery was markedly increased from 2019 compared to the previous year at WCSUH-SCU (Fisher’s exact test, P value <0.0001). In 2017–2018, a total 1,621 patients (2019–2021: 3,028 patients) underwent cervical cancer surgery, among whom 657 [40.53%; 2019–2021: 1,463 (48.32%)] received open surgery and 964 [59.47%; 1,565 (51.68%)] received minimally invasive surgery.

Meanwhile, the department has energetically participated in clinical research on cervical cancer, especially the appropriate treatment approach for early-stage cervical cancer. Professor Zhengyu Li and his team retrospectively analyzed the clinicopathological data of 678 patients with early-stage cervical cancer who were treated between 2013 and 2015 at WCSUH-SCU (the data has been published) and found that tumor size was a key consideration for the treatment of early-stage cervical cancer: specifically, when the tumor was ≤ 4 cm in size, minimally invasive surgery had similar outcomes to open surgery. Many studies in this area have been published by the team and much more studies are currently under way.

Endometrial cancer

In the year of 2021, 563 patients received surgery for endometrial cancer, representing an increase of 2.93% from 2020. Surgical techniques included open surgery ($n=61$, 10.83%), multi-port laparoscopic surgery ($n=390$, 69.27%), hysteroscopic surgery ($n=18$, 3.20%), and single-port laparoscopic surgery ($n=94$, 16.70%) (Figure 4). Although

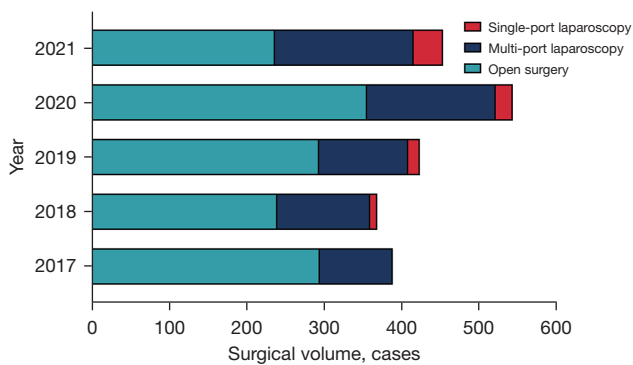


Figure 5 Surgical procedures for ovarian cancer in 2017 to 2021.

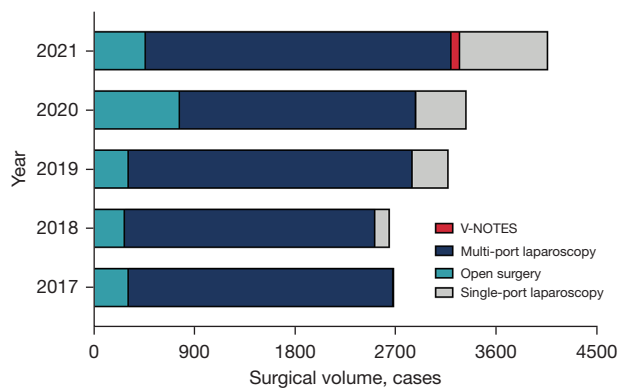


Figure 6 Surgical procedures for endometriosis from 2017 to 2021.

there was only a slight increase in the total number of surgical procedures performed in 2021, the proportion of cases treated with minimally invasive surgery rose markedly from 2020 (81.35% in 2020 *vs.* 89.17% in 2021, Fisher's exact test, P value = 0.0003).

Among them, 10 young patients underwent fertility preserving hysteroscopic lesion resection (hysteroscopy in all 10 cases and hysteroscopy & laparoscopy in none).

Ovarian cancer

In 2021, a total of 454 patients underwent surgery for ovarian cancer, representing a decrease of 16.54% from 2020. Surgical techniques included open surgery ($n=237$, 52.2%), multiport laparoscopic surgery ($n=179$, 39.43%), and single-port laparoscopic surgery ($n=38$, 8.37%) (Figure 5). The number of single-port laparoscopic surgeries increased by 72.73% from 2020 to 2021 (22 *vs.* 38 cases, Fisher's exact test, P value = 0.0077).

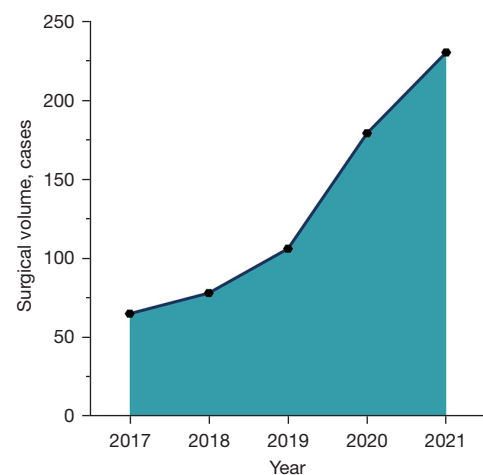


Figure 7 Surgical procedures for DIE from 2017 to 2021. DIE, deep infiltrating endometriosis.

Endometriosis

In 2021, a total of 4,066 patients with endometriosis underwent surgery in our department, representing an increase of 21.85% from 2020. Surgical techniques included open surgery ($n=470$, 11.56%), multiport laparoscopic surgery ($n=2,732$, 67.19%), single-port laparoscopic surgery ($n=786$, 19.33%), and vNOTES ($n=78$, 1.92%) (Figure 6).

Deep infiltrating endometriosis (DIE) is a special type of endometriosis for the lesion infiltrates ≥ 5 mm deep into the peritoneum or invades important organs such as intestine, ureter, and bladder. Surgical treatment for DIE is especially challenging, due to its deep location and organ invasion. In 2021, a total of 230 patients underwent surgery for DIE in our department, representing a 28.49% increase from 2020 (Figure 7), while the detection rate among all those endometriosis women showed no difference (5.09% *vs.* 5.35%, Fisher's exact test, P value = 0.6101).

Scientific research and education

As one of the top facilities for clinical practice, teaching, and scientific research in the field of gynecology in China, the department is committed to training high-potential expert at WCSUH-SCU. A variety of professional training programs (including weekly reading club by resident, weekly case discussion or lecture by attending/ chief physician) are offered to medical students, interns, trainees, and residents. A total of 534 hours of classroom- and bedside-based training sessions were completed in

2021. There were 96 master's and doctorate candidates in the department going for degree on gynecology. As one of the Gynecological & Obstetrical standardized training bases for residents of China, 92 residents accepted standardized training at WCSUH-SCU in 2021.

In the same year, the team of gynecology at WCSUH-SCU published 69 articles in Science Citation Index (SCI)-listed journals, including 21 articles that were published in journals with an impact factor of five or higher (total impact factor: 373.48, highest impact factor: 38.637); 181 articles were published in MEDLINE® journals or core/statistical source journals; 7 research projects were supported by grants at all levels, with a total of 18.49 million CNY received in funding.

In 2021, medical staff in the department participated in national academic activities, and more than 56 doctors and nurses made speeches at conferences. The department also holds high-level national academic conferences to disseminate the latest knowledge in gynecology. In 2021, more than 17 academic events were held including “Gynecological Laparoscopic Surgery Technology Training Project”, “West China Gynecology Single-port Minimally Invasive Training Camp”, “The 4th International Multidisciplinary Forum on Gynecological Tumor and Female Pelvic Floor Dysfunction” and “The 4th Multidisciplinary Forum on Women's Pelvic Floor Dysfunctional Diseases and the 6th Academic Conference on New Progress in the Treatment of Pelvic Floor Dysfunctional Diseases”, with more than ten thousand attendees in total.

The gynecologic surgery teams also organized a series of live operation demonstrations as well as surgery workshops and training courses, with the aim of sharing professional expertise with peers across China. In 2021, as the team has done in the past, the department provided several webinars on surgical demonstrations, and these skilled surgical procedures earned common praise from the audience. The training courses held by the department in 2021 included those for level-4 gynecologic surgery, pelvic floor reconstruction, and single-port laparoscopic surgery. These training sessions provided the participants with detailed theoretical explanations and precise practical guidance on surgical procedures and skills, so that every trainee benefited from the training program.

In 2021, a gynecological hospital alliance covering Chengdu and the rest of Sichuan, with WCSUH-SCU as the core institution, district/county secondary hospitals as the secondary referral hospitals, and community health

service centers as the grassroots base, named “West China Women's and Children's Union Gynecology Alliance”, which was launched in 2019, continue to offer training course as required by the syllabus. More than 100 medical staff in grassroots gynecological institutions have completed the training till now. Additionally, shadowing sessions were offered in the outpatient department, with dozens of gynecologists from the alliance completing the training.

Discussion

This is the annual report of the Department of Gynecology of WCSUH-SCU, which was issued to record achievements made by the gynecologic teams of WCSUH-SCU in 2021. WCSUH-SCU is one of the highest profile hospitals for women and children in China, and the Department of Gynecology has treated most of the critically ill women in western China. As the number of patients treated in the department has exceeded ten thousand for five consecutive years, this report was issued not only in an effort to inform colleagues about the new advances in gynecologic surgeries, but to also provide a summary of the latest developments in the department and serve as a reference for other medical institutions.

Mainly, the development dilemmas of our department in 2021 include three aspects. Firstly, for medical activities' improvement, the primary problem is repeated interrupted in the prevention and control of COVID-19 epidemic. Then, as for terms of education, the interruption of offline teaching and the reduction of international and domestic exchanges and cooperation caused by COVID-19 will affect the quality of education. The main challenge for scientific research lies in establishing advanced and sustainable research platforms and motivating scholars to conduct research in addition to heavy clinical work. In 2022, the COVID-19 was still existed. The preventing COVID-19 policy will deployed and updated by the Infection Control Department of the hospital under the guidance of the Health Commission and CDC of China. The main preventive measure is to conduct epidemiological investigation and screen virus by COVID-19 antigen quick test and nucleic acid test before hospitalization.

As a medical center for difficult and critical patients in southwestern China, WCSUH-SCU has a long-lasting commitment to enhance its capability to cope with difficulties. The department strengthened the management and staff training to improve the skills of surgeons constantly. Special attention has been paid to the

development of new clinical technologies and scientific researches by inspiring the sponsorship of, and participation in, clinical trials and studies. Efforts has also been made by the department on enhancing the connections among basic research teams and clinical work teams to support the sharing of knowledge. In this year, substantial achievements were made in many subspecialties, which have promoted the development of the entire department.

To further improve the high-quality healthcare in our department, we plan to jointly build a platform with others departments such as radiotherapy and chemotherapy, reproductive medicine, reproductive endocrinology, genetics, pathology, ultrasound, radiation, nutrition, pharmacy, anesthesia, and information management. The will is to establish a standardized, efficient, comprehensive, and powerful gynecological tumor management and diagnosis medical center, effectively promote the development and application of new surgical technologies, multi-disciplinary treatment (MDT), ERAS, venous thromboembolism (VTE) prevention and treatment, biological sample library and database for gynecological tumors, and achieve full closed-loop management of patient in our medical center. Moreover, we will carry out research on new technologies for gynecological tumor prevention, screening, diagnosis and treatment. We hope this could promote the implementation of related research projects, promote the transformation of management and technology achievements, and achieve world-class medical service capabilities. The development goal in the 2022 is to use the online conference platform to reduce the negative impact of COVID-19 on medical care, education and scientific research as much as possible. At the same time, we prepare to establish the platform mentioned before, and wish this could push our development to improve the ability of diagnosis and treatment of gynecological tumor.

Summary

This annual report summarizes the successes of the

Department of Gynecology, WCSUH-SCU in the whole year of 2021. The department will continue to provide high-quality healthcare to women, work on further the department's academic reach, and push the progress of gynecology.

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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