

TABLE 3 Association of high viral load with presence of SARS-CoV-2 in the lower genital tract of women with COVID-19 infection

	Positive vaginal swab (n = 5)	Negative vaginal swab (n = 54)	t-test statistic	P value
Mean CT value	23.6 + 0.89	27.11 + 3.32	-2.33	0.02
	Cervical swab positive (n = 4)	Cervical swab negative (n = 32)	t-test statistic	P value
Mean CT value	23.75 + 2.50	27.09 + 3.23	-1.98	0.055

Abbreviations: CT, cycle threshold.

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Gynecology

Reconstruction of three-dimensional models for complex female pelvic tumors

Yingwei Liu¹ | Shenglan Meng² | Miao Wei¹ | Fengqin Dai¹ | Lin Xiao¹ | Xiaoling Mu¹ | Junying Tang¹

¹Department of Gynecology, First Affiliated Hospital of Chongqing Medical University, Chongqing, China

²Department of Thoracic Surgery, Army Medical Center of People's Liberation Army of China, Chongqing, China

Correspondence

Junying Tang, Department of Gynecology, The First Affiliated Hospital of Chongqing Medical University, No. 1 Youyi Road, Yuzhong District, Chongqing 400016, PR China. Email: tangjy_cqmu@sina.com

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Pelvic tumors are common problems in gynecological diseases. Surgery remains the most important method for the management of pelvic tumors, including ovarian benign or malignant tumors,

sarcomas, neurogenic tumors, stromal tumors, and deep angiomyxoma.¹ The present study's three-dimensional (3D) reconstruction technique was based on preoperative computed tomography (CT)

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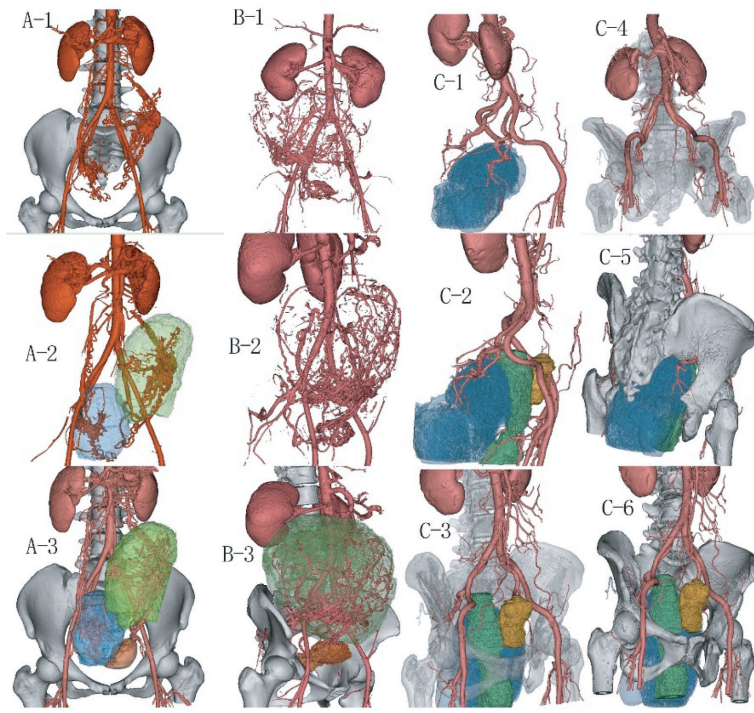
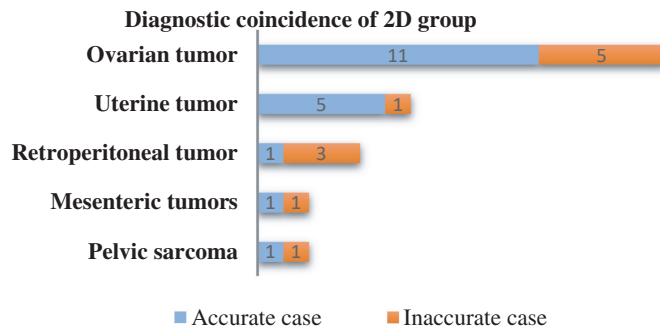
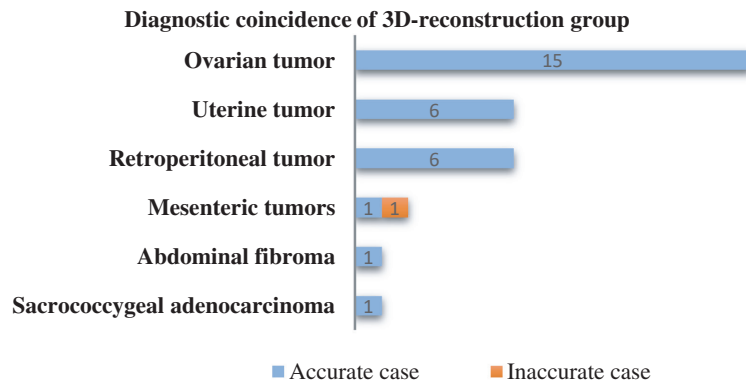


FIGURE 1 Tumor types and number of accurate diagnoses in the 3D and 2D group. (A1-2) Tumor in case 1. Right ovarian tumor (blue) and left ovarian tumor (green); The blood supply of the tumor originated from the bilateral reproductive vessels. The left genitourinary artery originates from the left renal artery and the right genitourinary artery originates from the abdominal aorta. (A-3) The orange tissue represents the uterus. (B1-3) The tumor in case 2. The tumor blood supply mainly originates from the right uterine proper ovarian ligament, as well as the reproductive vessels emanating from the aorta. The green mass represents the tumor. (C1-6) The tumor in case 3. The blue mass represents the tumor. The vessels come from the aorta and the bilateral internal iliac vessels. The yellow mass shows the uterus and green mass shows the rectum. The tumor is located behind the rectum in the retroperitoneal space

images of the patient's pelvis. The 3D models were used to observe the anatomic characteristics of the tumor, thus enabling us to anticipate potential surgery difficulties and subsequently guide the performance of actual surgeries (Figure 1).²

A total of 61 patients with complex pelvic tumors, who underwent surgeries at First Affiliated Hospital of Chongqing Medical University, were included in this study. Overall, 31 patients underwent pelvic CT angiography (CTA) with thin-layer scanning (0.625 mm)—these 31 patients (3D-reconstruction group) were evaluated by 3D reconstruction before surgery, while the other 30 patients (2D group) were evaluated without. The Ethics Committee of the First Affiliated Hospital of Chongqing Medical University provided ethical approval (2021–407) for the present study.

The software that was utilized for 3D reconstruction is a commercially available system called Mimics 21.0 software (Materialize).³ Relevant clinical parameters and surgical outcomes were recorded for comparison. Pathological analysis and histopathological evaluation identified the classification of the tumor. All 3D models were reconstructed successfully, and the coincidence rate with pathological results was 93.55%. Compared with the 2D group, the 3D group showed statistically significant superiority with regards to operation time, blood loss, length of hospital stay, and time of consultation during surgery ($P < 0.05$). The surgeons examined the reconstructed CT scan and prepared for the operation with a multidisciplinary team. This resulted in advantages of shorter operation time and quicker recovery time for the patient.

1 | CASE 1

A 28-year-old patient with two suspicious masses in the pelvic cavity and abdominal cavity. The blood supplies came from the reproductive vessels and the proper ovarian ligaments in the bilateral uterine horns. The pathological diagnosis was (bilateral ovaries) goblet cell carcinoid.

2 | CASE 2

A 28-year-old patient with pain in the lower abdomen. The tumor vascular system comes from the reproductive vessels and the proper

ovarian ligament in the right corner of the uterus. The pathological examination revealed dysgerminoma in right ovary.

3 | CASE 3

A 56-year-old patient with a hard, painless mass in the sacrococcygeal region for approximately 20 years. The blood vessels come from branches of the aorta and bilateral branches of the internal iliac vessel. The pathology result indicated mucinous adenocarcinoma which originated from teratoma.

Our findings suggest that evaluations which utilize 3D reconstructed models enabled greater accuracy with regards to locating lesions and vessels. 3D reconstructed models appear to be a more reliable method in assessing complex female pelvic tumors.

CONFLICT OF INTEREST

The authors have no conflicts of interest.

DATA AVAILABILITY STATEMENT

No. Research data are not shared.

AUTHOR CONTRIBUTIONS

JT contributed to the conception of the study. YL performed the experiment. SM, LX, XM, DF, and MW contributed significantly to analysis and preparation of the manuscript. YL performed the data analyses and wrote the manuscript. SM helped perform the analysis with constructive discussions. All authors contributed to and approved of the final version of the manuscript.

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