

Robotic-assisted laparoscopic radical hysterectomy (Piver type III) with pelvic node dissection - case report

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Summary

Objective: The aim of this study was to describe the first robotic-assisted radical hysterectomy (Piver type III) and bilateral pelvic lymph node dissection for a patient with Stage Ib1 cervical carcinoma.

Case: A 43-year-old woman G1, P1, previously operated on due to endometriosis with removal of the left ovary and fallopian tube, came under our care. In addition, hysteroscopic myomectomy had been done two years before. Otherwise the patient was healthy. Preoperative conization histology revealed 6 mm of stromal infiltration. The patient was offered the da Vinci robotic Wertheim operation for the first time which was well accepted and she was discharged uneventfully on the 4th day postoperatively. Four months later at a routine check-up we found asymptomatic bilateral lymphocysts but otherwise normal status.

Conclusion: It is fully possible to perform Piver type III laparoscopic radical hysterectomy using the da Vinci robotic system and it seems that radical dissection is much more precise than the conventional laparoscopic radical hysterectomy.

Key words: Robotic-assisted laparoscopy; Radical hysterectomy; Pelvic lymph node dissection.

Introduction

We report the first case of a robotic-assisted laparoscopic radical hysterectomy (Piver type III) with pelvic lymph node dissection to treat a Stage IB1 squamous cell carcinoma of the cervix.

Case Report

A 43-year-old woman, G1, P1, was referred to our department with a diagnosis of FIGO Stage IB1 squamous cell carcinoma of the cervix. Conization was performed at the local hospital and the histological diagnosis was squamous cell carcinoma of the cervix without lymphovascular involvement. Infiltration depth was more than 6 mm and wider than 10 mm.

Carcinoma in situ was found at the proximal resection border. Post-cone clinical examination was unremarkable after conization. Magnetic resonance imaging (MRI) showed no evidence of any remaining cervical tumor and both paraaortal and pelvic lymph nodes were not pathologic. The patient had been treated by hysteroscopic myomectomy two years before and the left ovary and Fallopian tube had been removed because of endometriosis three years before. Otherwise the patient was in good health.

After preoperative work-up she was offered robotic-assisted laparoscopic radical hysterectomy and pelvic lymph node dissection. The operation was technically extremely difficult due to severe adherances and endometriotic changes especially on the left pelvic side wall, and the robotic operation lasted seven hours and 25 minutes. Total estimated blood loss was 200 ml. The

postoperative period was uneventful and she was discharged after four days. Histological examination of the operation specimen showed no remaining tumor. The endometrium was of the secretory type. Some areas of adenomyosis were found in the fundus uteri. Seven lymph nodes on the right side and eight lymph nodes on the left side, in total 15 lymph nodes, showed no metastasis (0/15). Resection margins were free. After formol fixation the right parametrium measured 4 x 2.5 cm (Figure 1b) and the left parametrium 2 x 1 cm (Figure 1c). The vaginal edge anteriorly measured 1 cm and posteriorly 3 cm (Figure 1a). Four weeks later she was submitted to routine clinical control which was normal. Follow-up consisted of physical examination, vaginal ultrasound examination, and tumor markers including CEA every three months during the first two years, then every six months.

Conclusion

The first conventional laparoscopic radical hysterectomy on a 30-year-old woman with Stage IA2, squamous cervical carcinoma (depth of infiltration 4 mm) lasted eight hours [1].

Since then several studies with a limited number of patients have shown the feasibility of a radical resection by laparoscopic surgery, but only 150 patients have been reported in the medical literature with encouraging results.

Today laparoscopic surgery is a "transitional" technology leading to robotic surgery. It has been nearly ten years since the first appearance of robotics in the operating room. During this time progress has been made in integrating robotic technologies with surgical instrumentation, as evidenced by the many thousands of successful

Fig.1a

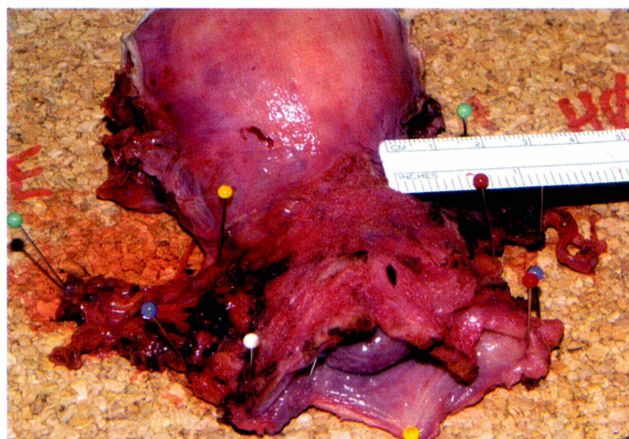
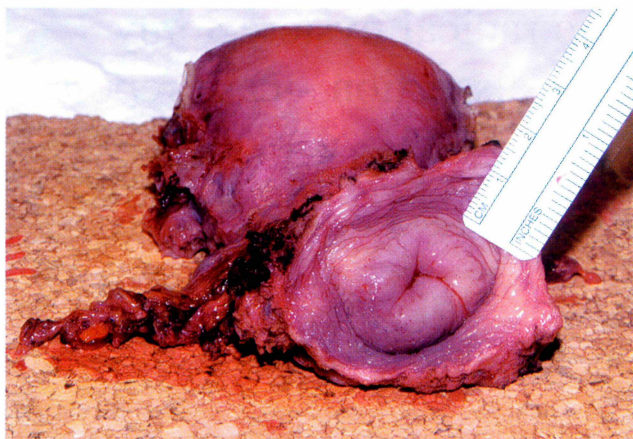


Fig.1c

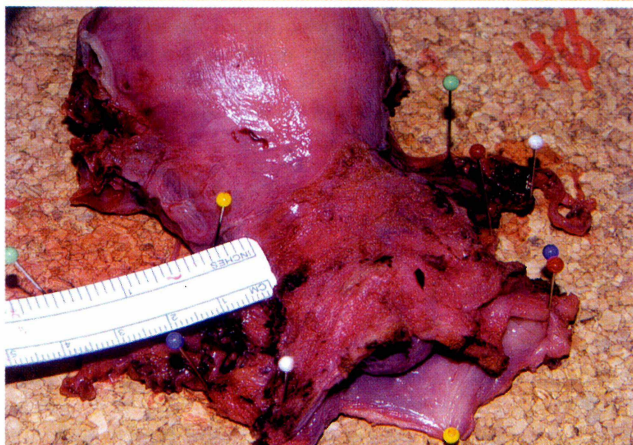


Figure 1a. — The operative specimen with bilateral parametrium and vaginal cuff.

Figure 1b. — Right parametrium.

Figure 1c. — Left parametrium.

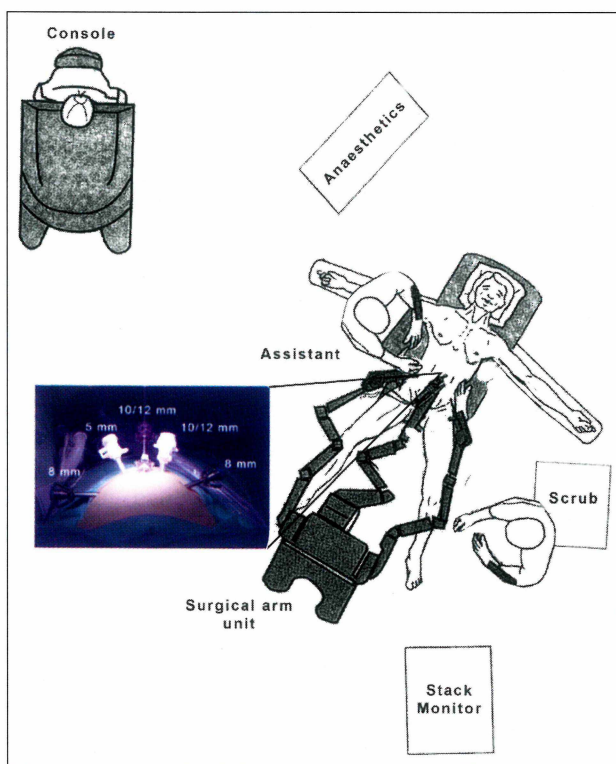


Figure 2. — Operating room set-up and trocar positions.

robot-assisted cases. The first case series of laparoscopic hysterectomy using the da Vinci robotic surgical system was reported in 2002 by Diaz-Arrastia *et al.* [2]. The operative time ranged from 4½-10 hours.

The da Vinci computer-enhanced robotic surgical system (Intuitive Surgical, Sunnyvale, CA, USA) has previously been used successfully in cardiologic surgery and urology. The objective was to combine the advantages of laparoscopic surgery, e.g., small incisions, reduced blood loss, and quicker patient recovery with the advantages of modern robot technology. The remote control system could improve laparoscopic surgery in many ways: 1) dexterity of instrument handling, 2) additional grades of freedom (Endowrist Technology), 3) excellent 3-D vision (Inside Vision System), 4) comfortable positioning of the surgeon. Nevertheless, present robotic surgical systems have limitations that have slowed the widespread introduction of the technology. One major barrier is cost. A second major concern is additional time for set up. Another area that will require optimization is the process of the Food and Drug Administration approval of safety and regulatory issues. The FDA approved the use of the da Vinci robotic system in gynecology in April 2005. We have already done feasibility and radicality studies with standard laparoscopic radical hysterectomy compared with open Wertheim and found that it is absolutely possible to perform type III radical Wertheim with

laparoscopy without compromising the radicality [3]. Therefore, we decided to do the same operation with a robot-assisted procedure. To date, there have been no published reports of using the da Vinci robotic system for radical hysterectomy in humans. Our experience is the first such report. The operating room set-up and trocar positions are shown in Figure 2.

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References

- [1] Canis M., Mage G., Wattiez A., Pouly J.L., Manhes H., Bruhat M.A.: "Does endoscopic surgery have a role in radical surgery of cancer of the cervix uteri?". (in French). *J. Gynecol. Obstet. Biol. Reprod.* (Paris), 1990, 19, 921.
- [2] Diaz-Arrastia C., Jurnalov C., Gomez G., Townsend C. Jr.: *Surg. Endosc.*, 2002, 16, 1271.
- [3] Sert M.B.: "Laparoscopic radical hysterectomies" (Oral presentation). Oncologist Forum, Tromso, Norway, Nov. 2005.

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