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Case Report

Radical vaginal trachelectomy and laparoscopic pelvic lymphadenectomy in IB1 cervical cancer during pregnancy

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Introduction

Cervical cancer is the most frequent oncologic pathology discovered during pregnancy and is considered particularly challenging, as the care of the patient involves the survival of the patient as well as the viability and well-being of the fetus. Currently, there is no consensus regarding the most effective treatment for cervical cancer during pregnancy due to the rarity of its occurrence. In 2008, Van de Nieuwenhof (Van de Nieuwenhof et al., 2008) reported the first successful case of radical vaginal trachelectomy (RVT) and abdominal pelvic lymphadenectomy in a patient who was 16 weeks pregnant and gave birth after 36 weeks gestation. In 2006, Ungar (Ungar et al., 2006a) published the first case of radical abdominal trachelectomy (RAT), which was also considered successful. The present report describes the first RVT with laparoscopic pelvic lymphadenectomy that occurred in June 2008, in a patient who was 11 weeks pregnant when she was diagnosed with stage IB1 cervical cancer. The procedure was considered successful, as the fetus completed its development in utero, and both the patient and child remained healthy throughout the length of the follow-up.

Case study

A 41 year-old patient, G3P2, without previous morbidity complained of vaginal bleeding during the first trimester of her pregnancy. Following gross examination, which suggested potential neoplastic disease, a biopsy of the exocervix was made, and a non-keratinizing squamous cell cervical carcinoma was diagnosed. The lesion was clinically labeled as a FIGO stage IB1 tumor by the gynecooncologic committee of the hospital. The tumor resided on the cervix, which was 3 cm in length, and did not demonstrate parametrial compromise. In line with patient's wish to preserve the pregnancy, the case was thoroughly discussed and several treatment options were offered to the patient and her husband including radical hysterectomy, radiochemotherapy, and a delay in treatment until fetal maturity. Eventually RVT with systematic laparoscopic pelvic lymphadenectomy (SLPL) was proposed as an experimental procedure that would allow treatment of the cancer while preserving the pregnancy. Fully informed of the risks, the patient opted for RVT with SLPL and signed an informed consent form that was specifically written for this case. To prevent the induction of premature labor, the patient was administered a daily dose of 200 mg of intravaginal micronized progesterone throughout the entire pregnancy and no antibiotics were administered.

The surgical intervention occurred in June 2008, and begun with a successful SLPL without suspicion of nodular metastasis upon gross examination. Subsequently in a trans-vaginal manner, the RVT was performed to remove a 2 cm vaginal cuff. The surgical removal of the vaginal cuff left a 0.5 cm cervical remnant to which a PROLENE cerclage was surgically implanted. The vagina was sutured to the cervical stump using Vicryl sutures. The total blood loss was estimated to be approximately 300 cc. There were no complications during or after surgery, which lasted approximately 300 min. The patient was discharged 7 days after the procedure and was monitored in the High-risk Obstetric and Oncologic Gynecology Unit every 3 weeks. Monitoring revealed no signs of recurrence; moreover, the fetus developed normally and showed no symptoms indicating a premature birth.

A definitive biopsy was evaluated by a pathologist, who reported a $35 \times 30 \times 30$ mm exophytic tumor corresponding to a non-keratinized squamous cell cervical carcinoma with grade III cervical intraepithelial neoplasia. The margins were negative at the base and there was minimal stromal infiltration. The lymphatic vessels were not compromised. The section edges and the parametrium were tumor-free, and the 22 lymph nodes that were collected showed no signs of metastasis.

After 36 weeks of gestation a Cesarean-hysterectomy was performed, and a 46 cm long, healthy male newborn was delivered weighing 2790 g. Apgar test results 1 min after delivery and 5 min after delivery were 5 and 7, respectively. Biopsy of the cervical tissue following the SVT

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revealed a microinvasive squamous cell carcinoma in the cervical stump. Postoperative Computed Axial Tomography was negative for metastasis. After consulting with the oncologic committee, the patient and the committee mutually agreed not to pursue further treatment, and periodic check-ups and supervision were recommended. Forty months after the initial SVT surgery, both the patient and her child were healthy and displayed no signs of pathology.

Discussion

Overall, 15% of cervical cancers and 45% of stage IB cervical cancers in women under 40 years of age are treated by surgery. A significant number of these patients are fertile when the diagnosis is made and thus can benefit from surgical techniques that enable them to preserve their reproductive capacity (Covens et al., 2001). Cervical cancer is the most frequently diagnosed cancer in pregnant women, affecting between 1 and 10 in 10,000 pregnant women (Duggan et al., 1993).

The most effective treatment for cervical cancer during pregnancy is not well defined and depends on several factors, such as gestational age of the fetus, stage of the disease and the patient's desire to preserve the pregnancy. Because of the rarity of cervical cancer occurring during pregnancy, most treatment options are still considered experimental. The literature that exists on treating cervical cancer during pregnancy describes three treatment options for women who wish to preserve their pregnancy: 1) scheduled delay of treatment until fetal viability is reached (Traen et al., 2006), 2) neoadjuvant chemotherapy until fetal viability is reached followed by a Cesarean hysterectomy (Bader et al., 2007) and 3) radical trachelectomy (Ungar et al., 2006b). It remains unclear whether the prognosis of cervical cancer is influenced by the pregnancy; however, there is a consensus that delaying oncological intervention is an acceptable alternative for pregnant woman who are at the end of their second trimester or in their third trimester. Delaying treatment in these patients presents a 5% risk of recurrence, which is similar to the rate of recurrence in women who are not pregnant. Neoadjuvant chemotherapy is used to reduce the size of the tumor and to prevent lymphatic metastasis. To date 9 cases of pregnant women treated for cervical cancer with neoadjuvant chemotherapy have been reported, of which 2 have passed away, and all have had good perinatal results. Chemotherapy is based on a platinum derivative drug used in combination with another agent; this chemotherapy regimen is contraindicated during the first trimester due to the associated risks for miscarriage, fetal death and minor fetal malformations.

In 1994, Dargent described the initial a RVT following a laparoscopic pelvic lymphadenectomy, removing a major part of the cervix, the parametrium and the vaginal cuff in the process. Several subsequent publications have reproduced this technique with promising oncological and perinatological results (Dargent et al., 2000; Shepherd et al., 1998). This technique has been successfully performed in patients with early-stage cervical cancer achieving a 2-year survival rate of approximately 97% and strongly encouraging its use in pregnant patients with cervical cancer.

In 2006, Ungar published 5 cases of radical abdominal trachelectomy with pelvic lymphadenectomy in pregnant patients between 7 and 18 weeks gestation with good oncological results; no recurrences were observed in any of the patients during the 40 months of monitoring following the procedure. However, 3 of those 5 patients had a miscarriage immediately after surgery, while the other 2 patients were able to complete the gestational period (Ungar et al., 2006a).

In 2004, Ben-Arie described a more conservative management of a patient with a 15-week pregnancy and a poorly differentiated stage Ia2 cervical tumor. In this procedure, a cold knife cone dissection was performed resulting in negative margins, followed by node-negative extraperitoneal pelvic lymphadenectomy. The pregnancy lasted 39 weeks, at which point a C-section was performed. An RVT was performed 6 weeks after delivery. Both mother and son are currently healthy after 3 years of monitoring (Ben-Arie et al., 2004).

Finally, in 2008, Van de Nieuwenhof published the first case of RVT with an abdominal pelvic lymphadenectomy and cerclage in a patient with a 16-week pregnancy. The patient underwent, a Cesarean-hysterectomy at 36 weeks gestation, and the patient and child were healthy 9 months after the delivery (Van de Nieuwenhof et al., 2008).

The case reported in this document is the first report in which the lymphadenectomy was performed by laparoscopic means. Laparoscopy has the advantage of requiring very little manipulation of the uterus and diminishes the possibility of miscarriage following the procedure while maintaining the ability to harvest all of the implicated pelvic lymph nodes. Vaginal trachelectomy is advantageous in that it prevents excessive bleeding as also described in abdominal techniques. In summary, this case study is the first to report the use of laparoscopy with radical vaginal trachelectomy in a patient who was 11 weeks pregnant with IB1 cervical cancer and wishes to preserve her pregnancy. As mentioned earlier, the advantages of this technique include minimal manipulation of the uterus and a rapid recovery with good oncological and perinatological results.

Conflict of interest statement

The authors have no conflicts of interest to disclose.

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