Laparoendoscopic single-site ovariectomy: an indication of choice for ovarian cryopreservation

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Abstract

Nodular sclerosing Hodgkin disease stage IV according to the Ann Arbor classification was diagnosed in a 30-year-old nulliparous woman. Because management required the use of a chemotherapy regimen with a high risk of secondary infertility, ovarian cryopreservation was realized by single-site laparoscopic unilateral oophorectomy. The single-site approach can limit aesthetic consequences in young patients and complications related to trocar set-up should emergency chemotherapy be requested.

Keywords

Fertility; oncology; laparoscopy; single-site surgery; ovarian cryopreservation; lymphoma.

Introduction

Cancers in young patients present problems not only with regard to treatment of the disease but also with the effects of treatment on fertility. The goal of chemotherapy or radiotherapy is always patient recovery, however fertility preservation techniques (including ovarian cryopreservation) are developing and must be offered to these young patients.

Case report

We report the case of a young 30-year-old nulliparous patient suffering from nodular sclerosing-type Hodgkin lymphoma with high tumour mass (Ann Arbor stage IV). The management consisted of urgent establishment of ABVD (adriamycin, bleomycin, vinblastine, dacarbazine) chemotherapy intensified by BEACOPP (bleomycin, etoposide, adriamycin, cyclophosphamide, vincristine-ovonicin, procarbazine, prednisone) chemotherapy. Because such
Chemotherapy regimens involve a high risk of secondary ovarian insufficiency, estimated to be up to 50% in our particular case, fertility preservation was discussed. Because of the medical emergency, ovarian stimulation was not an option, thus making freezing of embryos impossible. Ovarian cryopreservation was therefore proposed[1]. The procedure began with a 3-cm incision in the umbilicus to install the single port. This single abdominal access allowed the use of 2 straight or curved 5-mm instruments and a 5-mm 30° degree optic camera handled by an assistant (Fig. 1). Single-site laparoscopy allowed the abdominopelvic exploration of this young patient, especially to eliminate any adnexal or tubal disease that could affect the choice of the ovary to be removed. Following exploration, right oophorectomy by elective bipolar coagulation and progressive sections with cold scissors was performed, maintaining tubal vascularization[2]. The ovary was handed to the embryologist in the operating room 15 min after the beginning of the procedure to start ovarian cryopreservation. The time required for the entire surgical procedure did not exceed 30 min.

A chemotherapy venous catheter was also placed at the left cephalic vein during the intervention. No intraoperative or postoperative complications occurred and the patient was released the same day. Pathological examination of an ovarian fragment showed no lymphomatous involvement. Chemotherapy was started 3 days after the end of surgery.

**Discussion**

Preservation of fertility is central to the management of cancer in young patients. For young women, ovarian cryopreservation, which allows the conservation of healthy ovarian tissue, is a recently developed technique that can preserve fertility. This technique has already resulted in 10 pregnancies, especially in the case of Hodgkin disease[3,4].

The surgical procedure can be performed through different surgical approaches, depending on the indications (laparotomy or laparoscopy). It consists of unilateral oophorectomy preserving the homolateral Fallopian tube to facilitate freezing and conditioning for future autologous graft[5]. The time between oophorectomy and the beginning of the temperature drop should not exceed 1 h in order to preserve the oocytes. Considering this time limit, this kind of surgery is preferentially performed in an operating room adjacent to a reproductive unit. After cortical sections, the samples are placed in a cryovial filled with freezing solution and stored in liquid nitrogen[6,7]. An ovarian fragment is examined by the pathologist to verify the absence of tumour cells and thus limit the risk of tumour recurrence after transplantation.

In the context of cancers, and specifically Hodgkin disease, the timing of the first chemotherapy is critical in terms of its effectiveness for disease-free and overall survival[8]. Events that may delay the initial treatment such as infections and postoperative complications, which was estimated to be up to 3% in benign gynaecologic laparoscopic surgery, should therefore be avoided[9].

These complications are particularly prevalent in patients with Hodgkin disease, because patients with bulky compressive lymphadenopathy often benefit from high doses of...
corticosteroids starting from the clinical diagnosis to the end of the course of chemotherapy, thus increasing the risk of infection and delayed healing by immunosuppression\textsuperscript{[10]}. Single-site laparoscopy with a single trans-umbilical incision was used in our case. Even if specific equipment and training are required, retrospective studies have already shown that the operative time is approximately the same as that required in conventional laparoscopy for most adnexal surgeries\textsuperscript{[2]}. It allowed us to limit not only the number of incisions and the risk of complications related to the insertion of trocars, such as wound infection or delayed healing, but also the aesthetic sequelae in this young patient\textsuperscript{[11]}. The single umbilical incision, measuring 3 cm by 1 cm with the classic use of trocars, also facilitated extraction of the ovary without trauma for cryopreservation. Thus, single-site laparoscopy seems to be the surgical method of choice for ovarian cryopreservation.

**Conflict of interest**

The authors report no conflicts of interest in any products or companies mentioned in this article.

**References**


