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MINIMAL INVASIVE FERTILITY SPARING TREATMENT OF CERVICAL CANCER

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This paper gives an overview of in particular surgical techniques that allow young women with cervical cancer to retain fertility.
Key words: cervical cancer, fertility, radical trachelectomy.

Introduction

Professor Daniël Dargent from Lyon used the old technique of vaginal radical surgery according to Schauta for his uterus sparing but still radical surgery for cervical carcinoma (1994) [3]. Since he developed this technique in the late eighties, fertility sparing surgery has become increasingly important in the treatment of gynaecological cancer. As minimal invasive techniques have become more and more available, fertility sparing has become a real option.

Aim

This paper gives an overview of in particular surgical techniques that allow women with cervical cancer to retain fertility. Although also other types of intervention, such as neo-adjuvant chemotherapy, but also oöcyt vitrification and IVF play an increasing role in fertility sparing cancer treatment, these modalities will not be discussed in this paper.

Cervical cancer

Due to social economic improvements in Western countries, including Russia, the incidence of cervical cancer is decreasing. In Russia the current incidence is 13 per 100.000 women. Unfortunately, exactly in the younger age group between 20 and 40 years of age, there is a slight increase in the occurrence of cervical carcinoma [2]. In more advanced stages, which need to be treated with (chemo)radiation, preserving fertility is rarely possible. If available ovarian or oöcyt preservation will in principle allow surrogate mothership in the future. Of course, such assisted reproduction methods are subject to local, legal and medical ethical regulations which will often make it impossible to employ such methods. In earlier stages (Iaii through IIa) surgery may be performed with preservation of the uterus and of course the ovaries.

Surgical fertility preservation

Various surgical techniques are available (table 1) that aim at more or less radical removal of the cervix while preserving the uterus. Most experience has been gained with radical vaginal trachelectomy, as developed by prof. Dargent. This is only performed in tumours of less than 2 cm in diameter as this procedure is associated with a high risk of recurrence in larger tumours.

As part of this procedure, first a laparoscopic pelvic lymph node dissection is done, whether or not with a sentinel node procedure. Subsequently, the cervix and parametria will be removed vaginally. After the application of a permanent cerclage around the cervix, the uterus will be sutured to the vaginal vault. In about 10 % of cases this will result in a stenosis that usually can be relieved by dilatation but which also sometimes necessitates excision.

The Dutch experience now comprises about 100 patients of whom 60 % have tried to become pregnant. In a recent publication of the first 63 patients treated in the Netherlands, 23 pregnancies in 35 patients actively pursing pregnancy resulted in 15 healthy children from 19 ongoing pregnancies. In 3 cases an abortion was performed for non-medical reasons and 1 pregnancy was still ongoing. Worldwide this technique has been described in over a 1000 patients. In this large series this method did not only prove to be effective in terms of fertility preservation, but it also proved to be safe in oncological terms in comparison with the century old usual treatment with radical hysterectomy [1, 6].

Table 1

Options for fertility sparing surgery for cervical cancer

Radical vaginal trachelectomy (RVT)
Radical abdominal trachelectomy (RAT)
Radical laparoscopic trachelectomy
Radical robot-assisted laparoscopic trachelectomy
Neo-adjuvant chemotherapy + conisation

On one hand one could claim that a radical trachelectomy is actually already over treatment for patients with small tumours (<2 cm), because in these patients parametrial invasion is rare. In these patients the incidence of parametrial invasion is less than 2 %, if also the nodes are negative [11]. Nevertheless, we would favour to continue using radical surgery in these cases for at least two reasons. First of all, studies that addressed parametrial invasion have all been done in patients who underwent a parametrectomy and have therefore an excellent prognosis. Perspective studies are still necessary to show that less radical surgery, such as conisation in combination with lymphadenectomy, will have similar oncological outcome. F. Landoni et al. [4] have proposed to prevent under treatment through conisation by giving neoadjuvant chemotherapy before performing such limited surgery. The only and first major study comes from Prague, where is it suggested that a prognosis after conisation alone for tumours with a diameter of less than 1 cm (which incidentally adds another criterion) is also excellent [7]. The first randomized study, the so-called SHAPE study has just been proposed from Canada and aims to show that a parametectromy is not necessary. The design of this study does not entail fertility sparing surgery but rather compares simple versus radical hysterectomy in small cervical tumours.

A second reason however to stick to a radical trachelectomy rather than a simple trachelectomy or conisation, is the fact that only by performing this procedure one is completely sure to have removed the cervix. In surgical terms there is a definite risk of incomplete, i.e. irradical operation if conisation only is performed. In summary, it is fair to say that a conisation should only be done as part of a study addressing the issue of direct growth and metastasis using ultra staging techniques, in order to prospectively assess the difference between such less radical procedure as opposed to conventional, more radical surgery.

Alternative approaches

As mentioned before, neo-adjuvant chemotherapy may be considered in case tumours are bigger than 2 centimetres and therefore too big to immediate perform a uterus sparing operation (radical trachelectomy or conisation). Chemotherapy for such purpose usually contains cisplatin together with ifosfamide with or without doxorubicine. This approach has been described in a few but small series with a recurrence rate that varies from 0/16 to 1/7 [8]. Therefore, this method, although technically possible, has not yet been proven to be a safe as radical treatment.

In 1932, Aburel performed the first abdominal trachelectomy in Rumania and in 1997, J.R. Smith et al. [9] published this technique which had been revived by Ungar in Hungary. Until this day, the series of Ungar from Budapest is the biggest in the world with almost 100 patients. In the meantime, this procedure is also regularly being performed in big centres such as the Memorial Sloan Kettering in New York [10]. Nevertheless, this remains a procedure with relatively small numbers. Theoretically, this approach could be more suitable for bigger tumours than radical vaginal trachelectomy, but this has not been supported yet by data. For smaller tumours and for younger patients the advantage of an abdominal vaginal approach for fertility sparing surgery is still unclear. Not only is little known about the follow-up of these patients that have undergone an abdominal trachelectomy in both oncological as reproductive sense, but it also remains a question whether the advantage of diminished morbidity of the vaginal approach will also be retained by if this procedure will be performed abdominally. As a matter of fact it has already been shown that less patients become pregnant after abdominal radical trachelectomy than after vaginal radical trachelectomy. The use of (robot-assisted) laparoscopic surgery may perhaps again revive the concept of abdominal radical trachelectomy, also in tumours bigger than 2 centimetres as this approach will also allow resection of an adequate part of the parametria [5].

Conclusion

In conclusion increasingly doctors and patients alike are aware of the option of fertility sparing treatment for cervical carcinoma. Such therapy is not only associated with less morbidity but it also seems safe as it does not seem to jeopardize a prognosis of these often young patients. Of course, fertility sparing treatment may reach on the border of what is safe in oncological terms and this should be discussed with the patient and her partner. Doctors should be aware not to pass this border and to set a limit of what are safe options.

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