

MLODAWSKI, Jakub, CHABIK, Anna, ALBRZYKOWSKI, Maciej, MLODAWSKA, Marta & SWIERCZ, Grzegorz. Conservatively treated, live, 12-week cervical pregnancy – case report. *Journal of Education, Health and Sport*. 2022;12(12):311-316. eISSN 2391-8306. DOI <http://dx.doi.org/10.12775/JEHS.2022.12.12.047>  
<https://apcz.umk.pl/JEHS/article/view/40839>  
<https://zenodo.org/record/7467345>

The journal has had 40 points in Ministry of Education and Science of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of December 21, 2021. No. 32343. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical Culture Sciences (Field of Medical sciences and health sciences); Health Sciences (Field of Medical Sciences and Health Sciences). Punkty Ministerialne z 2019 - aktualny rok 40 punktów. Załącznik do komunikatu Ministra Edukacji i Nauki z dnia 21 grudnia 2021 r. Lp. 32343. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przynależność dyscypliny naukowej: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu). © The Authors 2022. This article is published with open access at License Open Journal Systems of Nicolaus Copernicus University in Torun, Poland Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike. (<http://creativecommons.org/licenses/by-nc-sa/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited. The authors declare that there is no conflict of interests regarding the publication of this paper. Received: 12.11.2022. Revised: 21.12.2022. Accepted: 21.12.2022.

## Conservatively treated, live, 12-week cervical pregnancy – case report

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### Abstract:

Cervical pregnancy is one of the rarest forms of ectopic pregnancy. Due to the low prevalence of this pregnancy complications, the management of this complication is not standardized. In this work, we describe conservative management of a 12-week cervical pregnancy. Descriptions of the cases of such a large pregnancy treated conservatively are scarce. In order to protect the fertility of the patient, most of the described conservative procedures available in the literature were applied, such as: the administration of a 15% solution of KCl into the gestational sac, administration of methotrexate into the gestational sac and intramuscularly, as well as embolization of the uterine arteries with cervical canal curettage. After 5 weeks of observation and applied treatment, the patient was discharged home with a preserved uterus.

Keywords: cervical pregnancy, ectopic pregnancy, methotrexate, arterial embolisation

### Introduction:

Cervical pregnancy occurs with a frequency of 1:1000 – 1:18000 pregnancies (1), which at the same time makes it one of the rarest forms of ectopic pregnancy. The most common of its symptoms include bleeding from the birth canal, with coexisting lower abdomen pain occurring less frequently. The diagnosis is based on the image obtained from a transvaginal ultrasound performed in the first trimester of pregnancy. The pathogenesis of cervical pregnancy is not fully understood, while the factors predisposing to this complication have been described in the literature. These include, among others: previous cervical procedures, in vitro fertilization, cigarette smoking and post-traumatic damage of the mucous membrane in the cervical canal (2) (3). Many methods of managing cervical pregnancy are described, however, due to the low prevalence of complications, standardized management algorithms are not available. In the case of female patients, who have completed their procreation, one of the treatment methods may be a complete removal of the uterus. The female patients, who wish to retain fertility should be treated conservatively. There are many methods of conservative treatment described in the literature, and their use should depend on the experience of the staff and the availability of equipment. In this work, we describe a case of the conservative management of a cervical pregnancy diagnosed at week 12 of pregnancy. There is a little data in the literature on the conservative treatment of such an advanced pregnancy which ended in success.

### Case description:

Due to the suspicion of cervical pregnancy, a 31-year-old patient was referred to the Obstetrics and Gynaecology Clinic in the 12th week of her first pregnancy. In the physical examination: vaginal spotting for approximately 7 days. Vital parameters within norm. The body of the uterus was not corresponded to the size of the pregnancy; it was painless when moved. On speculum examination, the vaginal part was distended and there was spotting from the cervical canal. In laboratory tests the concentration of beta chorionic gonadotropin in the blood was 47,000 IU / ml; the remaining parameters were in the norm ranges. The ultrasound examination on admission showed the presence of a gestational sac in the cervical canal; inside there was an embryo with CRL = 56 mm, which corresponded to 12 weeks of pregnancy. Foetal heart rate = 156/min. [fig. 1]

Due to the intention of the patient to maintain fertility and the lack of consent to the removal of the uterus, a proposal was made to terminate the pregnancy by means of an injection of a 15% KCl solution and subsequent administration of methotrexate (MTX) into the gestational sac. After obtaining the patient's consent, under ultrasound control, a 15% KCl solution was administered transcervically into the embryo, which resulted in foetal cardiac arrest. Then, the fluid was drained from the gestational sac and 25 mg of methotrexate was administered to the gestational sac. [fig.2]

On the seventh day after the procedure, the  $\beta$ -hCG concentration was 25900 IU/ml. The patient remained under observation for a month at the gynaecological ward, where she continued the treatment with intramuscular methotrexate in a total dose of 275 mg. The effectiveness of the therapy was monitored by measuring the  $\beta$ -hCG concentration in the blood (Table 1), ultrasound examinations, and controls of birth canal bleeding.

After four weeks, due to the lack of spontaneous expulsion of the deceased cervical pregnancy and the patient's lack of consent to the removal of the uterus, it was decided to conduct endovascular embolization of both uterine arteries using a gelatine sponge. Immediately after embolization, the contents of the cervix were sucked out and the cervical canal along with the uterine cavity was debrided. After the procedure, a Foley catheter was inserted into the cervical canal to control bleeding. The catheter balloon was filled with 80cm<sup>3</sup> of 0.9% NaCl. After the procedure, no bleeding from the birth canal was observed. Over the next 4 days, the balloon was gradually emptied, with observation of the bleeding. After removing the catheter, in the absence of bleeding, the patient was discharged home in good general condition.

Fig. 1. Transvaginal ultrasound at admission. Measurements of uterine body and endometrium.



Fig. 2. Transvaginal ultrasound after injection of 15% KCl to gestational sac and fluid drainage.



### Discussion:

Due to the rarity of cervical pregnancy, there are no unified standards of management in the treatment of this complication. In the natural course, this complication may lead to complications such as external or peritoneal haemorrhage (4) (5) (6), bilateral hydronephrosis, (7) or hypovolemic shock.

The methods of treatment are strictly dependent on the age of pregnancy, the severity of the ailments, the level of  $\beta$ -hCG in the serum, the presence of heartbeat in the foetus and the woman's will to maintain fertility (8). The number of complications in cervical pregnancy increases with the duration of the pregnancy, so conservative treatment becomes more difficult (9). Currently, in the management of cervical pregnancy, pharmacological and surgical treatments are applied, such as: embolization of the uterine arteries, curettage of the uterine cervix, hysteroscopy, microwave ablation, high focused ultrasound, and as a definitive treatment - hysterectomy (10) (11) (12). After the conservative treatment aimed at containing bleeding, the following may be additionally applied: cervical swabbing with a Foley catheter or Cooke dual-balloon catheter, cerclage on descending uterine artery branches, cervical vasopressin administration, or internal uterine or iliac vascular ligation after laparotomy. (13) (14) (15)

Conservative treatment includes single or repeated administration of methotrexate via intramuscular (16) and intravenous routes as well as into the gestational sac. Methotrexate blocks the cell division of the trophoblast cells and its proliferation, thus stopping further development of the embryo. Administration of methotrexate into the gestational sac is intended to prolong the direct effects of MTX on ectopic pregnancy and to reduce the risk of systemic side effects. If foetal heart activity is detected, a 15% solution of potassium chloride is administered

directly into the gestational sac under ultrasound guidance. The use of KCl to stop the foetal heart rate is characterised by almost 100 %-effectiveness and has a high safety profile.

In the case of a pregnancy being as large as in our case, the application of only KCL and MTX to the gestational sac led to the pregnancy demise but did not result in spontaneous expulsion of gestational sac. Due to the high risk of bleeding from the postoperative site after cervical pregnancy, the curettage procedure was delayed because we hoped that the cervix would be gradually emptied; however, after 4 weeks, in the absence of spontaneous miscarriage, the curettage of the cervix was performed with a precaution in the form of uterine artery embolization using a gelatine sponge. In addition, the site after the ectopic pregnancy was secured by compression from a Foley catheter balloon.

Uterine artery embolization (UAE) is a method used fairly often in the cases of such a large cervical pregnancy. This treatment has been described since the 1990s (17). In gynaecology, it can also be used to treat leiomyomas and adenomyosis with the intention of maintaining fertility. (18) Simultaneous fertility preservation and a large reduction of blood supply to the uterus is a major advantage. The material used is absorbed and over time the arteries are canalised. The limitation of this method is the need to have an interventional radiology laboratory and qualified personnel. Closing the lumen of the uterine arteries causes spontaneous degradation of the gestational sac in the mechanism of its ischaemia, and also significantly reduces bleeding in the patient and has a protective effect on the uterus itself. There are no reports on the specific time that should elapse between a performed UAE and curettage. However, it is recommended that both procedures be performed as soon as possible as this significantly reduces the risk of recurring bleeding. Resumption of bleeding, despite the uterine artery embolization, is possible because collateral circulation develops within a few hours after embolization. The maternal tissues remaining in the cervix can be nourished by collateral circulation vessels, which may result in the recurrence of bleeding.

Studies indicate that combining curettage with UAE is effective in maintaining fertility and future obstetric outcomes. In a Taiwanese cohort of 23 patients who wished to try to become pregnant, 83% became pregnant again and 78.9% gave birth to healthy children after this treatment, with a mean time to conception being 10.4 months. (19) UAE is more widely used in the treatment of leiomyomas, which is why larger cohorts of patients are described in the literature. In this case, fertility is preserved, too. (20)

In the literature, we found very few cases of conservative treatment in such a large pregnancy.

In one of them, a patient was treated by curetting pregnancy after previous surgical, abdominal ligation of uterine arteries, followed by balloon therapy of the post-curetting site. (21) In other cases, the treatment was analogous to the one used in our case. (22) (23) Both methods were successful; however, the advantage of UAE is only a temporary closure of the uterine arteries, which may bring better results in the context of maintaining fertility.

The main purpose of this case report is to show that even in cases of cervical pregnancy at the beginning of the second trimester of pregnancy, it is worth considering conservative treatment, as it may be effective. In our case, after initial treatment with KCL and MTX, there was no spontaneous miscarriage, so it is worth starting treatment in centres which are equipped with interventional radiology laboratories.

Table 1. Measurements of  $\beta$ -hCG concentration

Data	$\beta$ -hCG [mIU/ml]
05.11.2015	46 695,49
10.11.2015	25 908,36
16.11.2015	4 641,58
23.11.2015	498,86
30.11.2015	191,46
07.12.2015	96,43
14.12.2015	57,68
18.12.2015	45,96
28.12.2015	31,68
04.01.2016	30,49
10.01.2016	23,67
15.01.2016	11,74

#### Acknowledgements:

Publication was financed under project SUB.RN 22.071 of Jan Kochanowski University in Kielce.

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