Laparoscopic abdominal cervical cerclage before conception – case report

Laparoskopowe założenie szwu okrężnego na szyjkę macicy przed zajściem w ciążę – opis przypadku

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Abstract

Cervical incompetence is characterized by painless cervical dilation in the second or early in the third trimester, with prolapsed membranes and expulsion of an immature fetus.

Cervical cerclage performed during pregnancy is a typical and effective treatment of cervical incompetence. In case of previously failed cervical cerclages or other cervix malformations the procedure of abdominal cerclage in prepregnancy period can be considered as an option to help keep a pregnancy.

In the following work we present two cases in which laparoscopic abdominal cervical cerclage was performed before conception. Laparoscopic cervical cerclage is a less invasive technique with acceptable outcome, that could replace the traditional laparotomy technique.

Key words: **laparoscopic** / **pregnancy** / **cervical cerclage** /

Streszczenie

Niewydolność cieśniowo-szyjkowa jest to niezdolność szyjki macicy do utrzymania ciąży, charakteryzuje się bezbolesnym skracaniem szyjki macicy i rozwieraniem kanału szyjki.

Typową, najbardziej skuteczną metodą leczenia niewydolności cieśniowo-szyjkowej jest założenie szwu okrężnego na szyjkę macicy drogą pochwową w trakcie ciąży. W przypadkach licznych wcześniejszych niepowodzeń ciąży pomimo założenia szwu okrężnego na szyjkę macicy drogą pochwową lub w przypadku znacznego zniekształcenia szyjki, istnieje możliwość założenia szwu okrężnego na drodze laparotomii, przed zajściem w ciążę.

W pracy opisano dwa przypadki założenia szwu okrężnego w laparoskopii na szyjkę macicy przed zajściem w ciążę. Laparoskopowe założenie szwu okrężnego jest zabiegiem mniej inwazyjnym niż laparotomia i jednocześnie charakteryzuje się porównywalnym efektem leczniczym.

Słowa kluczowe: **szew okrężny** / **laparoskopia** / **szyjka macicy** /
/ **niewydolność cieśniowo-szyjkowa** /

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Introduction

Cervical insufficiency is believed to be the case of 0,1-2% of all pregnancies, thus being the reason for about 15% of recurrent miscarriages and premature labors between 16 to 28 week of gestation. In case of cervical incompetence the risk factors include: intrauterine exposure to diethylstilbestrol (DES), insufficiency of collagen and elastin, surgical trauma of the uterine cervix, mechanical dilatation of the cervical canal, post-delivery trauma of the cervix, and congenital malformations of the uterine cervix [1, 2, 3].

In medical practice many diagnostic and treatment manners of cervical incompetence are taken into consideration.

Nowadays, transvaginal ultrasonographic images constitute an unprejudiced and non-invasive method of diagnosis. Ultrasonographic examination might be a source of knowledge for the case of cervical biometry, length of cervical canal, examination of internal orifice of the uterine cervix and dynamic assessment of cervical configuration [4, 5, 6, 7, 8].

However, majority of handlings is surgical, mostly vaginal procedures. The most frequently applied techniques are Mc Donald and Shirodkar cerclages performed in the second trimester of pregnancy.

In cases when classic methods of cervical incompetence treatment failed (e.g. vaginal approaching of a cerclage, pessary, intravaginal devices) or in cases of deep cervical defect, abdominal placement of the cerclage before pregnancy seems to be the ultimate method of treatment [2, 3, 9].

Also patients that cannot be treated in the vaginal way may be qualified for the transabdominal way - ordinary open surgery as well as laparoscopic track. Transabdominal way of cerclage placement may be used before pregnancy and during the course of the pregnancy as well [2, 3, 6, 10].

Objectives

In this work we present two cases of cervical insufficiency with the medical history of recurrent miscarriages. Laparoscopic cervical cerclage was applied in both cases and one of them resulted in a term labor.

Materials and methods

Two women, 29 and 36 year-old, were admitted to the Department of Surgical and Endoscopic Gynecology of Polish Mother's Memorial Hospital-Research Institute with the diagnosis of secondary infertility due to recurrent abortions and cervical insufficiency.

Both patients had had four miscarriages before. One of the women had had three vaginal cerclages applied in the course of her previous pregnancies whereas the second patient had had two, none of which had worked. The pregnancies lasted less than 20 weeks and neither patient was able to bear children.

The women were hospitalized at our department in September 2007. Gynecological and ultrasonographic examinations were performed.

Pre-surgical treatment of both patients included: gynecological examination and ultrasound examination of cervix uteri. In both cases cervix uteri passed 12-14mm Hegar dilator. In one case cervix uteri was malformed due to recent miscarriages.

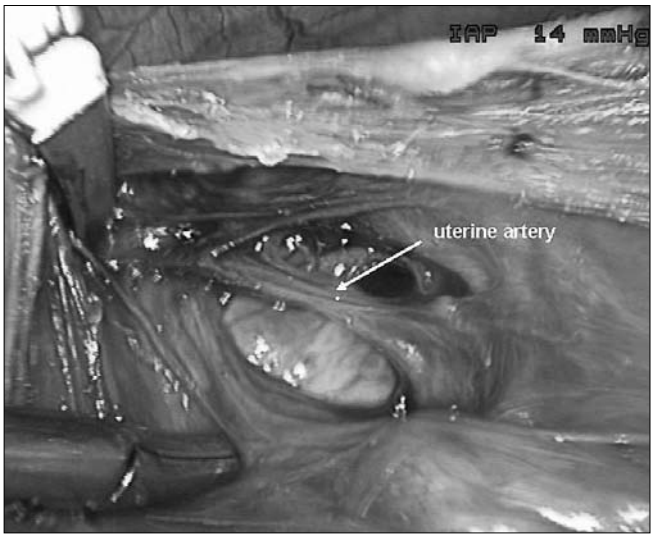

Figure 1. Preparation of the uterine artery.

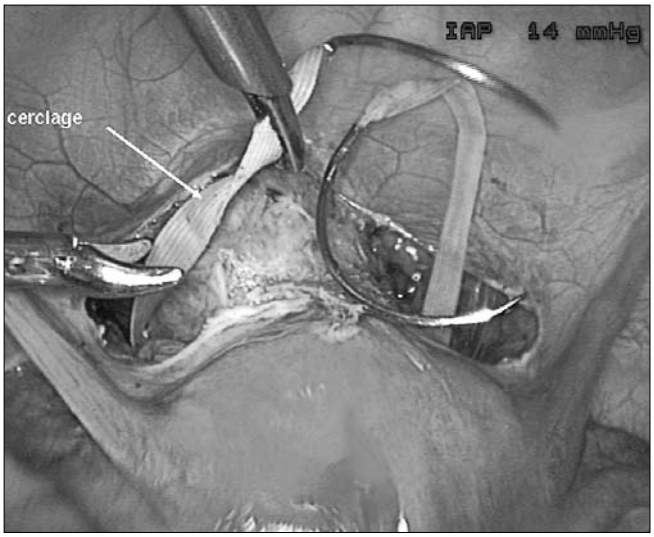

Figure 2. Placement of a cerclage around the isthmus of the cervix.

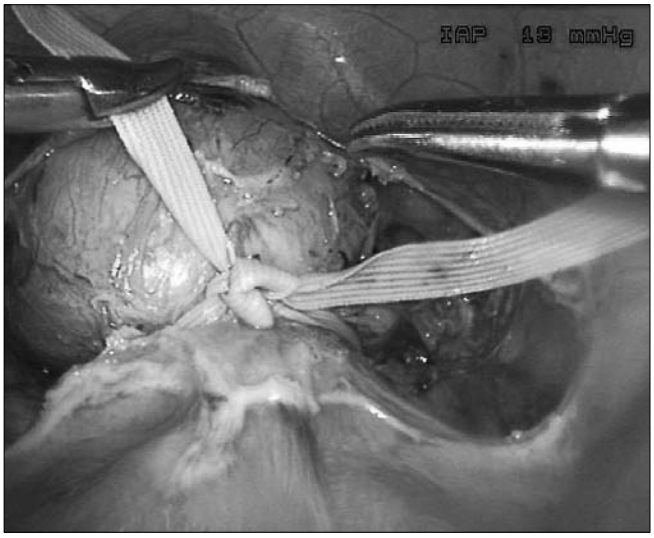

Figure 3. Cerclage knotted in the anterior part of the cervix.

Ultrasound images showed shorter length in one case (22mm) and dilatation of cervical canal to 6mm. In the second case the measurement of cervix uteri was normal (length 44mm, no dilatation of cervical canal).

The procedures of applying intraabdominal cerclage using laparoscopic method were carried out under general anesthesia. We inserted 8mm Hegar dilator into the cervix uterine canal and left it there throughout the entire time of the operation. Ports in the abdomen wall were typically positioned with three puncture sites. Vesico-uterine space was opened and bladder was pushed down. After this maneuver parametrium was prepared to find space near the isthmus below branch of uterine arteries.

The ligature of non-absorbable Mersilk tape was passed from the anterior part of the uterine cervix around all the isthmus part below the branch of uterine arteries. Ends of the tape were knotted in the anterior part of uterine cervix. Additional knot was placed in the posterior part of isthmus to stabilize the cerclage.

The vesico-uterine peritoneum was sutured. The tapes were left in the isthmus region of the cervix for subsequent pregnancies. Ringer solution in amount of 500ml was left in the peritoneum cavity.

Case one conceived within two months after the laparoscopy. In the course of the pregnancy she did not present any signs of preterm delivery and ultrasound examinations revealed a closed cervix. The pregnancy ended on term (38 weeks) by an elective cesarean section. She delivered a healthy son 3200g, Apgar score of 10 points. During the operation the cerclage was cut off but not removed, because it was partially ingrained.

Case two got pregnant four months after the operation. Unfortunately, the pregnancy ended in 16 week of gestation with spontaneous abortion. Currently the patient is trying to conceive again.

Discussion

Obstetric history and current risk factors are the main indication for the placement of a prophylactic cerclage before pregnancy. Cervical insufficiency is a well known cause of premature labor or miscarriages in the first and second trimester of pregnancy [1, 6, 8, 9].

The reason for cervical incompetence might be congenital, acquired and functional (hormonal, biochemical). As far as congenital incompetence is concerned, well-known reasons include an inappropriate proportion of collagen I in relation to collagen III, intrauterine exposure to diethylstilbestrol (DES) or agenesis of the cervix [1, 2, 8, 10, 11].

In case of acquired cervical incompetence the causes are: an injury during previous labor, previous abortions (especially in cases when the uterus cervix was dilated more than 10mm) or conisation of the cervix [4, 12, 13, 14].

Functional cervical incompetence is most frequently caused by a multiple pregnancy or influence of relaxin and prostaglandins on cervix tissue. When facing recurrent cervical incompetence, it is very difficult to find the main reason responsible for miscarriages as sometimes there is even more than one factor.

The indications for intraabdominal cerclage before conceptions are: previous vaginal cerclages which had failed to work, extremely short cervix (congenital and acquired pathology e.g. conisation), extremely lacerated cervix with deep rupture, agenesis of the cervix [1, 2, 6, 7, 15].

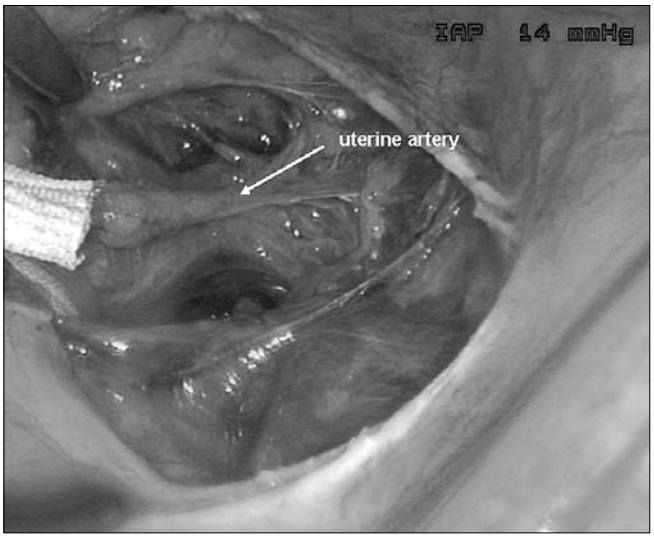

Figure 4. Cerclage below the branch of the uterine artery.

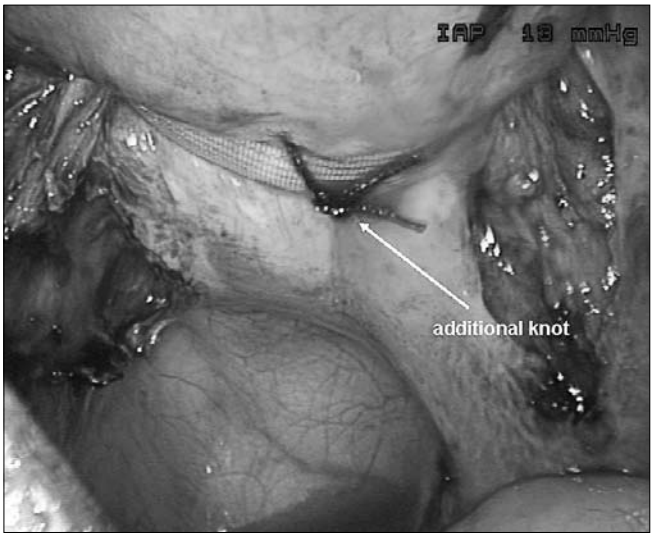

Figure 5. Additional knot placed in the posterior part of isthmus.

Laparoscopic intraabdominal placement of a cerclage gives an opportunity to attach the tape higher in the upper part of isthmus.

Patients after the laparoscopic procedure can conceive faster than after laparotomy, they usually can conceive one month after laparoscopy [15, 16]. Mersilk tape is fitted snugly around isthmus uteri and shortly after the operation it begins to fulfill its function.

Side effects of laparoscopic intraabdominal placement of a cerclage are connected with some procedures of applying of the mesh and/or due to anesthesia. Mersilk is a typical macropore mesh which can be used in such procedures because it generates few intraabdominal adhesions, there is less risk of complications due to infection, low risk of allergic responses to mesh and tape sliding.

Laparotomy method is also acceptable in medical centers where laparoscopic way of treatment is not the preferred method. Laparoscopic attachment offers an opportunity to produce fewer adhesions, less drug administration and lower costs of treatment, faster recovery, less post- operative pain and shorter hospitalization.

The only preferred method of pregnancy termination is the cesarean section, which should be performed before labor (38-39 weeks of pregnancy). The procedure of the cervical cerclage insertion performed laparoscopically is still relatively rarely described in literature. Other authors report encouraging outcomes after laparoscopy [3, 12, 15, 16].

Conclusions

Laparoscopic placement of a transabdominal cerclage is a promising option in the treatment of an incompetent cervix.

Majority of reports present favorable outcomes with pregnancies after laparoscopic cerclage, 80-85% of pregnancies were terminated at 38 weeks of gestation by cesarean section [10, 13, 16]. Some authors described cases of successful laparoscopic cerclage performed even in early second trimester [10]. Only in individual cases caesarean section was performed before 38 weeks of pregnancy. Pregnancy failure which resulted in losses in 8-10 weeks of gestation was observed in 10-15% of cases [10, 14, 16].

Despite all the controversy surrounding this particular cerclage method used to eliminate cervical insufficiency among women with a classic or characteristic history, prophylactic cervical cerclage done in laparoscopic way may still be the best choice.

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