

Clinical aspects and antenatal diagnosis of invasive placenta: a review of ten-years' experience of a multi-profile hospital in Lithuania

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Background. Invasive placenta is a rare obstetrical pathology that is life-threatening to mother and child. It is important to diagnose this pathology as early as possible and to plan further optimal care of patients in order to minimize life-threatening complications. The aim of this study was to analyze the frequency of cases of invasive placenta, the peculiarities of their clinical manifestation in women who gave birth from 2006 to 2015, to evaluate diagnostic and treatment options of this pathology, and to review their changes when the level of services provided by the institution changes.

Materials and methods. A retrospective study was performed of the ten-year period of 2006 to 2015. The study consisted of examining the data of medical records of a group of 14 women.

Results. The incidence of invasive placenta at the secondary level hospital was 1/2170 births, 1:934 births at the tertiary level. There were only three patients (21.4%) diagnosed with invasive placenta during pregnancy at Vilnius University Hospital Santaros Klinikos Obstetrics and Gynaecology Centre. Before the surgery, pre-occlusive balloons were ushered into the internal iliac artery and inflated to reduce bleeding after the newborn delivery. The amount of blood loss in the whole group ranged from 1000 to 6500 ml (avg. 3130.7 ml). Radical treatment was given to eleven patients.

Conclusion. Invasive placenta is a life-threatening condition. Tertiary-level hospitals have a greater capacity for antenatal diagnostics. Timely diagnosis of placental invasion and evaluation of the level of the myometrium damage before delivery is instrumental in planning patient care and preparing for delivery and operation.

Keywords: postpartum haemorrhage, uterine scar, hysterectomy, abnormally invasive placenta

INTRODUCTION

Invasive placenta is the term used to describe the condition when the whole or part of the placenta grows into the uterine wall and fails to detach from it during the delivery. It often leads to life-threatening complications such as severe bleeding, a caesarean section with possible hysterectomy, and even serious pelvic injuries.

Histologically, placental invasion is identified by trophoblast invasion into the myometrium through a decidua basalis defect. The most serious form of this condition is placenta percreta, when placenta grows through the uterine muscle and serosa layer or even overgrows the adjacent pelvic organs such as the bladder. The presence of placental overgrowth into uterine muscular layer without the infringement of the serosa layer is called placenta increta. A minor invasion is described as placenta accreta. Also, this term is often used as a general term to describe all these conditions (1).

Such an abnormal attachment of the placenta to the uterine wall is a life-threatening obstetric complication that causes excessive bleeding during pregnancy, delivery, or after it. It may also cause other serious complications such as disseminated intravascular coagulation (DIC), acute insufficiency of functions of kidneys and other organs, infectious complications, acute respiratory distress syndrome (ARDS), and fertility loss. Due to this pathology, the fatality rate is at 7% high.

Because of invasive placenta, has to be completed earlier. Life-saving surgical interventions such as hysterectomy or ligation of major pelvic blood vessels has to be used, transfusion of blood products has to be performed. Participation of a multidisciplinary team is required (2–4).

Early diagnosis of invasive placenta allows planning further care of the patient and preparation for possible surgery. Unfortunately, most of the cases are determined at the delivery when placental expulsion fails (2, 3).

Vilnius University Hospital Santaros Klinikos is a multi-profile hospital. Until 2013, the Obstetric and Neonatal Department was part of the Central Branch of this hospital. It was a secondary-level hospital department. The Obstetrics and Gynaecology Centre was established in 2013, and since then the Department of Obstetrics, including the Perinatology Centre, has been providing tertiary-level

functions. This offered a unique opportunity to examine the frequency of invasive placental pathology, peculiarities of its clinical course, and diagnostic and treatment options in one place, depending on the hospital level.

This study aims to analyze the frequency of cases of invasive placenta and peculiarities of its clinical manifestation in women who gave birth at a multi-profile hospital during a ten-year period (2006 to 2015), to evaluate diagnostic of this pathology and options of its treatment, and to review their changes resulting from the change in the level of services provided by the institution.

MATERIALS AND METHODS

A retrospective study of cases from a ten-year period, 2006 to 2015, was performed. The data of medical records of clinically diagnosed and histologically approved diagnosis of invasive placenta were investigated. The group consisted of 14 women.

The research was performed in accordance with the World Medical Association Declaration of Helsinki.

RESULTS

During the study period (2006 to 2015) at Vilnius University Hospital Santaros Klinikos Hospital, invasive placenta was diagnosed to 14 women: four women who gave birth at the Central Branch before 2013 and ten women who were treated at the Obstetrics and Gynaecology Centre from 2013 to 2015. During the period of investigation, 18,021 women gave birth: 8682 gave birth at the Central Branch before 2013 and 9339 at the Obstetrics and Gynaecology Centre from 2013 to 2015. Thus, the incidence of invasive placenta at the secondary-level hospital was 1/2170 births, and 1/934 births at the tertiary level.

The data of the investigated women is briefly presented in Table.

Characteristics of the investigated women

The women's age ranged from 29 to 45 years (avg. 35.4). For two women (14.3%), it was the first pregnancy, three women had from one to three abortions. For three women it was the first delivery and 11 were multiparous. Five patients (35.7%) had experienced caesarean section. The first caesarean

Table. Data of the investigated women and neonatal data

Parameter	Case													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	2006	2007	2010	2012	2013	2014		2015						
Hospital	Secondary B					Tertiary								
Age, year	29	36	31	38	33	32	32	33	40	45	36	39	35	37
Pregnancy	I	IV	III	I	II	II	III	V	III	VIII	III	III	X	IV
Delivery	I	IV	III	I	I	II	III	III	II	III	II	III	VII	III
Gestational age, weeks	40	37	38	38	39	41	32	32	40	40	35	20	21	20
Previous caesarean delivery		1					2	2			1	2		
Antenatal diagnostics								+				+	+	
Mode of delivery	VD	CS	VD	VD	VD	VD	CS	CS	VD	VD	CS			
Complications														
Haemorrhage	+	+	+	+	+	+	+	+	+	+	+	+		+
Sepsis	+													
DIC				+										+
DODS														+
Uterine rupture							+							+
Blood loss, ml	1200	1000	1200	2500	1800	4560	2700	6500	5670	3000	1500	1700	6000	4500
Treatment														
Selected operation	R	R	S	R	S	R	R	R	R	R	S	R	R	R
Hysterectomy	TH	SH		TH		TH	TH	TH	TH	TH		TH	TH	SH
Intensive care unit (ICU)				+	+	+	+	+	+	+	+		+	+
Blood transfusion	+		+	+	+	+	+	+	+	+			+	+
Newborn														
Gender	F	F	F	F	M	M	F	M	F	M	F			
Weight, g	2680	2810	2750	3480	3220	2000	2000	3895	4120	3040	2250			
Height, cm	50	49	51	48	53	53	42	42	55	54	45			
Apgar score at 1 min	9	7	9	9	8	9	6	6	9	9	9			
Apgar score at 5 min	9	8	10	10	9	10	8	8	10	9	9			

Abbreviations: VD – vaginal delivery, CS – caesarean section, + – patient was indicated with a complication, R – radical treatment, S – sparing treatment, TH – total hysterectomy, SH – subtotal hysterectomy, M – a male newborn, F – a female newborn

was performed for two women and the second caesarean for three patients. Two women had abnormal placental period in the past.

All patients had one-foetus pregnancies. Duration of pregnancy with invasive placenta was from 20 to 41 weeks. Three women (21.4%) had complications of invasive placenta at 20th–21st week of pregnancy. These pregnancies resulted in abortion due to massive haemorrhage. Three patients (21.4%) gave birth prematurely at 32nd–35th (avg. 33rd) week of pregnancy. Other patients gave birth on time. Four of them gave birth before 2013, when the hospital was a secondary-level hospital. From 2013, pregnancy losses of patients before 22 weeks or premature delivery due to invasive placenta were five out of ten (50%). The average duration of pregnancy in the study group was 33.8 weeks.

Antenatal diagnosis

There were only three patients (21.4%) diagnosed with invasive placenta during pregnancy at the Obstetrics and Gynaecology Centre. All these patients were treated at the centre's tertiary-level hospital in 2015. In these patients, invasive placenta was not found or suspected at the outpatient department. They all arrived at the tertiary level hospital in a matter of urgency due to abdominal pain of varying intensity and/or bleeding from the uterus; one of the patients lost consciousness. All patients had had caesarean sections in the past: two had two caesarean sections, one – four caesarean sections. All patients were diagnosed with invasive placenta after ultrasound examination (Figs. 1, 2) and confirmed with magnetic resonance imaging (MRI) (Figs. 3–6).

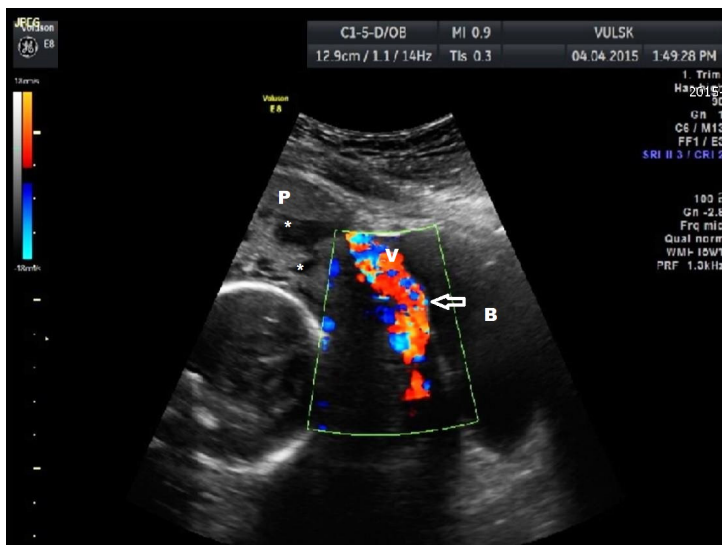


Fig. 1. Invasive placenta praevia, Case 1. Ultrasound examination at Doppler mode, abdominal sensor, sagittal section. Irregularly shaped lacunae (*) of different sizes in the placenta (P). The rear wall (arrow) of the bladder (B) curved. Active blood flow (V) monitored at the bladder

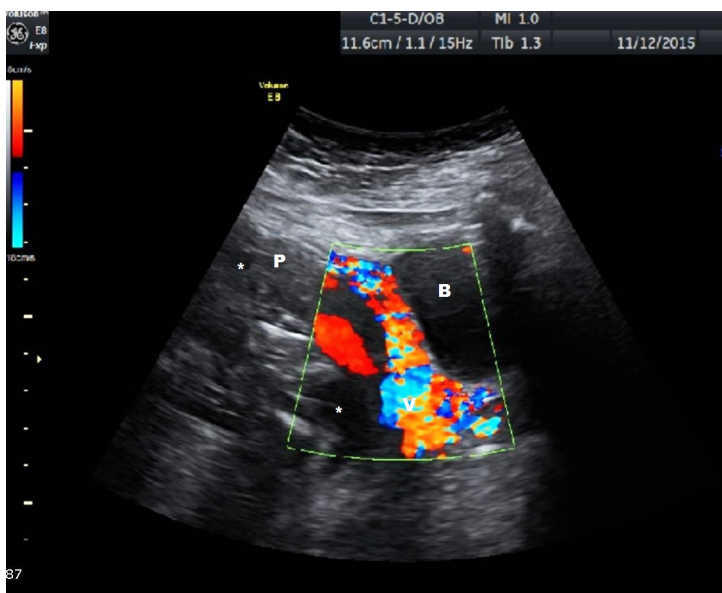


Fig. 2. Invasive placenta praevia, Case 2. Ultrasound examination at Doppler mode, abdominal sensor, sagittal section. Irregularly shaped lacunae (*) of different sizes in the placenta (P). The rear wall (arrow) of the bladder (B) curved. Active blood flow (V) monitored at the bladder

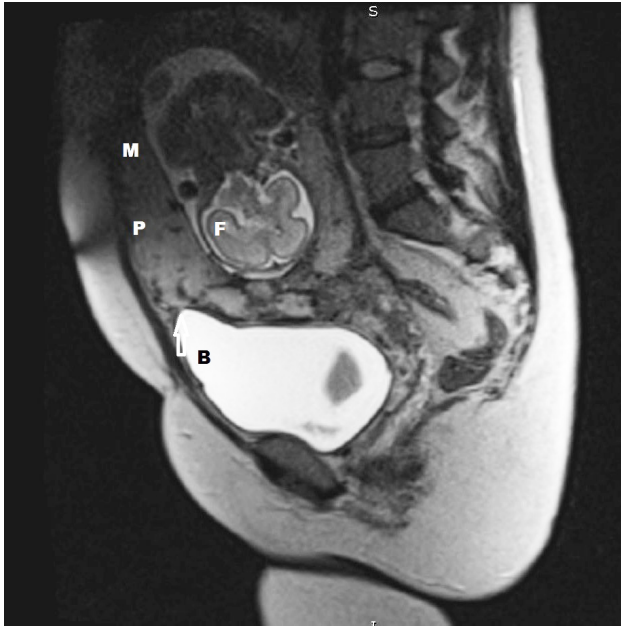


Fig. 3. Invasive placenta praevia, Case 1. MRI, T2 mode, sagittal section. The upper wall of the bladder (B) locally (arrow) (contact and press is seen from the placental (P) side), in some places clearly undifferentiated and hyper vascularized contour of the bladder wall of a normal signal, not fully-fledged myometrium (M). Fetus (F) in the womb



Fig. 4. Invasive placenta praevia, Case 2. MRI, T2 mode, sagittal section. The upper wall of the bladder (B), contact and press (arrow) is seen from the placental (P) side. Not fully-fledged myometrium (M), a massive invasion of the placenta. Fetus (F) in the womb

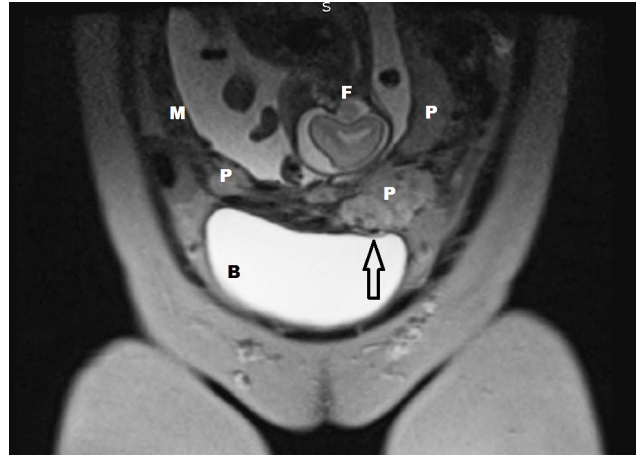


Fig. 5. Invasive placenta praevia, Case 1. MRI, T2 mode, coronal section. The upper wall of the bladder (B) locally deformed from the left side, contact and press (arrow) is seen from the placental (P) side, in some places clearly undifferentiated and hyper vascularized contour of the bladder wall of a normal signal, not fully-fledged myometrium (M), placental invasion from the left. Fetus (F) in the womb



Fig. 6. Invasive placenta praevia, Case 2. MRI, T2 mode, coronal section. Not fully-fledged myometrium (M), placental invasion from both sides (P), more from the right. Fetus (F) in the womb

Clinical manifestation

Eleven patients (78.6%) were diagnosed with invasive placenta when complications developed during the delivery or after it. Complications developed to two patients in the late period postpartum due to retained placenta: one patient had sepsis and profuse bleeding (nine days after delivery), another had profuse bleeding with DIC syndrome (30 days after

delivery). Two patients (20th and 32nd weeks of pregnancy) were diagnosed with a uterine rupture due to placental invasion, manifesting with acute abdominal expressions and massive internal bleeding. The uterus of one of the patients is shown in Fig. 7. The remaining nine patients had profuse bleeding due to invasive placenta during the delivery or the caesarean section.

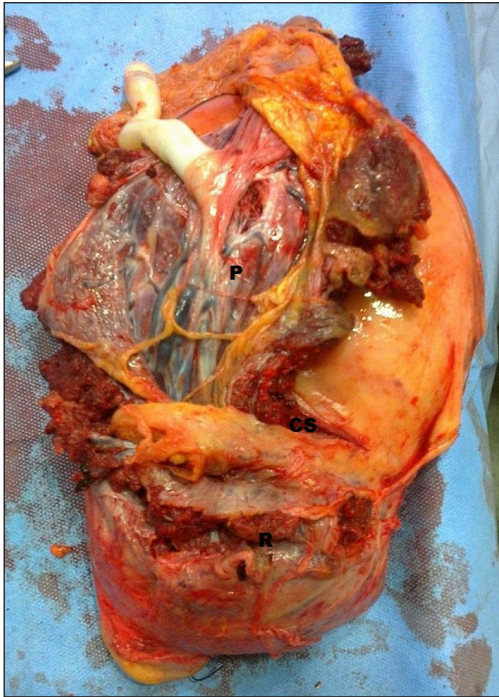


Fig. 7. Product after surgery. In the lower uterine segment below the performed uterine section (CS) conditioned uterine rupture (R) of the invasive placenta with the placental villi at the edges of the split is being observed. The placenta (P) was left *in situ*

All the patients had lost more blood than usual. The amount of blood loss in the whole group ranged from 1000 to 6500 ml (avg. 3130.7 ml). The women who gave birth naturally lost from 1200 to 5670 ml (avg. 2847.1 ml) of blood; those who underwent a caesarean section lost from 1000 to 6500 ml (avg. 2925.0 ml). The women who had complications of invasive placenta before 22 weeks of pregnancy lost from 1700 to 6000 ml (avg. 4066.7 ml) of blood.

Treatment

A radical treatment was given to eleven patients: nine women had total hysterectomy without

the removal of ovaries and fallopian tubes, two women underwent subtotal hysterectomy without removal of ovaries and fallopian tubes.

In three cases, a caesarean hysterectomy was performed: one patient was diagnosed with invasive placenta antenatally and in two patients the placental invasion was revealed during surgery. No attempt was made to remove the placenta in either of the three patients and it was left *in situ* (Figs. 7, 8). Surgery was carefully planned in advance for the patients whose diagnosis was established antenatally. It was performed by a multidisciplinary team of the tertiary-level hospital. Pre-occlusive balloons (Fig. 9) were ushered into the internal iliac artery before the surgery and inflated to reduce bleeding after a newborn delivery.

Hysterectomy was performed in six patients who gave birth naturally, in the period after the delivery. Two patients underwent surgery due to heavy bleeding within 45 min and 1 h 52 min after the delivery of a newborn, respectively. The other two were operated on due to heavy bleeding when

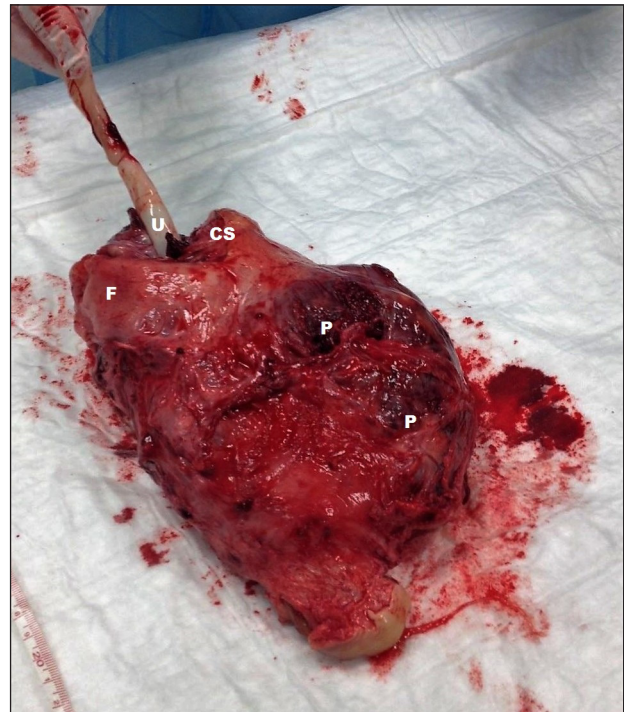


Fig. 8. Product after surgery. Uterine cross section (CS) at the bottom of the uterus (F). The isthmus part of the uterus is stretched and deformed by invasive placenta (P), myometrium is thin, in some places remains only serous layer of the uterus. The placenta (P) is left *in situ*, a short umbilical cord (U)



Fig. 9. Pre-occlusive dispenser of the internal iliac artery

other methods of postpartum haemorrhage treatment (B-Lynch compressive suture, vascular embolization) were ineffective within 10 h 42 min and 16 h 9 min after the delivery of a newborn, respectively. Two patients underwent hysterectomy due to complications that developed in the late period after the delivery (9 and 30 days after the delivery, respectively).

Transfusion of blood products of varying volume due to massive haemorrhage was performed for eleven patients (2–23 (avg. 9.27) units of erythrocyte mass, 2–14 (avg. 4.8) units of platelet mass, and 10–20 (avg. 15.0) of cryoprecipitate were used for transfusion). Plasmapheresis was applied to one patient who received 74 units of fresh frozen plasma. From 3 to 15 (avg. 7.7) units of plasma were used for other patients.

Prospects for future fertility

Uterus-sparing treatment was selected for three patients. The diagnosis was not established before the delivery for either of these patients and invasive placenta was diagnosed during the delivery or postpartum. In all these cases the placental invasion was partial. In two cases, part of the damaged myometrium was removed during the caesarean section. However, continuing bleeding from the uterus raised the suspicion of the invasion of placenta. The diagnosis was verified by ultrasound and MRI (Fig. 10). Selective embolization of the ascending branch of the right uterine artery and the uterine curettage in ultrasound control were selected. All the patients received adequate treatment and there were no complications.



Fig. 10. Invasive placenta after delivery. MRI, T2 mode, coronal section. Uterus compressed with compression sutures (arrow). Placental (P) areas in the uterine cavity deforming the myometrium, not fully-fledged myometrium, uneven contour

One patient, who received sparing treatment, became pregnant two years later and gave birth again. She did not suffer a placental invasion during her next pregnancy, delivered a healthy newborn on time, and did not experience any complications during pregnancy and after.

Hospital admission time

Total hospital admission time of patients treated for invasive placenta was from 5 to 74 days (avg. 13.29). The admission time after delivery or a caesarean section was from 5 to 16 days (avg. 8.21). Nine patients required treatment in the intensive care unit. The intensive care unit admission time varied from 17 h 30 min to 378 h 29 min (avg. 90 hours).

Neonatal data

There were four male and nine female infants born in a group of 11 newborns. The ratio of boys and girls was 1:2.25. Infant birth weight was from 2000 to 4120 g (avg. 2931.36), height from 42 to 55 cm (avg. 49.27). The Apgar score at 1 minute was from 6 to 9 (avg. 8.18); two newborns were given 6 points, and one 7 points. At 5 minutes, Apgar scores ranged from 8 to 10 (avg. 9.09).

DISCUSSION

This placental pathology was first described in 1930. The existence of this pathology was even questioned at that time as it was extremely rare. However, cases of invasive placenta have been increasing in recent decades: from 1/4027 pregnancies in 1970 to 1/533 pregnancies in 1982 to 2002. According to our research data, the frequency of invasive placenta in secondary-level hospitals was 1:2170 pregnancies, and in tertiary-level hospitals 1:934 pregnancies (1, 5).

In most cases, abnormal placental attachment is associated with uterine scars after previous surgeries, such as caesarean section, myomectomy, and placenta praevia. The risk is higher if placenta implants itself in the uterine scar area (6).

It is important to note that invasive placenta may occur to patients who did not have a caesarean section before. In our group, only 35.7% of women had caesarean sections in the past. Risk factors of placenta accreta also include previous intrauterine infections, maternal age (over 35 years), many previous pregnancies (more than six), cervical dilation and curettage, ablation of endometrium, submucous myomas, hypertensive conditions, smoking (7). The average age in the study group was over 35 years old; eight patients (57%) were older than 35 years old; 14.28% of the investigated women were pregnant more than 6 times; 35.7% of women had several risk factors.

It is very important to determine the diagnosis of invasive placenta before the delivery. Unfortunately, only about 30% of cases are determined at the antenatal stage and in 70% of cases the diagnosis is established upon the emergence of complications (2). Invasive placenta results in 38% of cases of intense postpartum bleeding. Such bleeding causes other serious complications: DIC, acute insufficiency of the kidney function, infectious complications, ARDS, and fertility loss. Transfusion of blood products (1, 4, 5) has to be performed. The mortality rate is high – 7%. We succeeded in avoiding death cases in our research group (100% survival).

Early diagnosis allows planning further patient care and treatment and proper preparation for a surgery and possible massive bleeding. This can reduce the blood loss and the need for the transfusion of blood products (3, 8).

The diagnosis is usually established by ultrasound and additional MRI. Histological examination is necessary to confirm the final diagnosis (9).

Transvaginal and transabdominal ultrasonography are complementary methods, especially when placenta praevia is present. Findings of ultrasound examination leading to the suspicion of the invasion of placenta depend on the stage of pregnancy (9). In the first trimester of pregnancy, it is implantation of the gestational sac in the lower segment of the uterus or in the uterine scar area, multiple irregular vascularization areas in the place of placentation. After detection of these symptoms, it is appropriate to repeat ultrasound examination at a later period (32 weeks) and test specifically for the symptoms of placental invasion.

During the second and the third pregnancy trimesters placental invasion presents itself as an irregular lacunae shape in the manifestation of the placenta. During the Doppler scan, a turbulent blood flow in placental lacunae is recorded, thinning of retroplacental hypoechogenic line or its absence, uneven thinning of the myometrium, intervention of placental tissue into the rear wall of the bladder with uneven thinning of the uterine and bladder gap, and bright blood flow (9, 10). The presence of lacunae (irregular vascular areas resembling “Swiss cheese” in the area of placental implantation) in the placenta and an increase in their number during the 15th–20th weeks of pregnancy are very important prognostic signs of placenta accreta (sensitivity of 79% and positive predictive value 92%). The more lacunae are present, the more likely the placental invasion into the surrounding tissue. The Finberg scale is used: evaluated by grade 0 when no lacunae are seen, grade 1 when one to three small lacunae are present, grade 2 when four to six larger or more irregularly shaped lacunae are detected, and grade 3 when lacunae are present all over the placenta (11).

Criteria of placental invasion of the Doppler scan are: abnormal hypervascularization of tissue (the myometrium and the bladder gap), enlarged diffusion lacunae throughout the area of the placenta, that reach the myometrium and the cervix, low-resistance arterial blood flow, enlarged venous-type flow blood vessels, locally extinct vascular tone in the hypoechogenic subplacental gap. It is highly important to identify the pathological

blood flow between the uterus and the bladder wall. This is one of the best indicators for invasive placenta diagnostics, which has high sensitivity and specificity of this parameter (12).

The sources of literature indicate that evaluating the entire whole of risk factors (condition after two or more caesarean surgeries, placenta on the front wall of the scar area), ultrasound findings, and calculation of the index of placenta accreta increase the possibility of detecting placental invasion to 96% (11).

In doubtful cases, MRI can be useful and complement the antenatal diagnosis (13). In our group, MRI was used in all the cases when placental invasion was suspected at the antenatal stage after ultrasound examination. In all cases, MRI confirmed the diagnosis. In one case MRI was also used after natural delivery when an invasion of leftover placental fragments was suspected clinically and by ultrasound.

MRI examination helps to evaluate the topography and placental invasion and can be useful in planning surgical treatment. MRI is now described as an examination that better predicts topography and placental tissue invasion, the possible damage to the adjacent organs, urethral involvement in this process. Helps to optimize the tactics of maternal care and treatment (14).

Tactics in prenatal diagnosis of placental invasion

After an ultrasound examination at the 20th week of pregnancy, when placenta previa is present and placental ingrowth is suspected, another ultrasound examination is recommended at the 32nd week of pregnancy. The diagnosis is adjusted during ultrasound examination; a further plan of pregnancy and delivery care is made (15).

A woman with a suspected placenta accreta is recommended to give birth at a tertiary-level hospital due to the potential danger of this condition and life-threatening bleeding. All the patients in the study group, who were diagnosed with invasive placenta before delivery, gave birth at a tertiary-level hospital. Only when patients were not diagnosed before delivery, they gave birth at a secondary-level hospital. The best treatment of placenta accreta is to start the evaluation of risk factors at the antenatal stage and, if circumstances allow, to confirm the diagnosis and develop a plan for further care. A multidisciplinary

team of experienced obstetrician-gynaecologists, anaesthesiologists, surgeons, interventional radiologists and urologists must be involved (5). Such tactics was used in our group with all the necessary personnel, services and equipment reserves of a tertiary-level hospital.

Optimal treatment of abnormal placental attachment has not been established yet. When ingrown or overgrown placenta is diagnosed, the usual method of treatment is a hysterectomy during the caesarean section (5). This surgery is associated with high morbidity and mortality of women, especially if it is performed urgently. As presented in a systematic review, the frequency of complications after urgent hysterectomy is 56% and the mortality rate is 3%. Surgery can be complicated by a damage to the urinary tract, profuse bleeding, and infection caused by invasive placenta. This risk can be reduced with preventive antibiotics at the early post-operative period. Neither methotrexate, nor artery embolization reduce this risk and should not be administered routinely (3, 16, 17).

If it is difficult to separate placenta from the uterus, separation should not be attempted during surgery. If the necessity of a hysterectomy arises, placenta should be left *in situ*, the uterine cavity should be closed with a few sutures, and an ordinary hysterectomy (usually subtotal, but if bleeding from the cervix does not stop, it can be total) performed (3, 18).

It is proved that both general and regional anaesthesia are safe in the case of placenta accreta, therefore it should be decided individually which to administer. If surgery is planned, it is recommended to put on compression stockings before surgery and wear them throughout the admission period. Antibiotics are administered for the prophylaxis of infection, repeating the dose every 2–3 hours or if the volume of blood lost reaches or exceeds 1.5 l. Cystoscopy may be performed before surgery for the prophylaxis of urinary tract damage, during which the urinary tract may be stented. Blood components and coagulation factors should be prepared and ready to use in case of a possible blood transfusion (5).

In order to reduce blood loss during surgery, balloon occlusion of internal iliac arteries can be used (19). Such auxiliary method had a positive effect in our unit.

There are some data about other methods applied to staunch bleeding: bimanual compression

or even aortic compression, balloon tamponade, the B-Lynch suture, vertical compression sutures, and inverse sewing of the cervical lip above the bleeding placenta (20–23). The B-Lynch suture was ineffective in our study group.

A conservative treatment method was first described in 1986 (24). This treatment strategy aims to preserve the uterus and fertility. It can be applied when the patient is especially concerned about the preservation of the uterus and when the conditions are favourable: stable hemodynamics, normal coagulative state, accessible and safe blood transfusion, and good intensive care.

Ligature on the cord close to the placental surface may be attached after the delivery; placental tissue is left *in situ*. In order to reduce the size of the placenta, resection of part of the placenta is possible in order to maintain stable hemodynamics and prevent life-threatening bleeding. Compression sutures, selective arterial embolization and/or balloon occlusion, ligation of uterine arteries and/or the hypogastric artery (for spontaneous placental involution by stopping of the blood flow) are also used for the transfusion of blood components and uterotonic during the delivery. Blood loss-controlling methods such as vascular embolization, ligation, or balloon arterial occlusion can be applied during surgery (25, 26). Our hospital no longer applies conservative tactics for large-area placental invasion. In the case of partial invasion, resection of the damaged myometrium was selected in two cases and abrasion of the uterus after the delivery with embolization of blood vessels in one case.

Possible complications of conservative tactics include a failure of the procedure, heavy bleeding prevention control at vascular anastomoses, thromboembolism and ischemic reperfusion damages at lower extremities, in particular due to the prolonged occlusion of the internal iliac artery and sudden embolization in the pelvic organs that may result in ovarian necrosis, chronic pelvic pain, sexual dysfunction, and bladder ischemia. Infectious complications are also possible. Complications may develop a few weeks or months after delivery, therefore, the woman should be regularly monitored after the delivery in order to detect possible complications in time (27, 28). No complications developed in our study group of carefully selected patients with the uterus-preserving tactics applied.

Preservation of the uterus requires a multidisciplinary effort that includes interventional radiologists. The ability to ensure haemostasis during surgery is a major determining factor in the preservation of the uterus.

According to the Royal College of Obstetricians and Gynaecologists (RCOG), conservative treatment will hardly be successful when woman is already bleeding and is just a waste of valuable time (17).

Prognosis

There are no sufficient data to provide an accurate forecast for other pregnancies. The likelihood of a recurrence of invasive placenta can reach 28.6%, bleeding after the delivery 9.0% (29). One patient in our group became pregnant again and gave birth to a full-term newborn after conservative treatment. Placental invasion did not recur.

Drawbacks of the paper

The research covers a relatively long period during which diagnosis and management of invasive placenta underwent significant changes. Therefore it cannot be unambiguously determined whether the larger number of cases in our study in recent years reflects the absolute increased incidence of this condition, or it can be associated with better diagnostics.

CONCLUSIONS

Invasive placenta is a life-threatening condition. A tertiary-level hospital has a greater capacity of antenatal diagnostics. The options of planning patient care and preparation for delivery and operation largely depend on a timely diagnosis of the placental invasion and evaluation of the level of myometrium damage before the delivery. Patients must be advised, monitored and give birth at a highest level hospital, where necessary resources are ensured: a multidisciplinary team, accessible and safe blood transfusion, and twenty-four-hour intensive care.

Conflicts of interest

The authors declare no conflict of interest.

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**PLACENTOS INVAZIJOS KLINIKINIAI
ASPEKTAI IR ANTENATALINĖ DIAGNOSTIKA:
VILNIAUS UNIVERSITETO LIGONINĖS
SANTAROS KLINIKŲ DEŠIMTIES METŲ
PATIRTIES APŽVALGA**

Santrauka

Įvadas. Placentos invazija yra reta, bet motinos ir vaiko gyvybei pavojinga akušerinė patologija. Siekiant sumažinti gyvybei grėsmingų komplikacijų svarbu šios patologijos antenatalinė diagnostika ir tolimesnės optimalios pacienčių priežiūros planavimas. Šio tyrimo

tikslas – išanalizuoti placentos invazijos atvejų dažnį, klinikinio pasireiškimo gimdžiusiųjų 2006–2015 m. ypatumus, įvertinti šios patologijos diagnostikos ir gydymo galimybes bei apžvelgti jų pokyčius, susijusius su medicinos įstaigos teikiamų paslaugų lygiu.

Medžiaga ir metodai. Atliktas retrospektyvinis tyrimas, kurio metu išnagrinėti medicininės dokumentacijos duomenys ir atlikta jų analizė. Tyrime dalyvavo 14 pacienčių, kurios gimdė VUL SK nuo 2006 iki 2015 m. ir kurioms buvo kliniškai diagnozuota bei histologiškai patvirtinta invazinės placentos diagnozė.

Rezultatai. Placentos invazijos dažnis antrinio lygio stacionare buvo 1 : 2170 gimdymų, tretinio lygio stacionare – 1 : 934 gimdymai. Tik trims pacientėms iš visos grupės (21,4 %) placentos invazija nustatyta VUL SK AGC iki gimdymo. Siekiant sumažinti kraujavimą operacijos metu, prieš operaciją į *a. iliaca interna* gali būti įvesti preokliuziniai balionėliai, kurie išpučiami gimus naujagimiui. Kraujo netekimas visoje grupėje svyravo nuo 1 000 iki 6 500 ml (vid. 3 130,7 ml). Vienuolika pacienčių buvo gydomos radikaliai.

Išvados. Placentos invazija yra gyvybei pavojinga būklė. Tretinio lygio ligoninė turi geresnes antenatalinės diagnostikos galimybes. Ankstyva placentos invazijos diagnostika ir miometro pažeidimo įvertinimas prieš gimdymą lemia galimybę tinkamai suplanuoti pacientės priežiūrą ir pasiruošimą gimdymui bei operacijai.

Raktažodžiai: kraujavimas po gimdymo, gimdos randas, histerektomija, placentos invazija