Introduction

- The frequency of abnormal placentaion has increased in 10 times for the last 20 years worldwide and presently reaches 9.3-10.0% in combination with placenta previa and 0.004% in pregnant women without placenta previa [6, 7, 9].
- A Caesarean section in female anemia quite frequently becomes the reason of the decidual membrane’s defect, therefore the increase of the rate of placenta accreta /increta /percreta cases can be connected with the increase of the number of operative deliveries to 30%.
- Traditionally, the most available adequate method of a treatment in such situation is the hysterectomy without appendages of a uterus [1, 4, 9, 11].
- Several authors suggest to conduct ligation of main vessels by securing internal iliac /hypogastric arteries (ILH), before the hysterectomy, which reduces volume of intraoperative blood loss [2, 3]. Some authors have marked the possibility of an organ-sparing operation in a case of partial and total pl. accreta on a background of placenta previa using uterine arteries’ embolization and the following weekly administration of Methotrexate [7, 8, 10].
- The new method of argon – plasma coagulation of tissues has been recently successfully applied in surgical and gynecological practices to reduce volume of intraoperative blood loss and decrease the number of purulent-inflammatory complications.

Objectives

The development of the optimal delivery algorithm in a case of placenta previa & placenta accreta using innovative technologies (carbocetin, argon – plasma coagulation of tissues and ligation of main uterine vessels) with the priority of organ-saving operations.

Methods

- On the first stage we conducted the retrospective analysis of 45 cases (I group) with the planned Caesarean section in pregnant women with placenta previa in the terms of 35-39 weeks during 2001-2010 years (according to the medical documentation).
- On the second stage the prospective dynamic research of 17 pregnant women’s planned operative delivery (II group) with placenta previa in the same pregnancy’s terms during 2011-2012 years with the use of an algorithm of consequent actions developed by us.

The technology developed by us with the priority of an organ-saving operation in the placenta previa and partial pl. accreta was used in the second group.

1. For the section of anterior abdominal wall’s tissues we used the apparatus “FOTEK-142” with the monopolar radioave scalpel in order to additional hemostasia and the decrease of infectious-inflammatory complications (Fig.1,2).
2. After fetal extraction and at the successful manual separation of the placenta, carbocetin in dose of 100 mcg was administered in the second group.
3. If bleeding continues from a placental bed, the uterus was removed into a wound, a tamponade of the cavity was conducted by naphon moistened in a solution of 5% anesthesic acid, 0.4 mg of terlipressin in 10 ml of 0.9% NaCl solution were administered in the lower uterine segment.
4. A partial uterine devascularization (more often - bilateral ligation of uterine and ovarian vessels, more rarely - the embolization of clinical manifestations of hemorrhagic shock – bilateral ligation of All and ovarian vessels ) was conducted (Fig3).
5. After ligation of main vessels naphon was extracted from the uterine cavity and the uterine devascularization was conducted (Fig4).
6. The placental bed, areas of partial placenta accreta (Fig.4), and also sutures on a uterus (Fig5), tissues of the anterior abdominal wall (the anepopause, subcutaneous adipose tissue) were processed by the argon-plasma torch of the apparatus “FOTEK-142” in a mode “fulgur” with the power 70 W, the argon stream with the speed of 5 l/min and the exposure of 3-5 seconds; additional hemostasis was carried out by the argon-plasma torch in a mode “bipolar”.
7. To objectify the post-partum involution’s progress and the estimation of the state of sutures on a uterus in the post-partum period an ultrasound scan of abdominal cavity’s organs with the hysteroscopy was done by the apparatus “Phillips HD 11-EX” on the fourth day after a Caesarean section.

Results

Table 1. Parameters of a Caesarean section in studied groups (M m)

<table>
<thead>
<tr>
<th>Index</th>
<th>Time till the fetal extraction (sec)</th>
<th>Duration of an operation (min)</th>
<th>Volume of blood loss (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I group (n=45)</td>
<td>274±12,0*</td>
<td>74,5±1,0*</td>
<td>970±55,0*</td>
</tr>
<tr>
<td>II group (n=27)</td>
<td>195±32,0*</td>
<td>557±5,0*</td>
<td>775±56,0*</td>
</tr>
</tbody>
</table>

Footnote: *p<0.05

Data presented in the table 1 show authentically lower average levels of intraoperative blood loss’s volume, the duration of a Caesarean section and time from the start of an operation to the fetal extraction in the second group (p<0.05), which we have connected with the use of our method with applying of argon-plasma tissue’s coagulation, modern uterocentric and vassopressor drugs (carbetocin and terlipressin) in this group and also an organ-saving methodic of the phased partial devascularization of a uterus in cases of diagnosed pl. accreta.

Table 2. Complications of pl. previa and methods of surgical hemostasis in comparable groups

<table>
<thead>
<tr>
<th>Index</th>
<th>Placenta accreta</th>
<th>Massive obstetric hemorrhages</th>
<th>The hystermotaxy</th>
<th>Organ-saving operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>I group (n=65)</td>
<td>9</td>
<td>20,0</td>
<td>14</td>
<td>31,1</td>
</tr>
<tr>
<td>II group (n=17)</td>
<td>7</td>
<td>41,2</td>
<td>2</td>
<td>11,7</td>
</tr>
</tbody>
</table>

In the second group pl. accreta was diagnosed in 6 cases, and pl. increta – in 1 case (the hysterectomy was carried out in this case). All cases of the partial pl. accreta were carried out by an organ-saving methodic with ligation of descending branches of uterine vessels, internal iliac arteries, the debritment of a placental bed by the argon-plasma coagulator, an intravenous injection of carbetocin (100 mcg), an injection of terlipressin in a dose of 0.4 mg to the myometrium of a low uterine segment.

Conducted pathohistolog-histochemical investigation of placentas in cases of partial placenta accreta and performed organ-saving operations determined typical changes: fragments of the decidual tissue with the necrosis, hemorrhages and the inflammatory infiltration in the matera; fragments of the placenta with dystrophic and destructive changes, acute hemorrhages and ingrowths of individual villi in a submucous layer of the endometrium till the myometrium.

In all cases of partial pl. accreta in the second group with applying of the organ-saving methodic developed by us we determined by data of Doppler investigations the decrease of pulse index and the systolic-diastolic ratio in 2:5-3 times in uterine and arcute arteries of a uterus in the postoperative period.

However, the minimally required blood flow in a uterus remained and we didn’t observe the necrobiotic changes from the side of a reproductive organ after ligation of main vessels. The postoperative period passed without complications in all cases. There were no cases of maternal mortality in groups.

Conclusions

- Applying of the radioave scalpel, argon-plasma coagulation of a placental bed, the phased partial devascularization of the main vessels of uterus with the use of an agonist of oxytocin – carbetocin and vassopressor – terlipressin let to conduct the operation with the safekeeping of a reproductive organ at the hard obstetrics pathology in cases of placenta previa with partial pl. accreta.

- The developed optimal algorithm of the delivery in pregnant women with placenta previa with the described technical and medicamentous maintenance applied during a Caesarean section lets to reduce volume of intraoperative blood loss, creates secure hemostasia, prevents the development of massive blood loss and decreases the duration of an operation.

- Taking into account the relatively small number of observations, it is necessary to continue studies of the effectiveness of proposed combined surgical and medicamentous hemostasis with a technical maintenance (apparatus “FOTEC-EA 142”) at different clinical variants of placenta previa.

REFERENCES