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Postpartum Hemorrhage after Cesarean Delivery - Causes and Management

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ABSTRACT

Postpartum hemorrhages represent a major cause of maternal mortality everywhere in the world and in Romania obstetrical hemorrhages are directly incriminated in 47.85% from the cases reported between 1975 –2010. This retrospective study over a period of five years (2008 - 2012) includes the clinical-statistical analysis of postpartum hemorrhages (PPH) registered in “Prof. Dr. Panait Sîrbu” Clinical Hospital of Obstetrics and Gynecology in Bucharest. During the period under analysis there were 20204 births, out of which 13012 were vaginal and 7192 by caesarean section. There were 853 cases of postpartum hemorrhage with significant clinical manifestations, which required medical management, 4.22% of all births. In 459 cases there were reported hemorrhagic complications after caesarean section (6.368% of caesarean sections), representing 53.81% of postpartum hemorrhage. The severity of intra-operative and post-caesarean bleeding is due to its association to anesthetic risk, which is more important in cesarean, as well as to the associated pathology that indicated the caesarean section in the first place.

Keywords: postpartum hemorrhage, cesarean section, delivery

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Introduction

Postpartum hemorrhages represent a major cause of maternal mortality everywhere in the world and in Romania obstetrical hemorrhages are directly incriminated in 47.85% from the cases reported between 1975 –2010 [1,2].

Methods

This retrospective study over a period of five years (2008-2012) includes the clinical-statistical analysis of postpartum hemorrhages (PPH) registered in “Prof. Dr. Panait Sîrbu” Clinical Hospital of Obstetrics and Gynecology in Bucharest. During the period under analysis there were 20204 births, out of which 13012 were vaginal and 7192 by caesarean section.

Results

There were 853 cases of postpartum hemorrhage with significant clinical manifestations, which required medical treatment and hemostasis measures (representing 4.22% of all births) compared to Jacobs (10%) and acc. to WHO 2000 Report (10.5%) [2].

In 459 cases there were reported hemorrhagic complications after caesarean section (6.368% of caesarean sections), representing 53.81% of postpartum hemorrhage.

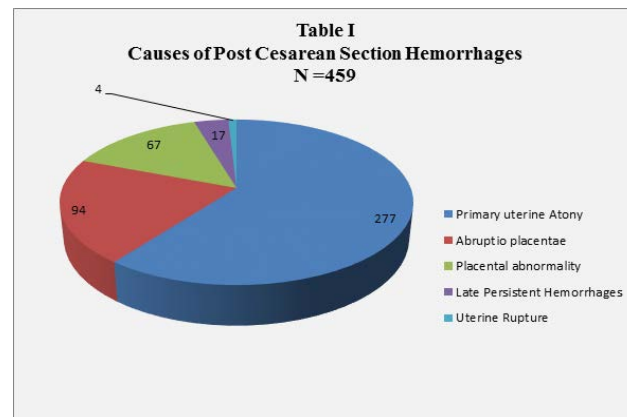
Specific for bleeding after caesarean section is:

- The severity of the bleeding - normal blood loss after caesarean birth is higher than after natural birth –
- Bleeding added to the pathology that indicated caesarean section
- Favoring uterine atony due to lack of contraction of the myometrium during the refractory period [3,4,5,6,7,8]

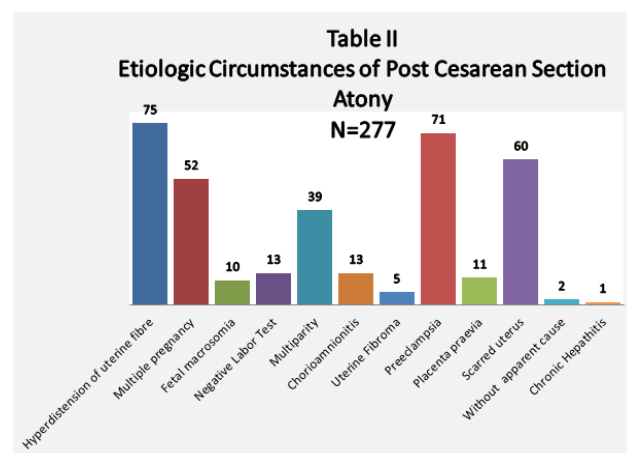
Intra and post caesarean section hemorrhage was caused by:

- Primary uterine atony: 277 cases
- Placental abruption: 94 cases
- Defects in placental insertion: 67 cases,
- Uterine rupture: 4 cases (2 after caesarean section, 1 post-myomectomy, 1 during labor on apparently unscarred uterus)
- Persistent late hemorrhage: 17 cases

We included in the study only cases of heavy bleeding which required intensive care measures, with severe secondary anemia (hemoglobin <8.5 g/dL, Ht <19), which resulted in coagulation disorders in all cases (67 of which with preeclampsia). Intraoperative, uterus was pale, mottled with petechiae, without contractility.



PRIMARY UTERINE ATONY: 277 cases represented 60.35% of post- caesarean bleeding. Possible causes of the emergence of atony are highlighted in the chart below:

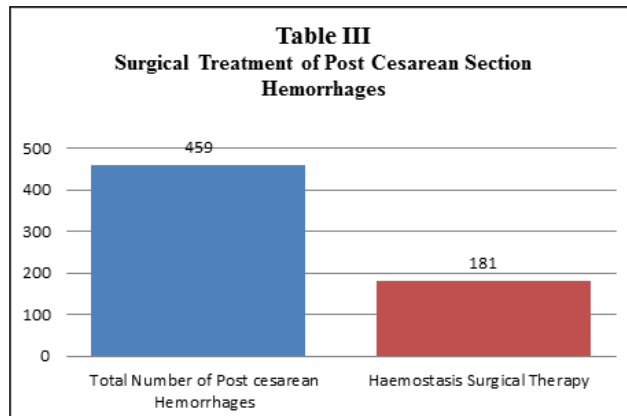


In accordance with the literature [5,9], we assumed that chronic anemia preexistent to caesarean section was a contributing, aggravating factor in 194 cases (70%) who had Hb <10 g/dL with normocytosis (106 cases) or microcytosis (86 cases), hypochromia in all cases; 2 cases with preeclampsia, diabetes mellitus and hypothyroidism presented macrocytic anemia. Serum iron values were below 55 µg/dL. The atony mechanism would be represented by Fe deficiency interfering through cytochrome oxidase with the mechanism of myometrium contraction.

SURGICAL TREATMENT OF POST CESAREAN HEMORRHAGE

Of the 459 cases of hemorrhage after caesarean

section, 181 required treatment for hemostasis (39.43%).



Following cesarean section, 116 total hysterectomies were performed and one subtotal hemostatic hysterectomy, in the following situations:

- Uteroplacental Apoplexy: 61 cases plus 2 cases where uteroplacental apoplexy was also associated with dead fetus and a scarred uterus.
- Pathological Placenta: 19 cases, namely: in 11 cases placenta praevia, in 5 cases placenta accreta and in 3 cases placenta percreta
- Uterine atony in 30 cases: 10 cases preeclampsia, uterine scar 17 cases, 1 case twin pregnancy (subtotal hysterectomy), underlying disease: chronic hepatitis: 1 case; 1 case of HIV infection.

- Uterine Rupture: 4 cases
- Isthmic Uterine Fibroids: 1 case

Immediate reoperation with total hysterectomy was performed in 45 cases:

- Uteroplacental Apoplexy 16 cases
- Pathological placenta (praevia) 8 cases.

Late reoperation was performed in 2 cases with total hysterectomy for placenta accreta.

In 17 cases with late hemorrhage after cesarean section per hysteroscopy hemostasis was performed thus:

- hemostasis by electrocoagulation of bleeding sites in 7 cases
- extracting the remaining wires from the tranche of hysterotomy and electrocoagulation of bleeding sites in 10 cases. In these patients, on a background

of continuous bleeding without fluctuations, the bleeding became abundant on days 24-36 after birth by caesarean section, which required hemostasis. All patients presented secondary anemia with Hb = 7-9 g/dL, without any coagulation disorders.

In all cases of early reintervention, consumption and dilutional coagulopathy was present with: Platelets < 80000/MMC (in 3 cases = 20-30.000/mmc), fibrinogen < 1g/dl, the presence of fibrin degradation product (FDP) in all cases, and D-dimers in 9 cases, with altered coagulogram in all the 79 cases requiring hemostatic hysterectomy. Hematological rebalancing was made by administering fresh blood, FFP, platelet mass, cryoprecipitate, antifibrinolytic (6 cases). Preservation of the uterus was obtained in only 15 cases (15.95 %); in all of them uterine artery ligation was performed [10]. Continuous vertical compression over the uterine vessels was done by B-Lynch compression suture [3,10,11] where there was abundant bleeding during caesarean section, after exhausting other conservative methods before the decision for hemostatic hysterectomy in 8 cases. Bleeding occurred in: primary atony 1 case, atony by fiber hyperdistension in 3 cases (twin pregnancy in 2 cases, negative labor test 1 case), lack of retraction of the lower segment by praevia insertion of placenta 1 case and uterine scar 3 cases. The result was good in 6 cases. The Clinic staff had positive results when distance assessing the endometrium post B-Lynch compression suture by hysteroscopy and endometrial biopsy.

Uterine artery ligation was performed in 178 cases:

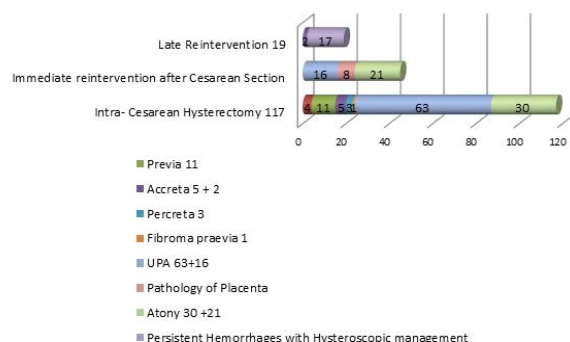
- 73 cases before the decision for hysterectomy intraoperative: 16 with primary atony 10 with preeclampsia, 16 with scarred uterus, 19 placenta praevia, 12 with uteroplacental apoplexy.

- in 30 cases, uterine artery ligation did not achieve hemostasis, therefore reintervention was necessary immediately after caesarean section to ensure hemostasis: 6 with preeclampsia, 16 with scarred uterus and 8 with placenta praevia.

- in 75 cases conservative treatment was effective.

Haemostasis in the placental bed was done in 60 cases.

Table IV
Surgical Management of
Post Cesarean Section Hemorrhage
N=181



Conclusions

The severity of intra-operative and post-cesarean bleeding is due to its association to anesthetic risk, which is more important in cesarean, as well as to the associated pathology that indicated the caesarean section in the first place. What stands out is uteroplacental apoplexy (94 cases), abnormal placentation (67 cases), preeclampsia (71 cases).

Parity was irrelevant for the study, probably due to the low percentage of registered multiparous (2.85% of all births).

What is significant for the occurrence, and especially for the severity of bleeding complications, is the association of pregnancy pathology with a potential for coagulopathy.

Myometrial fiber hyperdistension was determinant or adjuvant for the occurrence of the bleeding accident in 75 cases of bleeding after caesarean section.

Uterine atony is the most important cause of postpartum hemorrhage [4,6,7,9] reported in 394 cases (46.18%). It has a lower occurrence after vaginal birth (117 cases - 29.7%) than after caesarean section (277 cases - 60.35%). In 42.64% of the cases, atony led to hysterectomy for hemostasis [12] (168 cases), 6 cases after spontaneous birth (5.13%) and

162 cases after cesarean section (58.48%).

Conservative treatment was the first intention in all cases. Before the decision for hysterectomy, conservative treatment was attempted by uterine artery ligation, in situ hemostasis or using B-Lynch vascular sutures [3,10,11,13,14,15]. Uterine artery ligation, done in 178 of the cases, facilitated uterine conservation in 75 cases (42%). B-Lynch suture [3,10], performed in 8 cases, led to the conservation of the uterus in 7 cases.

In 3 cases, the association of pathology likely to induce coagulation disorders, namely systemic lupus, chronic hepatitis, HIV infection stage 3 or 4, which determined hemorrhage with coagulation disorders, imposed radical surgery- total hysterectomy- as a measure to prevent the aggravation of the coagulation disorders.

It is recommended that conservative methods of treatment should be attempted [15]: uterine artery ligation [10], B-Lynch suture [3,11], hypogastric artery ligation [13], before the radical decision for hemostatic hysterectomy, as a large number of cases (42-45% in our study) can be resolved conservatively.

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