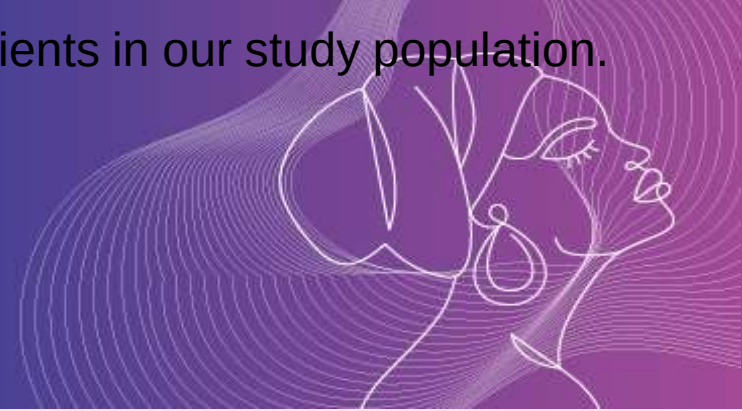




Prophylactic Internal Iliac Artery Occlusion Balloons in Placenta Accreta Spectrum Management

Labidi I, Amami M, Aloui H, Menjli S, Frikha H, Abouda HS, Chanoufi B
Gynecology-obstetrics department C
Tunis maternity and neonatology center, Tunisia

Introduction

The placenta accreta spectrum (PAS) encompasses a group of heterogeneous disorders characterized by abnormal placental invasion into the uterine wall, posing significant risks to maternal health due to the potential for massive hemorrhage. The incidence of PAS is rising, largely attributed to the increasing prevalence of cesarean deliveries. Its management requires a multidisciplinary approach, although standardized protocols have yet to be established. Cesarean hysterectomy, despite being a hemostatic surgical intervention, remains the gold standard in PAS management. In recent years, several adjunctive techniques, such as prophylactic internal iliac artery occlusion balloons, have been introduced to reduce hemorrhage and mitigate the morbidity associated with these conditions.

Methods

We conducted a retrospective, monocentric cohort study in Department of Gynecology and Obstetrics at the Maternity Center of Tunis. The study spanned three years, from January 2020, to December 2022. The study population was divided into two groups: Group 1 included patients who underwent cesarean hysterectomy without prophylactic internal iliac artery occlusion balloons, while Group 2 included patients who underwent cesarean hysterectomy with the use of prophylactic internal iliac artery occlusion balloons.

Results

Our study included 38 patients, with a prevalence of PAS in our department estimated at 1.65%. All patients shared similar sociodemographic characteristics and risk factors, with a history of cesarean delivery being the most common risk factor, observed in 92% of cases. The mean gestational age at diagnosis was 30 ± 2 weeks. The most frequent clinical presentation was third-trimester bleeding, reported in 71% of cases. Delivery occurred between 36 and 37 weeks of gestation. A significant difference in blood loss was observed between the two groups (2,888 mL in Group 1 vs. 1,828 mL in Group 2, $p < 0.05$). The use of prophylactic internal iliac artery occlusion balloons reduced the need for massive transfusion by 36.4% ($p < 0.01$) and shortened operative time (126 minutes in Group 1 vs. 92 minutes in Group 2; $p = 0.04$). There was no significant difference in morbidity or the spectrum type, with accreta type observed in 68% of cases in both groups.

Summary of estimated blood loss averages for our study population

	Medium $\pm$ ET	Minimum	Maximum
Group 1	2888 $\pm$ 863	1400	4700
Group 2	1828 $\pm$ 324	1300	2400
Total population	2442 $\pm$ 864	1300	4700

Summary of mean units of blood products transfused to patients in our study population

transfusion with RGCs and FFPs			
	Group 1	Group 2	Total
Number of patients	22	12	34
Medium $\pm$ ET (unités)	10 $\pm$ 5	4 $\pm$ 3	8 $\pm$ 5
Transfusion with standard platelets (SPC)			
	Group 1	Group 2	Total
Number of patients	9	0	9
Medium $\pm$ ET (unités)	4 $\pm$ 3	0	4 $\pm$ 3

Evaluation of operating time in both study groups

	Medium $\pm$ ET	Minimum	Maximum
Group 1	126 $\pm$ 36	75	210
Group 2	92 $\pm$ 17	60	110
Total	112	60	210

Discussion

Our study confirms the beneficial role of prophylactic internal iliac artery occlusion balloons (PIIAOBs) in managing placenta accreta spectrum (PAS). The estimated incidence in our department was 1 per 182 births. No significant differences were observed between the two groups in terms of epidemiological or clinical characteristics. The most common risk factor was a prior cesarean delivery, present in 92% of patients.

The use of PIIAOBs significantly reduced estimated blood loss (Group 1: 2,888 $\pm$ 863 mL vs. Group 2: 1,828 $\pm$ 324 mL; $p < 0.05$) and lowered the need for massive transfusion (Group 1: 10 units CGR/PFC and 4 $\pm$ 3 platelets vs. Group 2: 4 units CGR/PFC and 0 platelets; $p < 0.01$). The average operative time was also reduced (Group 1: 126 $\pm$ 36 min vs. Group 2: 92 $\pm$ 17 min; $p = 0.04$). Moreover, PIIAOBs contributed to shorter ICU stays and postoperative hospitalizations (6 $\pm$ 1 days in Group 1 vs. 3 $\pm$ 2 days in Group 2; $p < 0.01$). No significant differences in overall morbidity or PAS type were noted; the accreta form (grade 1) was predominant in both groups (68%).

These findings support previous literature suggesting that PIIAOBs may reduce intraoperative blood loss and enhance perioperative outcomes, especially in high-risk PAS cases. However, no significant impact on morbidity or PAS severity was observed in our sample.

Conclusion

Prophylactic internal iliac artery occlusion balloons can effectively reduce the risk of hemorrhage and associated morbidities in patients with PAS.

...

References

Peng Y, Jiang L, Peng C, Wu D, Chen L. The application of prophylactic balloon occlusion of the internal iliac artery for the treatment of placenta accreta spectrum with placenta previa: a retrospective case control study. BMC Pregnancy Childbirth. 2020 Jun;20(1):349.
Nicholson PJ, O'connor O, Buckley J, Spence LD, Greene RA, Tuite DJ. Prophylactic placement of internal iliac balloons in patients with abnormal placental implantation: maternal and foetal outcomes. Cardiovasc Intervent Radiol. 2018;41(10):1488-93.