

Placenta accreta spectrum (PAS):

epidemiology and management

in Belgium

Data Collection Form

Hash code

# BACKGROUND

Placenta Accreta Spectrum (PAS) is a pathological condition in placentation where villous tissue adheres to or invades the uterine wall without the interposing decidua1. The global incidence of PAS is rising, driven primarily by the increasing prevalence of Caesarean deliveries, which is a major risk factor for PAS in subsequent pregnancies1,2. The primary impact of PAS is the significant risk of massive obstetric hemorrhage during delivery, one of the leading and potentially preventable causes of maternal death. PAS poses major challenges in modern obstetric care, necessitating accurate and timely diagnosis and vigilant prenatal screening to reduce maternal morbidity and mortality and optimise foetal outcomes1,3,4. Increasing evidence suggests that managing PAS cases with multidisciplinary teams in tertiary centers reduces maternal morbidity and mortality compared to standard obstetric care. Three grades of PAS are considered in the FIGO classification:

(1) abnormally adherent placenta (placenta adherent or creta) - attached directly to the surface of the middle layer of the uterine wall (myometrium) without invading it;

(2) abnormally invasive placenta (increta) - invasion into the myometrium; and

(3a , 3b & 3c) abnormally invasive placenta (percreta) - invasion may reach surrounding pelvic tissues, vessels and organs.1,2.

This observational study has two objectives. First, to evaluate the incidence of PAS in Belgium, which is of interest given the moderate increase in caesarean rates (Brussels 20.9%, Wallonia 22.8%, Flanders 22.6% in 2022) and a fertility rate of 1.46 children per woman. Secondly, we aim to assess the management of PAS in Belgium and the outcomes for both mother and newborn.

These data will provide valuable information for counseling women, developing management guidelines, and establishing a baseline incidence to monitor future trends if caesarean rates continue to rise nationally. A coordinated and comprehensive approach by a multidisciplinary team minimizes complications and optimizes outcomes in high-risk obstetric scenarios5.

1. [Jauniaux](https://obgyn.onlinelibrary.wiley.com/authored-by/Jauniaux/Eric) E, [Ayres-de-Campos](https://obgyn.onlinelibrary.wiley.com/authored-by/Ayres%E2%80%90de%E2%80%90Campos/Diogo) D, [Langhoff-Roos](https://obgyn.onlinelibrary.wiley.com/authored-by/Langhoff%E2%80%90Roos/Jens) J, [Fox](https://obgyn.onlinelibrary.wiley.com/authored-by/Fox/Karin%2BA.) K.A, [Collins](https://obgyn.onlinelibrary.wiley.com/authored-by/Collins/Sally) S (2019) [FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel](https://obgyn.onlinelibrary.wiley.com/authored-by/ContribRaw/FIGO%2BPlacenta%2BAccreta%2BDiagnosis%2Band%2BManagement%2BExpert%2BConsensus%2BPanel). FIGO classification for the clinical diagnosis of placenta accreta spectrum disorders. *Obstet Gynecol Int J*; **146**: 20–24. DOI: 10.1002/ijgo.12761.
2. Jauniaux E, Ayres-de-Campos D; FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel. FIGO consensus guidelines on placenta accreta spectrum disorders: Introduction. Int J Gynaecol Obstet. 2018 Mar;140(3):261-264. doi: 10.1002/ijgo.12406. PMID: 29405322.
3. Jauniaux E, Chantraine F, Silver RM, Langhoff-Roos J; FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel. FIGO consensus guidelines on placenta accreta spectrum disorders: Epidemiology. Int J Gynaecol Obstet. 2018 Mar;140(3):265-273. doi: 10.1002/ijgo.12407. PMID: 29405321.
4. Hall T, Wax J.R, Lucas F.L, Cartin A, Jones M, Pinette M.G (2014) Prenatal sonographic diagnosis of placenta accreta—impact on maternal and neonatal outcomes. *J Clin Ultrasound*; **42**: 449–455. DOI: 10.1002/jcu.22186.
5. Nieto-Calvache A.J, Vergara-Galliadi L.M, Rodríguez F, Ordoñez C.A, García A.F, López M.C, Manzano R, Velásquez J, Carbonell J.P, Bryon A.M, Echavarría M.P, Escobar M.F, Carvajal J, Benavides-Calvache J.P, Burgos J.M (2021) A multidisciplinary approach and implementation of a specialized hemorrhage control team improves outcomes for placenta accreta spectrum. *J Trauma Acute Care Surg*; **90**: 807–816.

CASE DEFINITION

1.Peripartum hysterectomy performed because of suspected and/or confirmed PAS

and/or

2. Severe PAS confirmed by pathologists (specimen should include uterine wall)

and/or

3. Clinical: Delivery (vaginal / CS) with placenta left in situ or with difficult piecemeal removal of placenta wherein the patient required blood transfusion.

# DATA COLLECTION FORM

1. **Woman’s details**
	1. Woman’s age at delivery:
	2. Ethnicity

1.2.1. Current nationality

☐ Belgian with Belgian background

☐ Belgian with a foreign background

☐ Non Belgian, please specify:

☐ Not known

1.2.2. Country of birth

☐ Belgium

☐ Other: Please specify:

☐ Not known

* 1. Were any social services utilised during follow-up of pregnancy?

[ ]  Yes
[ ]  No
[ ]  Not known

* 1. Height at booking (first antenatal visit)?

      cm

[ ]  Not known

* 1. Weight at booking (first antenatal visit)?

      kg

[ ]  Not known

*(Voor Vincent: automatisch BMI laten berekenen)*

* 1. Smoking status

[ ] Never

[ ] Current

[ ] Stopped before pregnancy

[ ] Stopped during pregnancy

[ ] Not known

* 1. Alcohol use

[ ] Never

[ ] Current

[ ] Stopped before pregnancy

[ ] Stopped during pregnancy

[ ] Not known

* 1. Substance use/ Addictions (cannabis, opioids, cocaine and amphetamines, benzodiazepines, barbiturates; does not include alcohol and tobacco)

[ ] Never

[ ] Current

[ ] Stopped before pregnancy

[ ] Stopped during pregnancy

[ ] Not known

1. **Prior obstetric history**
	1. Gravidity

Number of current pregnancy:
Number of completed pregnancies (≥ 22 weeks; this pregnancy included):

* 1. Did the mother had a caesarean section in a previous pregnancy?

[ ]  Yes
[ ]  No
[ ]  Not known

***If she had a previous caesarean section***, please indicate how many:

Caesarean 1:

 Year:

Gestational Age at delivery: ….weeks (completed weeks)

 Planned mode of delivery:

[ ]  vaginal

[ ]  caesarean section

Indication for caesarean section (tick all that apply):

 [ ]  Maternal request

[ ]  Suspected cephalopelic disproportion (eg macrosomia, small pelvis)

[ ]  Previous CS

[ ]  Breech

[ ]  Abnormal fetal lie, other than breech

[ ]  Twin, Multiplets

[ ]  Maternal condition. Please specify the maternal condition as indication for CS:

[ ]  Fetal condition. Please specify the fetal condition as indication for CS:

[ ]  Placenta praevia

[ ]  Bleeding

[ ]  Not bleeding

[ ]  Suspected PAS

[ ]  Fetal distress

[ ]  Labour stagnation/arrest, failure to progress (no full dilatation)

[ ]  Prolonged 2nd stage (full dilatation)

[ ]  Failed instrumental delivery (failed vacuum, failed forceps)

[ ]  Urgent obstetric condition: suspected ruptured uterus, cord prolaps, suspected abruption. Please specify the urgent obstetric condition:

[ ]  Other, please specify other indication for the current caesarean section:      :………

[ ]  Unknown

 Grade of urgency:

[ ]  Category I
[ ]  Category II
[ ]  Category III

[ ] Category IV



 Type of incision:

[ ]  **Lower uterine transverse** incision (see figure)

[ ]  Other lower uterine incision (**low vertical**, extension with J incision, extension with T incision)

[ ]  Vertical incision (**classical incision**, see figure)

[ ]  Other: specify type of incision:

[ ]  Not known



Need for blood transfusion:

[ ]  Yes
[ ]  No
[ ]  Not known

* 1. Did the woman have any **prior** pregnancy related complications (in previous pregnancies)?

[ ] Yes (thick all that apply)

[ ]  Gestational diabetes

[ ]  Hypertensive problems

[ ]  Premature delivery

[ ]  Hemorrhage

[ ]  Placental abnormalities

[ ]  Other, please specify other prior pregnancy related complications:

[ ]  No

[ ]  Not known

* 1. Has the woman a history of a placenta previa?

[ ] Yes

[ ] No

[ ] Not known

* 1. Has the woman a history of a PAS?

[ ] Yes

[ ] No

[ ] Not known

* 1. Has the woman ever had a manual placental removal?

[ ] Yes

[ ] No

[ ] Not known

1. **Previous medical history**
	1. Does the women have gynaecological problems in her medical history?

[ ]  Yes:

[ ]  Congenital uterine anomaly. Please specify the uterine anomaly:

[ ]  Endometriosis

[ ]  Adenomyosis

[ ]  Asherman

[ ]  Endometritis

[ ]  PID

[ ]  Other: please specify other previous gynaecological problems:

[ ]  No

[ ]  Not known

* 1. Does the woman have gynaecological surgery in her medical history?

[ ]  Yes:

[ ]  Myomectomy

If Myomectomy, was the cavity breached?

[ ] Yes

[ ] No

[ ]  Dilatation and curettage

[ ]  Operative hysteroscopy; please specify the hysteroscopy:

[ ]  Niche resection/repair

[ ]  Uterine artery embolization; please specify reason for embolisation:

[ ]  Other: please specify other previous gynaecological surgery/ies:

[ ]  No

[ ]  Not known

1. **This pregnancy**

4.1 Estimated date of delivery?

* 1. Origin of pregnancy?

[ ]  Spontaneous

[ ]  IUI (intra-uterine insemination)

[ ]  IVF/ICSI (in-vitro fertilisation/ intracytoplasmic sperm injection)

[ ]  Other: please specify other origin of pregnancy:

[ ]  Not known

* 1. Type of pregnancy?

[ ] Singleton

[ ] DCDA twin (dichorionic diamniotic)

[ ] MCDA twin (monochorionic diamniotic)

[ ] MCMA/MOMA twin (monochorionic monoamniotic)

[ ] Other: please specify type of pregnancy:

* 1. Was this woman referred from another centre?

[ ] Yes:

* please specify the hospital:
* please specify reason for referral:

[ ]  antenatal (elective) :

[ ]  intrapartum/postpartum (urgent) :

* Please specify gestational age at booking (first antenatal visit) in the first centre: … weeks (completed weeks)
* Please specify gestational age at referral: … weeks

[ ] No

* Please specify gestational age at booking (first antenatal visit): … weeks (completed weeks)
	1. Were routine prenatal ultrasounds performed (in this hospital and if applicable: in referral hospital)?
* First trimester screen

[ ]  Yes

[ ]  No

* Second trimester screen

[ ]  Yes

[ ]  No

* Third trimester screen yes / no

[ ]  Yes

[ ]  No

[ ] Not known:

* 1. Was a caesarean scar pregnancy suspected/diagnosed in the first trimester?

[ ] Yes

[ ] No

[ ] Not known

* 1. Was the pregnancy complicated by a placenta previa?

[ ] Yes

* Specify:

[ ]  Low-lying placenta *(question correct?)*

[ ]  Grade 2: marginal praevia (at internal os)

[ ]  Grade 3: partial praevia (over internal os partial)

[ ]  Grade 4: complete praevia (over internal os complete)

* Placenta was last evaluated at … weeks of gestational age
* Findings of last evaluation:

[ ]  anterior placenta

[ ]  posterior placenta

[ ]  Not applicable

[ ]  Not known

[ ] No

* 1. Was PAS suspected prior to delivery?

[ ] No, PAS presented unexpectedly during vaginal/ caesarean delivery

* Delivery complicated by

[ ]  Postpartum hemorrhage

[ ]  Retained placenta

[ ]  Uterine rupture

[ ]  Other: please specify complication during delivery:

[ ] Yes:

* At which GA was PAS diagnosed? (completed weeks): ....... weeks
* Which modes of imaging were used:

[ ]  Ultrasound

 Which findings were recorded (tick all that apply)?

[ ]  Abnormal placental lacunae

 Number abnormal placental lacunae:

[ ]  Loss of hypoechoic retroplacental clear space

[ ]  Myometrial thinning

[ ]  Bladder wall interruption

[ ]  Placental bulge

[ ]  Hypervascularization patterns (tornado vessels)

 [ ]  Uterovesical

 [ ]  Subplacental

 [ ]  Intraplacental

[ ]  Presence of bridging vessels

[ ]  Other. Please specify these other ultrasound findings:

[ ]  MRI

 Which findings were recorded?

 [ ]  Dark intraplacental bands

[ ]  Uterine bulging

[ ]  Heterogeneous placenta

[ ]  Irregular contour and rounded edge

[ ]  Abnormal or disorganized intraplacental and subplacental vascularization

[ ]  Thinning or loss of the retroplacental T2 dark zone

[ ]  Myometrial thinning

[ ]  Focal disruption of the myometrium

[ ]  Or see MRI report (copy paste the text of the report):

* 1. Were there any other complications during this pregnancy?

[ ] Yes

[ ]  Gestational diabetes

[ ]  Hypertensive problems

[ ]  Preterm labour

[ ]  PPROM

[ ]  Antepartum heamorhage

[ ]  Other. Please specify other complications during this pregnancy:

[ ]  No

[ ]  Not known

1. **Delivery**
	1. Gestational age at delivery (number of completed weeks)?       weeks
	2. What was the planned mode of delivery?

[ ]  Vaginal delivery

[ ]  Caesarean section

* 1. Was the woman in labour? *(defined as having had continuous, progressive contractions that caused cervical changes (effacement, dilatation)*

[ ]  Yes

[ ]  No`

* 1. Was labour induced?

[ ]  Yes (maternal or foetal indication)

[ ]  No

* 1. What was the final mode of delivery?

[ ]  Vaginal (Vincent: if Vaginal: onderliggende vragen niet open)

[ ]  Caesarean section

* + 1. What was the indication for caesarean section?

[ ]  Suspected PAS

[ ]  Placenta praevia

[ ]  Bleeding

[ ]  not bleeding

[ ]  Maternal request

[ ]  Suspected cephalopelic disproportion (eg macrosomia, small pelvis)

[ ]  Previous CS

[ ]  Breech

[ ]  Abnormal fetal lie, other than breech

[ ] Twin, Multiplets

[ ]  Maternal condition. Please specify the maternal condition as indication for CS:

[ ]  Fetal condition. Please specify the fetal condition as indication for CS:

[ ]  Fetal distress

[ ]  Labour stagnation/arrest, failure to progress (no full dilatation)

[ ]  Prolonged 2nd stage (full dilatation)

[ ]  Failed instrumental delivery (failed vacuum, failed forceps)

[ ]  Urgent obstetric condition: suspected ruptured uterus, cord prolaps, suspected abruption -> please specify the urgent obstetric condition:

[ ]  Other, please specify other indication for the current caesarean section:

[ ]  Unknown

* + 1. Grade of urgency?

[ ]  Category I
[ ]  Category II
[ ]  Category III

[ ]  Category IV

[ ]  Not known



* + 1. Was the placenta left in situ?

[ ]  Yes

* Were antibiotics administered?

 [ ] Yes:

* Type:
* Duration:      days

 [ ] No

 [ ] Not known

[ ]  No

* 1. Was a hysterectomy performed

[ ]  No

[ ]  Yes

* + 1. In which type of hospital was it performed?

[ ] Second line hospital

[ ] Third line hospital (hospital with MIC and NICU)

* + 1. Was this planned/anticipated?

[ ] Yes

[ ] Yes, placenta left in situ

[ ] Yes, with difficult/piecemeal/partial removal

[ ] No

[ ]  Failed removal/detachment of placenta

[ ]  Severe postpartum bleeding:

[ ]  Other, please specify reason unplanned hysterectomy:

[ ] Not known

* + 1. The hysterectomy was:

[ ]  Total

[ ]  Subtotal

* + 1. Moment of hysterectomy if different from delivery date:      weeks and      days after delivery.
		2. Who performed the hysterectomy?

1st surgeon:

- (sub)speciality 1st surgeon:

- Grade 1st surgeon: [ ]  junior [ ]  senior

*Knop: Add second surgeon*

2nd surgeon:

- (sub)speciality 2nd surgeon:

- Grade 2nd surgeon: [ ]  junior [ ]  senior

*Knop: Add third surgeon*

3d surgeon:

- (sub)speciality 3rd surgeon:

- Grade 3d surgeon: [ ]  junior [ ]  senior

* + 1. Was interventional radiology support involved

[ ]  Yes

* + were preventive interventional radiology measures taken

[ ] Yes

[ ] No

* + were haemostatic interventional radiology procedures done

[ ] Yes

[ ] No

* + please copy report of interventional radiology here :

[ ]  No

* 1. Please indicate below all other therapies used to prevent or treat haemorrhage

|  |  |  |  |
| --- | --- | --- | --- |
| Treatment | Yes | Rank order in which given (1,2,3…) | Prophylactic (P) or therapeutic (T) |
| P | T |
| *Oxytocin singe bolus* | [ ]  |  | [ ]  | [ ]  |
| *Oxytocin infusion* | [ ]  |  | [ ]  | [ ]  |
| *Misoprostol (Cytotec)* | [ ]  |  |  |  |
| *Carbetocine (Pabal)* | [ ]  |  | [ ]  | [ ]  |
| *Carboprost (Prostin 15M)* | [ ]  |  | [ ]  | [ ]  |
| *Tranexamic Acid* | [ ]  |  | [ ]  | [ ]  |
| *Methylergometrine (methergine)* | [ ]  |  | [ ]  | [ ]  |
| *Recombinant activated factor VII* | [ ]  |  | [ ]  | [ ]  |
| *Intrauterine balloons* | [ ]  |  | [ ]  | [ ]  |
| *B-Lynch or another brace suture* | [ ]  |  | [ ]  | [ ]  |
| *Uterine artery ligation* | [ ]  |  | [ ]  | [ ]  |
| *Internal iliac artery ligation* | [ ]  |  | [ ]  | [ ]  |
| *Intra-abdominal packing* | [ ]  |  | [ ]  | [ ]  |
| *Artery embolisation* | [ ]  |  | [ ]  | [ ]  |
| *Balloon tamponade* |  |  |  |  |
| *Intraaortic balloon occlusion* | [ ]  |  | [ ]  | [ ]  |
| *Internal iliac artery (IIA) balloon occlusion* | [ ]  |  | [ ]  | [ ]  |
| *Other*  | [ ]  |  | [ ]  | [ ]  |
| *If other, please specify therapy to prevent or treat haemorrhage:* |  |

* 1. What was the total estimated blood loss during delivery?

      ml

[ ]  Not known

* 1. Were blood products given?

[ ]  No, not indicated

[ ]  No, the patient refused

[ ]  Yes:

|  |  |
| --- | --- |
| Type of blood product | Total units |
| *Whole blood or packed red blood cells* |  |
| *Fresh frozen plasma* |  |
| *Platelets* |  |
| *Cryoprecipitate* |  |
| *Cell salvaged blood* |  |
| *Other blood product* |  |
| *If other blood product given, please specify which:*       |

[ ]  Not known

* 1. What was the clinical placenta accreta spectrum classification?

[ ]  Not applicable

**Following general terminology:**

[ ]  Placenta accreta

[ ]  Placenta increta

[ ] Placenta percreta

**Following the FIGO classification:**

[ ]  **Grade 1**: abnormally adherent placenta (placenta adherent or creta) - attached directly to the surface of the middle layer of the uterine wall (myometrium) without invading it

[ ]  **Grade 2**: abnormally invasive placenta (increta) - invasion into the myometrium

[ ]  **Grade 3**: abnormally invasive placenta (percreta) invasion may reach surrounding pelvic tissues, vessels and organs.

[ ] Grade 3a (limited to the uterine serosa)

[ ] Grade 3b (with urinary bladder invasion)

[ ] Grade 3c (with invasion of other pelvic tissue/ organs)

* 1. What was the pathological classification?

[ ]  Not applicable

**Following general terminology:**

[ ]  Placenta accreta

[ ]  Placenta increta

[ ]  Placenta percreta

**Following the Hecht classification (see Figure below):**

[ ]  **Grade 1**: non-invasive without gross thinning of the uterine wall

[ ]  **Grade 2**: superficial invasion: shows thinning of the uterine wall below the placenta, with preservation of at least 25% of the wall thickness relative to uninvolved myometrium

[ ]  **Grade 3**: deep invasion

[ ] Grade 3a (shows thinning of the uterine wall below the placenta, with preservation of less than 25% of the wall thickness relative to uninvolved myometrium)

[ ] Grade 3d (shows disruption of the uterine serosa)

[ ] Grade 3e (shows invasion into extrauterine structures)



1. **Woman’s outcome**
	1. Were there any surgical complications

[ ]  Not applicable (no surgery)

[ ]  No

[ ]  Yes

 [ ]  Bladder

 [ ]  Ureter

 [ ]  Bowel

 [ ]  Other, Please specify other surgical complications

* 1. Was the woman admitted to an Intensive Care Unit?

[ ]  Yes

Was this planned (pre-operatively)?

[ ]  Yes

[ ]  No

Did she receive any inotropic medication?

[ ]  Yes

[ ]  No

How many days:

Specify unit:

[ ]  ICU

[ ]  PACU

[ ]  Other; please specify other unit:

[ ]  No

[ ]  Not known

* 1. Did the woman die?

[ ]  Yes

[ ]  No

* 1. Duration of stay in the hospital during her delivery:

[ ]        days

[ ]  Still hospitalised

[ ]  Not known

1. **Infant outcome (of this pregnancy)**

Infant 1 outcomes

* 1. Birthweight

     g

[ ]  Not known

* 1. Was the infant stillborn (>= 22 weeks)?

[ ]  Yes

[ ]  No

* + 1. Apgar scores

[ ]  Not known

* + 1. Complete the umbilical cord blood gas analysis if known:
		- Arterial pH:
		- Venous pH:

[ ]  Not known

* + 1. Did any major infant complications occur?

[ ]  Yes

[ ]  Respiratory distress syndrome
[ ]  Intraventricular haemorrhage
[ ]  Necrotising enterocolitis
[ ]  Neonatal encephalopathy
[ ]  Severe jaundice requiring phototherapy
[ ]  Major congenital anomaly
[ ]  Severe infection e.g. septicaemia, meningitis
[ ]  Exchange transfusion

[ ]  Other? Please specify other major infant complications :

[ ]  No

[ ]  Not known

* + 1. Did the infant die?

[ ]  Yes

[ ]  No

[ ]  Not known

1. **Additional information?**

### Please use this space to enter any other information you feel may be important:

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_