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Placental Pathology Examination, A Key Element of Fetal Autopsy: Case Report of a Home Abortion in a Vulnerable Patient.

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KEYWORDS

Placenta,
Abortion,
Fetal death,
Fetal autopsy,
Pathology.

ABSTRACT:

Introduction: Anatomopathological examination of the placenta is essential in forensic medicine and obstetrics to determine the underlying causes of miscarriages and fetal deaths.

Objectives: This study focuses on the importance of this examination in determining the causes of miscarriage, particularly in cases where the cause remains unexplained after the initial fetal autopsy.

Methods: We report the case of a 23-year-old patient with intellectual disability who was admitted to the emergency room for massive vaginal bleeding. Clinical examination and ultrasound revealed placental retention, requiring emergency surgery. A forensic investigation was opened due to the context: home abortion and the patient's mental vulnerability.

Results: Histopathological analysis of the placenta revealed intervillous thrombosis, suggestive of placental malperfusion, a lesion frequently associated with late spontaneous abortions. This observation made it possible to confirm the spontaneous origin of the abortion and rule out suspicious circumstances.

Conclusions: This case illustrates that histopathological analysis of the placenta can reveal abnormalities that are sometimes undetectable at autopsy, and that collaboration between pathologists and forensic scientists is crucial in clarifying the circumstances of the abortion and guiding the judicial investigation.

1. Introduction

Post-mortem pathology examination is a key tool in forensic and obstetric medicine for determining the underlying causes of abortion or perinatal death. In forensic investigations, it is an essential step in completing the fetal autopsy and detecting any placental anomalies. A study of 400 forensic autopsies revealed that major diagnoses, not identified by macroscopic examination, were revealed in 21% of cases, illustrating the value of complementary histopathological analysis (1).

The placenta is the main organ of exchange between the maternal and fetal compartments, providing vital unctions for intra-uterine development. Its histopathological examination can identify pathological mechanisms often involved in spontaneous abortion or fetal death in utero, helping to guide medico-legal decisions (2). Among these mechanisms, maternal perfusion disorders can lead to placental infarction, while certain maternal-fetal infections, such as chorioamnionitis or chronic villitis, cause inflammatory reactions that are deleterious to fetal development (3,4).

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However, a major problem in interpreting these analyses is that placento-pathological examinations are generally carried out by anatomopathologists, who do not always possess the specific skills required in forensic medicine. This lack of specific expertise can make it difficult to integrate histopathological results into a forensic investigation, particularly when assessing the circumstances of a suspected abortion (5). This situation underlines the need for closer collaboration between forensic pathologists and specialists in anatomopathology to ensure optimal interpretation of the data.

2. Objectives

The aim of this work is to demonstrate the importance of anatomopathological examination of the placenta in determining the causes of an abortion and highlighting underlying abnormalities. It also highlights the need for interdisciplinary collaboration between pathologists and forensic pathologists to ensure more rigorous interpretation, in line with forensic requirements.

3. Case report

A 23-year-old single woman with an intellectual disability was admitted to the maternity hospital in Sidi Bel Abbès (Algeria) after being evacuated from a local health facility due to profuse bleeding. Due to her intellectual disability, the patient was uncooperative on admission. Although aware of her situation, she was unable to answer medical questions properly, and did not actively participate in her assessment. This lack of cooperation, probably linked to her psychological vulnerability, led the care team to adapt her care to better meet her needs.

On admission, the patient was conscious but uncooperative, with discoloration of the integument and conjunctiva, shock and cold extremities. Vaginal examination revealed a cervix dilated to 4 cm. Ultrasound examination revealed an enlarged uterus due to retained placenta, with no apparent abnormalities of the right or left adnexa.

The patient was admitted urgently to the operating theatre for a bi-digital evacuating and haemostatic curettage. She received a transfusion of two packed red blood cells, together with appropriate hemodynamic support.

Forensic investigation

Due to the patient's mental state, a judicial report was made, in accordance with established protocols for such situations, and an investigation was launched to clarify the circumstances of the event. Following this situation, the National Gendarmerie Brigade went to the patient's home, where traces of blood were found on the floor and in the toilet, and where a foetus was found. The fetus was taken to the forensic medicine department for a full examination.

The competent court prosecutor requested an autopsy to determine the cause of death of the fetus and to elucidate the circumstances of the abortion.

4. Results

Autopsy results

Autopsy examination revealed a female fetus, with an estimated gestational age of 24 weeks' amenorrhea (plus or minus 02 weeks). External examination revealed several key features, including an untied umbilical cord measuring 30 cm, suggesting that the termination of pregnancy had probably occurred unassisted or outside a medical setting, suggestive of abortion or unsafe delivery.

In addition, the dense, smooth, dark lilac-coloured lungs observed indicate a lack of pulmonary aeration, confirmed by a negative four-stage hydrostatic docimasie, pointing to in utero death.

The absence of traces of external violence was also confirmed, eliminating any possibility of direct trauma as the cause of fetal death. To complete the investigation, biological samples were taken.

Pathological analysis of the placenta

An anatomopathological examination of the placenta was requested after consultation with a specialist in anatomopathology, in order to orientate the forensic diagnosis. Histopathological analysis revealed several significant abnormalities:

Macroscopic description: The placenta measured 15 × 14 × 3 cm and, after sectioning, dark reddish foci of intervillous thrombosis were observed, extending over the placental parenchyma. These foci are compatible with a pregnancy term of 26 weeks' amenorrhea (Figure 1).

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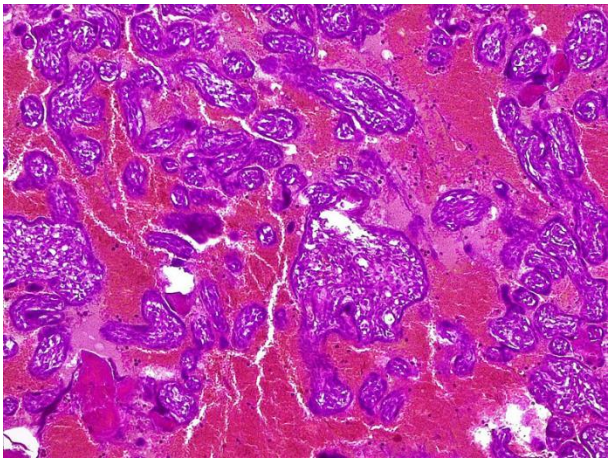
Figure 01: Macroscopic appearance after sectioning shows dark red foci of intercellular thrombosis.

Microscopic description: chorionic villus analysis showed a regular trophoblast, sometimes vascularized, sometimes avascular, surrounded by hemorrhagic foci. The vessels on the maternal side were congested, suggesting vascular dysfunction linked to insufficient placental perfusion (Figure 2).

Figure 02: Microscopic appearance of intercellular thrombosis at GX10 magnification.



These placental anomalies, in particular intervillous thrombosis, are frequently associated with serious obstetric complications such as intrauterine growth retardation, fetal hypoxia, and late abortion (6). This highlights the importance of pathological examination in identifying placental vascular pathologies that might otherwise go unnoticed.

5. Discussion

Pathological examination of the placenta plays a central role in identifying the underlying causes of spontaneous abortion and fetal death, particularly in cases where the reasons for pregnancy failure remain unclear after initial autopsy(7,8) . In the case report of our patient, a 23-year-old woman with intellectual disability, clinical examination revealed a critical situation on admission with symptoms of shock. Ultrasound showed retained placenta, which led to urgent intervention in the operating room for curettage.

The importance of placental examination is confirmed by numerous studies which emphasize that this histopathological examination can not only identify structural abnormalities, but also offer diagnostic clues concerning vascular and infectious pathologies responsible for fetal loss(9) . Microscopic analysis of this case revealed the presence of intervillous thrombosis, a sign of placental malperfusion, frequently associated with late abortions (6,9,10).

Placental pathologies and the role of histopathological examination

Histopathological analysis of the placenta is essential to understand the abnormalities that may have contributed to pregnancy termination(1) . Intervillous thrombosis has been observed in several studies and identified as a frequent cause of obstetric complications, including late abortion and fetal death in utero(6) .

This anomaly can be the cause of fetal complications such as fetal hypoxia and growth retardation(6,11). These results underline the importance of anatomopathological examination in identifying placental pathologies.

Interdisciplinary collaboration and medico-legal impact

Interdisciplinary collaboration between pathologists and forensic pathologists is crucial for optimal interpretation of histopathological findings in forensic investigations(5) . As highlighted in several studies, the lack of specific training of pathologists in the forensic field can lead to inadequate interpretation of results in the context of a forensic investigation. In our patient's case, close collaboration with anatomopathology specialists enabled the identification of relevant placental anomalies, such as intervillous thrombosis, which would not have been identified without in-depth analysis, without providing detailed information concerning the circumstances and objectives of our forensic mission. This collaboration not only contributed to the determination of the causes of the abortion, but also guided judicial decisions in the search for the cause of foetal death, as well as the age of the pregnancy, which

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was estimated at 26 weeks of amenorrhoea (plus or minus 02 weeks). However, a discrepancy was observed between the gestational age estimated at autopsy, estimated at 24 weeks of amenorrhea (plus or minus 02 weeks), and that determined by histopathological examination of the placenta, estimated at 26 weeks of amenorrhea (plus or minus 02 weeks). This difference can be explained by thrombosis intervilleuse, which is indicative of placental vascular insufficiency. This type of damage is likely to compromise fetal growth, leading to developmental delay in utero and underestimation of gestational age on post-mortem morphological examination.

It is crucial that pathologists receive comprehensive information on the clinical and forensic circumstances, in order to correctly interpret the results of their analyses and provide conclusions that support forensic investigations(12) . Such an approach makes it possible to establish clear links between observed placental anomalies and the forensic context, and to avoid misinterpretation. Active collaboration between these disciplines not only enhances the quality of forensic investigations, but also prevents the recurrence of similar complications in future pregnancies(13).

Clinical implications and management perspectives

Anatomopathological examination of the placenta is not limited to its diagnostic role in forensic investigations. It also has direct implications for the clinical management of future pregnancies, especially in the case of detected placental pathologies such as intervillous thrombosis(9). Placental vascular thrombosis, often associated with increased risks of complications such as intrauterine growth retardation and fetal death, requires special attention in subsequent pregnancies.

The use of histopathological findings to predict fetal health and establish prevention strategies is fundamental to improving maternal and fetal health outcomes. This may include specialized consultations, increased monitoring of fetal growth, or appropriate medical treatment to reduce the risk of severe complications(2,14).

Limitations and recommendations for future research

Although anatomopathological examination of the placenta is a powerful diagnostic tool, it has certain limitations that must be taken into account. Firstly, the histopathological diagnosis of placental abnormalities relies heavily on the experience of the pathologist and the quality of the samples collected(3,15) . Some subtle placental abnormalities may go undetected, which can make it difficult to reach a definitive conclusion on the cause of abortion or fetal death. This may also be affected by the timing of placenta removal, as some changes may only be visible in the early post-mortem stages.

In addition, the lack of specialized forensic training for pathologists may limit the interpretation of results in a forensic context.

It would be appropriate to encourage the harmonization of infant autopsy practices, particularly as regards the anatomopathological examination of the placenta. The implementation of standardized protocols would guarantee uniformity in analyses, limit diagnostic subjectivity and enhance the reliability of forensic conclusions in cases of abortion or fetal death.

6. Conclusion

This work highlights the importance of anatomopathological examination of the placenta in determining the causes of abortion and identifying underlying anomalies in fetal death. In our patient's case, an abortion occurred at home in a woman with an intellectual disability. Histopathological analysis revealed intervillous thrombosis, a sign of placental vascular malperfusion. This anomaly disrupted placental blood perfusion, contributing to the termination of the pregnancy. Examination of the placenta therefore proved essential to understanding the underlying causes of the abortion, bringing to light pathologies not visible at the initial autopsy. The medico-legal investigation, supported by the results of the examinations, led to the conclusion that the abortion was spontaneous, thus providing essential elements for understanding the circumstances of the event. Interdisciplinary collaboration between pathologists and forensic pathologists is crucial to the correct interpretation of results in a forensic context. This allows for better management of complex cases and more accurate integration of clinical and histopathological data. Further research into the standardization of post-mortem anatomopathological examination protocols is essential to optimize the rigor and reliability of forensic conclusions, particularly in the investigation of abortions and fetal deaths.

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Ethical statements

This case study was conducted in compliance with the ethical principles of the Declaration of Helsinki. Informed consent was obtained from the patient's legal representatives for the use and anonymous publication of medical data. No experiments were carried out, and all information was treated confidentially to ensure privacy.

Conflict of interest

The authors declare that they have no conflicts of interest.

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References:

1. Chatelain, D.; Hebert, A.; Trouillet, N.; Charfi, S.; Stephens, P.; Manaouil, C. Intérêt de l'analyse anatomopathologique dans une série de 400 autopsies médicolégales. Ann. Pathol. 2012, 32 (1), 4–13.
2. Cornélis, F. Intérêt de l'examen anatomopathologique du placenta. Rev. Francoph. Lab. 2008, 2008 (402), 71–76.
3. Dureau, Z. J.; Rogers, B. B. Placental pathology. Diagn. Histopathol. 2019, 25 (9), 341–349.
4. Agapitos, E.; Papadopoulou, C.; Kavantzas, N.; Papoulias, J.; Antonaki, V.; Davaris, P. The contribution of pathological examination of the placenta in the investigation of the causes of foetal mortality. Arch. Anat. Cytol. Pathol. 1996, 44 (1), 5–11.
5. Capuani, C.; Guilbeau-Frugier, C.; Dedouit, F.; Rougé, D.; Delisle, M. B.; Telmon, N. Implication des médecins légistes dans l'autopsie médicale: l'expérience toulousaine. Ann. Pathol. 2013, 33 (2), 87–92.
6. Narice, B. F.; Byrne, V.; Labib, M.; Cohen, M. C.; Anumba, D. O. Placental lesions in stillbirth following the Amsterdam consensus: A systematic review and meta-analysis. Placenta 2024, 158, 23–37.
7. Khong, T. Y. The placenta in stillbirth. Curr. Diagn. Pathol. 2006, 12 (3), 161–172.
8. Odendaal, H.; Pattinson, R.; Schubert, P.; Mason, D.; Brink, L.; Gebhardt, S.; Groenewald, C.; Botha, C.; Rall, G. The key role of examining the placenta in establishing a probable cause for stillbirth. Placenta 2022, 129, 77–83.
9. Avortements spontanés: Prise en charge aux CSRef des communes V et VI du District de Bamako [Internet]. Accessed Mar 19, 2025. Available from: https://bibliosante.ml/handle/123456789/8314.
10. The placenta in intrauterine demise - Boyd - 2018 - APMIS - Wiley Online Library [Internet]. Accessed Mar 19, 2025. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/apm.12832.
11. Menter, T.; Bruder, E.; Hösli, I.; Lapaire, O.; Raio, L.; Schneider, H.; Holzgreve, W.; Surbek, D.; Tercanli, S.; Nelle, M.; Baud, D.; Ochsenbein-Kölble, N. Pathologic findings of the placenta and clinical implications – recommendations for placental examination. Swiss Med. Wkly. 2024, 154 (10), 3929–3929.
12. Derriche, M.; Boukhata, C. Incidence des avortements spontanés au niveau de la clinique S'bihi Tassadit (T.O) et étude anatomopathologique d'un placenta [Internet]. Université Mouloud Mammeri, 2019. Accessed Mar 19, 2025. Available from: https://dspace.ummto.dz/handle/ummto/10522.
13. Maternal vascular malperfusion of the placental bed - Ernst - 2018 - APMIS - Wiley Online Library [Internet]. Accessed Mar 22, 2025. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/apm.12833.
14. Redline, R. W. Placental Pathology: A Systematic Approach with Clinical Correlations. Placenta 2008, 29, 86–91.
15. Khong, T. Y.; Mooney, E. E.; Ariel, I.; Balmus, N. C. M.; Boyd, T. K.; Brundler, M. A.; Derricott, H.; Evans, M. J.; Faye-Petersen, O. M.; Gillan, J. E.; Heazell, A. E. P.; Heller, D. S.; Jacques, S. M.; Keating, S.; Kelehan, P.; Maes, A.; McKay, E. M.; Morgan, T. K.; Nikkels, P. G. J.; Parks, W. T.; Redline, R. W.; Scheimberg, I.; Schoots, M. H.; Sebire, N. J.; Timmer, A.; Turowski, G.; van der Voorn, J. P.; van Lijnschoten, I.; Gordijn, S. J. Sampling and Definitions of Placental Lesions: Amsterdam Placental Workshop Group Consensus Statement. Arch. Pathol. Lab. Med. 2016, 140 (7), 698–713.