

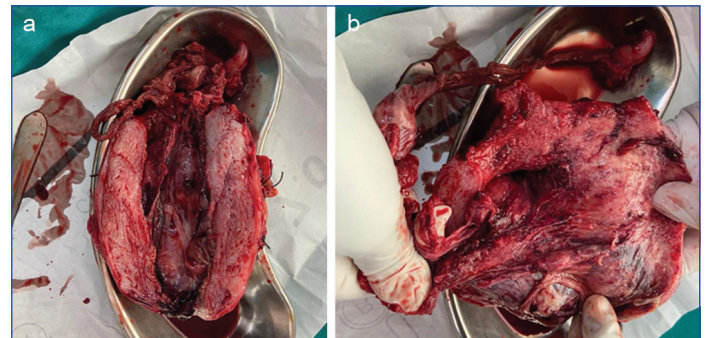
Role of Ultrasound in the Diagnosis of Retained Placenta

JAY RADHEYKUMAR NAGARGOJE¹, SURESH VASANT PHATAK²,
PRASHANT MANIKRAO ONKAR³, AZHAR SHOAB SHAIKH⁴



Keywords: Hysterectomy, Myometrium, Postpartum haemorrhage

A 30-year-old female, in her second pregnancy at approximately 37 weeks of gestational age, presented with excessive pervaginal bleeding for four hours following a home delivery. A previous single antenatal ultrasound was performed at 13 weeks of gestational age, which indicated that the placenta was developing along the posterior uterine wall. During the current ultrasound examination, the uterus was found to be enlarged and bulky. A large hyperechoic structure measuring approximately 11.2×7.6×6 cm was observed in the fundo-posterior wall of the uterus [Table/Fig-1], showing minimal vascularity on colour Doppler [Table/Fig-2]. This was identified as the non expelled retained placenta. Due to the diagnosis of retained placenta and the possibility of atonic Postpartum Haemorrhage (PPH), a hysterectomy was performed by the obstetrician under anaesthesia to prevent further uncontrolled blood loss. The uterus, along with the retained placental tissue, was removed [Table/Fig-3a,b]. Following the surgery, the patient experienced a cessation of blood loss, and her vital signs remained stable.



[Table/Fig-3a,b]: Hysterectomy specimen showing retained placenta within.

Retained placenta is a significant cause of maternal mortality and morbidity, particularly in developing nations. It affects nearly two percent of all deliveries, resulting in a maternal mortality rate of approximately 10% in rural areas [1]. Non institutional and home deliveries are major risk factors for retained placenta [1].

The PPH is the leading cause of maternal deaths worldwide, and about 20 percent of these cases are attributed to retained placenta, as it disrupts normal uterine haemostasis and involution [2].

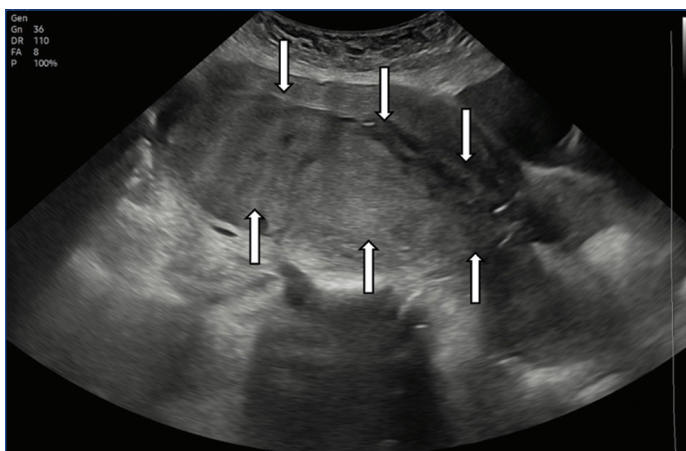
The ability to dynamically visualise the uterus during the third stage of labour using ultrasound has contributed to an increased understanding of the mechanism behind placental retention. The expulsion of the placenta occurs during the third stage of labour, and the contraction of the retroplacental myometrium leads to its spontaneous expulsion [3]. However, if the retro-placental myometrium fails to contract, it results in placental retention.

The placenta produces multiple inhibitors of myometrial contraction, with progesterone and Nitric Oxide (NO) playing significant roles. The continuous production of these inhibitors may be the reason behind the failure of contraction of the retro-placental myometrium [4].

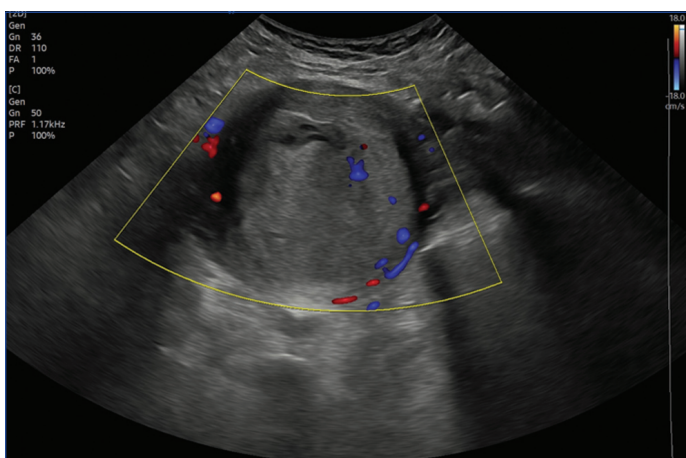
Active management of the third stage of labour, using interventions such as oxytocin administration, uterine massage, or controlled cord traction, is the most effective way to prevent placental retention. However, in cases of retained placenta, the most common treatment is Manual Removal of Placenta (MROP) under anaesthesia. In situations where the retained placental tissue is large and causes excessive bleeding, hysterectomy is the preferred choice [5].

AlMousa R et al., found that despite adequate management with broad-spectrum antibiotics, the postpartum fever of the patient did not resolve. This prompted further investigation, which revealed retained placental tissue as a possible source of infection, using pelvic ultrasound [6].

Qazi AS et al., reported that ultrasound imaging demonstrated a sensitivity of 75% for detecting retained placenta. However, it is important to consider other possible mimics, such as blood clots and necrotic material [7].



[Table/Fig-1]: Postnatal ultrasound image showing bulky uterus with retained placenta along the fundo-posterior wall (white arrows).



[Table/Fig-2]: Retained placental tissue showing minimal vascularity on colour doppler.

Ultrasonography is a routine procedure for detecting cases with retained placentas. Monitoring the patient's signs and symptoms, along with postoperative radiological investigations, aids in the diagnosis and management of the condition.

REFERENCES

- [1] Combs CA, Laros Jr RK. Prolonged third stage of labour: Morbidity and risk factors. *Obstetrics and Gynecology*. 1991;77(6):863-67.
- [2] Franke D, Zepf J, Burkhardt T, Stein P, Zimmermann R, Haslinger C. Retained placenta and postpartum hemorrhage: Time is not everything. *Arch Gynecol Obstet*. 2021;304(4):903-11.
- [3] Herman A, Weinraub Z, Bukovsky I, Arieli S, Zabow P, Caspi E, et al. Dynamic ultrasonographic imaging of the third stage of labour: New perspectives into third-stage mechanisms. *Am J Obstet Gynecol*. 1993;168(5):1496-99.
- [4] Akol AD. *The Clinical Importance of Retained Placenta Subtypes*. The University of Liverpool (United Kingdom); 2019.
- [5] Perlman NC, Carusi DA. Retained placenta after vaginal delivery: Risk factors and management. *Int J Womens Health*. 2019;11:527-34.
- [6] AlMousa R, AlMuhaidib HR, Alanezi SM, Al Qahtani N. The rule of ultrasonography in the management of retained placenta. *Cureus*. 2021;13(1):e12696.
- [7] Qazi AS, Sami S. Devising new management protocol based on sonographic sensitivity for the detection of retained products of conception. *Ann King Edw Med Univ*. 2009;15(3):123.

PARTICULARS OF CONTRIBUTORS:

1. Undergraduate Student, Department of Radiodiagnosis, NKP Salve Institute of Medical Sciences and Lata Mangeshkar Hospital, Digdoh Hills, Nagpur, Maharashtra, India.
2. Professor, Department of Radiodiagnosis, NKP Salve Institute of Medical Sciences and Lata Mangeshkar Hospital, Digdoh Hills, Nagpur, Maharashtra, India.
3. Professor, Department of Radiodiagnosis, NKP Salve Institute of Medical Sciences and Lata Mangeshkar Hospital, Digdoh Hills, Nagpur, Maharashtra, India.
4. Undergraduate Student, Department of Radiodiagnosis, NKP Salve Institute of Medical Sciences and Lata Mangeshkar Hospital, Digdoh Hills, Nagpur, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Suresh Vasant Phatak,
Professor, Department of Radiodiagnosis, NKP Salve Institute of Medical Sciences and Lata Mangeshkar Hospital, Digdoh Hills, Nagpur-440019, Maharashtra, India.
E-mail: suresh_phatak@yahoo.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Aug 15, 2023
- Manual Googling: Oct 17, 2023
- iThenticate Software: Oct 24, 2023 (8%)

ETYMOLOGY: Author Origin

EMENDATIONS: 5

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? No
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. No

Date of Submission: **Aug 13, 2023**

Date of Peer Review: **Oct 13, 2023**

Date of Acceptance: **Oct 27, 2023**

Date of Publishing: **Feb 01, 2023**