Section: Radiodiagnosis

Original Research Article

PREVALENCE AND CLINICAL SIGNIFICANCE OF CHORIONIC BUMP IN FIRST-TRIMESTER ULTRASOUND: A PROSPECTIVE STUDY AT A TERTIARY CARE CENTRE FROM SOUTH INDIA

Navab M[1], Bipin Augustine Joseph[2], Vipin Krishnan K.V[1], Gomathy Subramaniam[3]

[1]Associate Professor, Department of Radiodiagnosis, Malabar Medical College Hospital and Research Centre, Kozhikode, India
[2]Assistant Professor, Department of Radiodiagnosis, Malabar Medical College Hospital and Research Centre, Kozhikode, India
[3]Professor, Department of Radiodiagnosis, Malabar Medical College Hospital and Research Centre, Kozhikode, India

Received : 07/07/2025
Received in revised form : 05/09/2025
Accepted : 26/09/2025

Keywords:
Chorionic bump, first-trimester ultrasound, infertility, miscarriage, fetal outcomes.

Corresponding Author:
Dr. Bipin Augustine Joseph,
Email: bpnjsf@gmail.com

DOI: 10.47009/jamp.2025.7.5.105

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (5); 537-539

ABSTRACT

Background: Chorionic bump (CB) is a rare first-trimester sonographic finding characterized by a convex protrusion into the gestational sac. Previous studies suggest associations with infertility and increased miscarriage risk, but prospective evidence is limited. The objective is to evaluate the prevalence of CB in first-trimester ultrasound, its association with infertility, and its impact on pregnancy outcomes in a tertiary care cohort. **Materials and Methods:** A prospective observational study was conducted at a tertiary care center including pregnant women undergoing first-trimester ultrasound (6–12 weeks). CB presence, maternal demographics, and infertility history were recorded. Participants were followed until delivery to assess outcomes: miscarriage, preterm birth, intrauterine growth restriction (IUGR), and live birth. **Result:** CB was detected in 15 women (0.6%). Among them, 9 (60%) had a history of infertility. Pregnancy outcomes included 8 miscarriages (53%), 2 preterm births (13%), 1 IUGR (7%), and 7 live births (47%). Miscarriage was significantly higher in the CB group compared to the non-CB cohort. **Conclusion:** CB is a rare sonographic finding associated with infertility and higher miscarriage risk. Early detection allows for counselling and closer monitoring. Despite increased risk, nearly half of affected pregnancies progressed to live birth.

INTRODUCTION

Chorionic bump is defined as a convex protrusion into the gestational sac, visible on first-trimester ultrasound. Its prevalence ranges from 0.4% to 1.5%, and it has been linked to infertility, assisted reproductive technology (ART) pregnancies, and increased miscarriage risk.[1–5] The exact pathophysiology remains unclear, with proposed mechanisms including focal decidual hemorrhage, abnormal implantation, trophoblastic dysfunction, or localized inflammatory processes.[6–8]

Prior studies have reported higher incidence of CB in women with infertility, particularly in those undergoing IVF, suggesting a possible link with abnormal implantation or ART-related endometrial changes.[3,9–11] Retrospective analyses have shown that CB may be associated with increased risk of first-trimester miscarriage, though a subset of pregnancies progress to term, emphasizing variable prognostic significance.[2,5,10,12–15]

Despite increasing recognition, large prospective studies examining CB prevalence and outcomes remain limited. Our study aims to determine CB prevalence, associations with infertility, and pregnancy outcomes including miscarriage, preterm birth, IUGR, and live birth, providing guidance for early clinical counselling.

MATERIALS AND METHODS

This prospective observational study was conducted over six years at Malabar Medical College and Hospital, Kozhikode. A total of 2,500 women presenting for first-trimester ultrasound (6–12 weeks) were enrolled. Singleton pregnancies were included, while women with multiple gestations, uterine anomalies, or prior uterine surgery affecting implantation were excluded.

Demographic data included maternal age, parity, and infertility history. Ultrasound evaluation documented the presence, size, and location of CB. Participants were followed until delivery to record outcomes:

ISSN (O): 2687-5365; ISSN (P): 2753-6556

miscarriage, preterm birth (<37 weeks), IUGR, and live birth.

Descriptive statistics summarized prevalence, demographics, and outcomes. Chi-square tests assessed associations between CB, infertility, and adverse pregnancy outcomes. Statistical significance was set at $p < 0.05$.

RESULTS

CB was identified in 15 of 2,500 pregnancies (0.6%). Mean maternal age was 29 ± 3.9 years, and mean gestational age at diagnosis was 8.1 ± 1.2 weeks. Among CB cases, 9 women (60%) had a history of infertility, compared to 435 (17.5%) in the non-CB cohort.

Table 1: Demographic Characteristics of Chorionic Bump Patients (n=15)

Characteristic	Value
Mean maternal age (years)	29 ± 3.9
Gestational age at diagnosis	8.1 ± 1.2
History of infertility (%)	60%
Nulliparous (%)	67%
Multiparous (%)	33%

Among CB cases, miscarriage occurred in 8 (53%), preterm birth in 2 (13%), IUGR in 1 (7%), and live birth in 7 (47%).

Table 2: Pregnancy Outcomes in Chorionic Bump vs Non-Bump Cohort

Outcome (n=2,485)	CB Group (n=15)	Non-CB Group (n=2,485)
Miscarriage	8 (53%)	124 (5%)
Preterm birth	2 (13%)	187 (7%)
IUGR	1 (7%)	99 (4%)
Live birth	7 (47%)	2,175 (88%)

Table 3: Ultrasound Features of Chorionic Bump

Feature	Number of Cases (n=15)
Size <5 mm	5
Size 5–10 mm	7
Size >10 mm	3
Location: anterior	6
Location: posterior	9
Vascularity on Doppler	4

Larger CB (>10 mm) showed a trend toward higher miscarriage risk, though statistical analysis was limited due to small sample size.

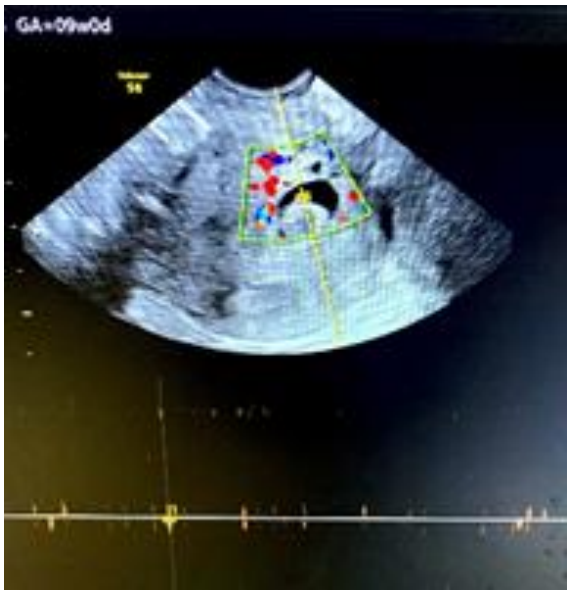

Figure 1: Chorionic Bump

TVS image of a 9 weeks gestation with an avascular chorionic bump and the adjacent small fetal pole showing no demonstrable cardiac activity.

DISCUSSION

In this prospective study, CB prevalence was 0.6%, consistent with previous reports.[1,2,5,12] A history of infertility was significantly higher among women with CB (60%), supporting the hypothesis that CB is associated with ART pregnancies or abnormal implantation.[3,9,11,13,20] The miscarriage rate of 53% aligns with prior literature reporting first-trimester loss between 40–60%.[5,6,10,15,16] Notably, 47% of CB pregnancies resulted in live birth, emphasizing that CB is a risk marker rather than a definitive predictor of adverse outcomes.

Prior studies suggest that the size and vascularity of CB may influence prognosis. Larger CB (>10 mm) may confer higher miscarriage risk,[7,14,17] while Doppler-detected vascularity could indicate ongoing hemorrhage or trophoblastic activity affecting outcomes.[8,18] In our cohort, larger CB tended toward worse outcomes, though the sample size limited definitive conclusions.

The etiology of CB is multifactorial. Proposed mechanisms include focal decidual hemorrhage, abnormal implantation, localized inflammation, or trophoblastic dysfunction.[6–8,19] ART pregnancies may have altered endometrial receptivity and implantation site dynamics, increasing CB

ISSN (O): 2687-5365; ISSN (P): 2753-6556

prevalence.[3,11,20] Understanding these mechanisms is critical for patient counselling and management.

Clinically, early identification of CB allows for risk stratification and closer monitoring. While miscarriage risk is elevated, nearly half of CB pregnancies achieve live birth, underscoring the need for balanced counselling. Clinicians should avoid undue alarm while providing support and surveillance.

Our study contributes prospective data on a large cohort with detailed ultrasound evaluation, infertility history, and follow-up outcomes. Limitations include single-center design and a small CB sample, limiting subgroup analyses. Larger multicentre studies are needed to confirm these findings and refine clinical guidelines.

Overall, CB is an important sonographic finding in early pregnancy, particularly in infertile women and those undergoing ART. Routine first-trimester assessment for CB can improve counselling and pregnancy monitoring.

CONCLUSION

Chorionic bump is a rare first-trimester ultrasound finding associated with infertility and increased miscarriage risk. Early detection enables counselling and closer follow-up. Despite elevated risk, a substantial proportion of pregnancies progress to live birth. Further prospective studies are required to clarify pathophysiology, prognostic factors, and management strategies for CB.

REFERENCES

1. Younesi L, Shahnazari R. Chorionic bump in first-trimester sonography. J Med Ultrasound. 2017;25(4):205–208.
2. Sana Y, Appiah A, Davison A, Nicolaides KH, Johns J. Clinical significance of first-trimester chorionic bumps: a matched case-control study. Ultrasound Obstet Gynecol. 2013;42(5):507–511.
3. Zhang JT, Vessa B, Gill P, et al. Chorionic bump in IVF pregnancies: prevalence and miscarriage risk. Fertil Steril. 2025;124(3):514–522.
4. Zhang JJ, Vessa B, Gill P, et al. Chorionic bump in IVF with ICSI and PGT-A: clinical loss risk. Fertil Steril. 2024;122(2):S1–S2.
5. Sepulveda W, Bravo L, Garcia M, et al. Chorionic bump at 11–13 weeks: prevalence and clinical significance. Prenat Diagn. 2019;39(13):1073–1078.
6. Yousaf A, Tayyab A, Ullah AM, Helmi AM, Badr AS. Chorionic bump: radiologic features and pregnancy outcomes. Cureus. 2020;12(11):e11556.
7. McCarter K, McCarter M. Chorionic bump in early pregnancy associated with miscarriage. BMJ Case Rep. 2020;13(7):e236624.
8. Taha A, El-Khayat W, El-Sayed H, et al. Prevalence and clinical significance of chorionic bump in early pregnancy. Egypt J Womens Health Issues. 2023;14(1):e300112.
9. Arleo EK, Karpovsky C, Porter MM, Ouhilal S. Chorionic bump and live birth outcomes. J Ultrasound Med. 2015;34(5):845–849.
10. Harris RD, Couto C, Karpovsky C, Porter MM, Ouhilal S. The chorionic bump. J Ultrasound Med. 2006;25(8):1037–1040.
11. Lipitz S, Glezerman M, Tadmor O, et al. Chorionic bump in ART pregnancies: prevalence and outcome. Hum Reprod. 2003;18(5):1047–1050.
12. Kagan KO, Sonek JD, Nicolaides KH. Chorionic bumps at 11–14 weeks: incidence and implications. Ultrasound Obstet Gynecol. 2009;34(6):707–711.
13. Weisz B, Lunenfeld E, Schiff E. Chorionic bump in early pregnancy: risk factors and outcome. Fertil Steril. 2008;90(5):1813–1815.
14. Sepulveda W, Nicolaides KH. Sonographic markers of first-trimester pregnancy loss. Prenat Diagn. 2005;25(13):1187–1191.
15. Yoder IC, Veeck LL, Hill JA, et al. Chorionic bump and early pregnancy loss: a review. Fertil Steril. 2004;82(3):684–686.
16. Kim SY, Lee YH, Kim JH, et al. Sonographic features of chorionic bump and first-trimester outcome. J Korean Med Sci. 2011;26(6):798–802.
17. Liu S, Chen Y, Luo S, et al. Size of chorionic bump as predictor of miscarriage: prospective analysis. Ultrasound Obstet Gynecol. 2016;48(6):713–718.
18. Tongsong T, Wanapirak C, Sirichotiyakul S. Doppler features of chorionic bump and pregnancy outcomes. J Matern Fetal Neonatal Med. 2011;24(11):1371–1375.
19. Sepulveda W, Kagan KO. First-trimester sonographic findings: chorionic bump and implications. Prenat Diagn. 2010;30(3):273–278.
20. Schachter M, Blankstein J, Mashiach S, et al. Chorionic bump and implantation dynamics in IVF: clinical insights. Fertil Steril. 2012;97(3):598–602.

ISSN (O): 2687-5365; ISSN (P): 2753-6556