Section: Obstetrics and Gynaecology

Original Research Article

FETOMATERNAL OUTCOMES IN PREGNANT WOMEN WITH INFLAMMATORY BOWEL DISEASE: A RETROSPECTIVE STUDY

Mandira Kumari[1], Sharad Kumar Jha[2], Meenakshi Singh[3]

[1]*Assistant Professor, Department of Obstetrics and Gynaecology, Madhubani Medical College and Hospital, Madhubani, Bihar, India.*
[2]*Assistant Professor, Department of Gastroenterology, Darbhanga Medical College and Hospital, Laheriasarai, Bihar, India.*
[3]*Professor, Department of Obstetrics and Gynaecology, Lady Hardinge Medical College, Delhi, India.*

Received *: 19/05/2024*
Received in revised form *: 07/07/2024*
Accepted *: 30/07/2024*

Corresponding Author:
Dr. Sharad Kumar Jha,
Assistant Professor, Department of Gastroenterology, Darbhanga Medical College and Hospital, Laheriasarai, Bihar, India.
Email: drsharadjha@gmail.com

DOI: 10.70034/ijmedph.2025.3.58

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

Int J Med Pub Health
2025; 15 (3); 321-326

ABSTRACT

Background: Inflammatory Bowel Disease (IBD), encompassing Crohn's Disease and Ulcerative Colitis, poses unique challenges during pregnancy due to its chronic inflammatory nature and potential for disease flares. Understanding the impact of IBD on fetomaternal outcomes is crucial for optimizing prenatal care and management strategies.

Materials and Methods: This retrospective study analyzed data from 39 pregnant women with IBD, including 12 with Crohn's Disease and 27 with Ulcerative Colitis. Demographic characteristics, clinical variables, and pregnancy outcomes were assessed. Logistic regression analysis was used to identify predictors of adverse outcomes, adjusting for potential confounders.

Results: Women with Crohn's Disease exhibited significantly higher rates of disease flare-ups during pregnancy compared to those with Ulcerative Colitis (58.3% vs. 14.8%, p=0.011). Crohn's Disease was associated with increased odds of adverse outcomes compared to Ulcerative Colitis (adjusted OR 1.75, 95% CI 1.05-2.91, p=0.030). Corticosteroid use during pregnancy (adjusted OR 2.1, 95% CI 1.20-3.67, p=0.010), previous IBD-related surgeries (adjusted OR 1.9, 95% CI 1.05-3.42, p=0.044), and disease flare-ups (adjusted OR 2.5, 95% CI 1.30-4.80, p=0.013) were significant predictors of adverse outcomes. Maternal demographics, including age, BMI, smoking status, and parity, showed no significant associations with adverse outcomes.

Conclusion: Pregnant women with Crohn's Disease are at heightened risk for adverse fetomaternal outcomes compared to those with Ulcerative Colitis, particularly when disease activity is not adequately controlled. Optimal disease management, including careful monitoring and individualized treatment plans, is essential to mitigate risks and improve pregnancy outcomes in this population.

Keywords: Inflammatory Bowel Disease, Crohn's Disease, Ulcerative Colitis, pregnancy outcomes, disease flare-ups, corticosteroids, adverse outcomes.

INTRODUCTION

Inflammatory bowel disease (IBD) encompasses two primary conditions: Crohn's disease (CD) and ulcerative colitis (UC), both of which are chronic, relapsing inflammatory disorders of the gastrointestinal tract.[1] These conditions predominantly affect young adults, with a notable incidence during the reproductive years, thereby posing significant concerns for women during pregnancy.[2] The interaction between pregnancy and IBD is complex, influenced by disease activity, medication use, and the physiological changes that occur during gestation.[3]

The incidence of IBD has been rising globally, including in populations where it was previously considered rare. For instance, a systematic review reported that the incidence of IBD has increased from 3.1 per 100,000 person-years in the 1950s to 20.2 per 100,000 person-years in the 2000s.[4] This

increase is particularly concerning for women of childbearing age, as it necessitates careful management to optimize both maternal and fetal outcomes. Active IBD during conception and pregnancy has been associated with adverse outcomes, including preterm birth (22.4% vs. 7.2% in the general population), low birth weight (15.2% vs. 4.5% in the general population), and increased cesarean delivery rates (35.8% vs. 22.9% in the general population).[5,6] Conversely, women with quiescent disease at the time of conception often experience pregnancies comparable to those of the general population.

Managing IBD during pregnancy requires a multidisciplinary approach, involving gastroenterologists, obstetricians, and pediatricians to ensure both maternal and fetal well-being.[7] The use of medications, such as aminosalicylates, corticosteroids, immunomodulators, and biologics, needs to be carefully balanced to control disease activity while minimizing potential risks to the fetus.[8] Recent studies have indicated that many of these medications are relatively safe during pregnancy, but the decision to use them must be individualized.[9,10] For example, a study showed that the use of biologics did not significantly increase the risk of adverse pregnancy outcomes, with rates of congenital anomalies similar to those observed in the general population.[10]

Despite the increasing body of literature, gaps remain in understanding the optimal management strategies for pregnant women with IBD. This study aimed to evaluate the fetomaternal outcomes among pregnant women with IBD, providing insights into the effects of disease activity and treatment on pregnancy outcomes. By investigating these aspects, we hope to contribute to the development of guidelines that can improve the care and prognosis for this unique patient population.

MATERIAL AND METHODS

Study Design

This is a retrospective cohort study conducted to evaluate the fetomaternal outcomes among pregnant women diagnosed with inflammatory bowel disease (IBD), including both Crohn's disease (CD) and ulcerative colitis (UC).

Study Setting and Population

The study was conducted in the department of Obstetrics and Gynaecology at a tertiary care center of Noth India. The study population included pregnant women diagnosed with IBD who attended or were admitted in the Obstetrics and Gynaecology department in the last five years, from January 2019 to December 2023. Inflammatory bowel disease (IBD) diagnosis was confirmed through a combination of clinical assessment, endoscopic evaluation, histopathological examination, radiological imaging, and laboratory tests. Clinical symptoms such as chronic diarrhea, abdominal pain, and rectal bleeding were documented. Endoscopic procedures, including colonoscopy and flexible sigmoidoscopy, identified mucosal inflammation and ulcerations characteristic of IBD. Biopsy samples from these procedures revealed histopathological features like crypt abscesses and granulomas. Radiological imaging, such as magnetic resonance enterography (MRE) or computed tomography (CT) enterography, assessed the extent and severity of the disease. Laboratory tests, including inflammatory markers and serological tests, supported the diagnosis. Only those who had complete medical records and had attended regular prenatal visits at our institution were included in the study. Exclusion criteria included women with other chronic illnesses such as pre-existing diabetes mellitus, chronic hypertension, renal disease, or autoimmune disorders that could independently affect pregnancy outcomes. Additionally, women with multiple pregnancies (e.g., twins or triplets) were excluded due to the inherently higher risk of complications.

Sample Size

Based on the estimated prevalence of inflammatory bowel disease (IBD) ranging from 42.8 to 44.3 per 100,000 individuals, a sample size of approximately 39 participants was determined feasible for this study.[11] The calculation was based on a 95% confidence level and a margin of error of 20%, considering the variability in prevalence estimates.

Treatment

During the study, pregnant women with inflammatory bowel disease (IBD) were managed with various medications tailored to control disease activity while minimizing risks to maternal and fetal health. Aminosalicylates, such as mesalamine (e.g., Asacol, Pentasa), were commonly prescribed as first-line treatment for mild to moderate disease. These medications were administered orally or rectally depending on disease location and severity, typically at doses ranging from 1 to 4 grams per day, divided into multiple doses. For moderate to severe cases or when aminosalicylates were insufficient, corticosteroids such as prednisone or budesonide (e.g., Entocort) were used to induce remission. Prednisone was typically initiated at a dose of 20-40 mg daily, gradually tapering based on clinical response and maternal tolerance. Budesonide, known for its lower systemic absorption, was administered at doses of 9 mg daily, primarily targeting localized disease activity in the terminal ileum and right colon. In cases where disease remained active despite conventional therapies or in refractory disease, immunomodulators such as azathioprine (Imuran) or mercaptopurine (Purinethol) were considered. These medications, administered orally at doses adjusted based on thiopurine methyltransferase (TPMT) enzyme activity levels, aimed to suppress immune responses contributing to inflammation and disease progression. For women requiring biologic therapies due to severe, refractory disease or intolerance to

conventional treatments, anti-tumor necrosis factor (TNF) agents such as infliximab (Remicade) or adalimumab (Humira) were utilized. These biologics, administered via intravenous infusion or subcutaneous injection, targeted specific inflammatory pathways associated with IBD. Infliximab was typically administered at 5 mg/kg body weight at weeks 0, 2, and 6, followed by maintenance doses every 8 weeks thereafter. Adalimumab was initiated with a loading dose regimen followed by maintenance doses every 2 weeks.

Data Collection

Data were collected retrospectively from medical records using a structured data collection form. Detailed demographic information such as age, parity, BMI, and socioeconomic status was recorded. Clinical characteristics included the type of IBD (CD or UC), duration of disease, and history of IBD-related surgeries. Information on medication use during pregnancy, including aminosalicylates, corticosteroids, immunomodulators, and biologics, was also obtained. Maternal outcomes were assessed based on disease activity during pregnancy, determined using the Harvey-Bradshaw Index for CD and the Simple Clinical Colitis Activity Index for UC.[12,13] Pregnancy complications such as preeclampsia, gestational diabetes, and hypertensive disorders were recorded. Mode of delivery (vaginal delivery or cesarean section) and any delivery complications were also documented. Fetal outcomes included gestational age at birth, birth weight, and the incidence of intrauterine growth restriction (IUGR). Apgar scores at 1 and 5 minutes were recorded. The incidence of congenital anomalies and the need for neonatal intensive care unit (NICU) admission were also noted.

Statistical Analysis

Data were analyzed using SPSS version 20.0. Descriptive statistics (mean, standard deviation, frequencies, and percentages) were used to summarize the demographic and clinical characteristics of the study population. Comparative analyses were performed to evaluate the differences in maternal and fetal outcomes based on disease activity and medication use. Chi-square tests and t-tests were used for categorical and continuous variables, respectively. Multivariate logistic regression analysis was conducted to identify independent predictors of adverse fetomaternal outcomes, adjusting for potential confounders. A p-value < 0.05 was considered statistically significant.

Ethical Considerations

The study was approved by the Institutional Review Board (IRB). Given the retrospective nature of the study, the need for informed consent was waived. The study was conducted in accordance with the Declaration of Helsinki and adhered to good clinical practice guidelines.

RESULTS

The study comprised 39 pregnant women with IBD, including 12 with Crohn's Disease and 27 with Ulcerative Colitis. The mean age was 30.2 ± 5.1 years, with no significant difference between the groups (p=0.321). The mean BMI was 23.1 ± 2.7 kg/m² (p=0.483), and the average parity was 1.5 ± 1.0 (p=0.409). The mean duration of IBD was 4.8 ± 2.3 years (p=0.453). Smoking status (10.3%, p=0.785), family history of IBD (7.7%, p=0.918), and history of IBD-related surgeries (15.4%, p=0.256) showed no significant differences between the groups. Disease location varied significantly, with 58.3% of Crohn's patients having ileocolonic disease compared to none in the Ulcerative Colitis group (p<0.0001), and 100% of Ulcerative Colitis patients having colonic disease (p<0.0001). Medication use prior to pregnancy was high in both groups (89.7%, p=0.784). [Table 1]

Among the 39 pregnant women with IBD, disease flare-ups were significantly more common in those with Crohn's Disease (58.3%) compared to those with Ulcerative Colitis (14.8%) (p=0.011). Preeclampsia occurred in 12.8% of the total cohort, with a higher incidence in Crohn's Disease (25.0%) compared to Ulcerative Colitis (7.4%) (p=0.082). Gestational diabetes (10.3%), hypertensive disorders (15.4%), and premature rupture of membranes (10.3%) showed no significant differences between the groups. Mode of delivery did not differ significantly, with 51.3% having vaginal deliveries and 48.7% cesarean sections. Delivery complications were reported in 17.9% of the cases, with a slightly higher rate in Crohn's Disease (25.0%) compared to Ulcerative Colitis (14.8%) (p=0.423). Antepartum hemorrhage occurred in 7.7% of the total cohort, with no significant difference between the groups (p=0.918). [Table 2]

Among the 39 pregnant women with IBD, 20.5% experienced preterm birth (<37 weeks), with a higher incidence observed in Crohn's Disease (41.7%) compared to Ulcerative Colitis (11.1%) (p=0.030). Similarly, low birth weight (<2500g) occurred in 15.4% of cases, with a higher proportion in Crohn's Disease (25.0%) compared to Ulcerative Colitis (11.1%), though this difference was not statistically significant (p=0.228). Intrauterine growth restriction affected 12.8% of pregnancies, with no significant difference between the two groups (Crohn's Disease: 16.7%, Ulcerative Colitis: 11.1%, p=0.648). Apgar scores at 1 minute (Mean ± SD: 7.3 ± 1.1) and 5 minutes (Mean ± SD: 8.5 ± 0.9) showed no significant differences between the groups (p=0.456 and p=0.385, respectively). Congenital anomalies were rare, occurring in 2.6% of cases, with no difference between Crohn's Disease and Ulcerative Colitis (p=0.441). Neonatal intensive care unit (NICU) admission was necessary for 20.5% of newborns, with a higher rate in Crohn's Disease (33.3%) compared to Ulcerative Colitis

(14.8%), though not statistically significant (p=0.182). Stillbirth occurred in 2.6% of pregnancies, with no significant difference between the groups (p=0.445). Neonatal sepsis affected 5.1% of newborns, with similar rates in Crohn's Disease and Ulcerative Colitis (p=0.586). [Table 3]

The logistic regression analysis revealed several significant predictors of adverse outcomes in pregnant women with Inflammatory Bowel Disease (IBD). Women with Crohn's Disease had a significantly higher odds ratio (OR 1.75, 95% CI 1.05-2.91, p=0.030) for adverse outcomes compared to those with Ulcerative Colitis (UC). Use of corticosteroids during pregnancy was associated with increased odds of adverse outcomes (OR 2.1, 95% CI 1.20-3.67, p=0.010). Previous IBD-related surgery also showed a significant association with adverse outcomes (OR 1.9, 95% CI 1.05-3.42, p=0.044). Disease flare-ups during pregnancy were strongly associated with adverse outcomes (OR 2.5, 95% CI 1.30-4.80, p=0.013). Other variables including duration of IBD, age, BMI, smoking status, parity, and mode of delivery did not show statistically significant associations with adverse outcomes, although trends were observed for mode of delivery (Cesarean vs. Vaginal) (OR 1.65, 95% CI 1.00-2.72, p=0.053). [Table 4]

Table 1: Demographic and Clinical Characteristics of Pregnant Women with IBD

Characteristic	Total (n=39)	Crohn's Disease (n=12)	Ulcerative Colitis (n=27)	p-value
	Frequency (%)/Mean±SD			
Age (years)	30.2±5.1	31.5±4.8	29.6±5.2	0.321
BMI (kg/m²)	23.1±2.7	22.8±2.9	23.3±2.6	0.483
Parity	1.5±1.0	1.3±0.9	1.6±1.0	0.409
Duration of IBD (years)	4.8±2.3	5.2±2.1	4.6±2.4	0.453
Smoking status	4 (10.3)	1 (8.3)	3 (11.1)	0.785
Family history of IBD	3 (7.7)	1 (8.3)	2 (7.4)	0.918
History of IBD-related surgeries	6 (15.4)	3 (25.0)	3 (11.1)	0.256
Disease location				
Ileocolonic	7 (17.9)	7 (58.3)	0 (0)	<0.0001
Colonic	32 (82.1)	5 (41.7)	27 (100)	<0.0001
Medication use prior to pregnancy	35 (89.7)	11 (91.7)	24 (88.9)	0.784

Table 2: Maternal and Delivery Outcomes in Pregnant Women with IBD

Outcome	Total (n=39)	Crohn's Disease (n=12)	Ulcerative Colitis (n=27)	p-value
	Frequency (%)/Mean±SD			
Disease flare-ups	11 (28.2)	7 (58.3)	4 (14.8)	0.011
Preeclampsia	5 (12.8)	3 (25.0)	2 (7.4)	0.082
Gestational diabetes	4 (10.3)	2 (16.7)	2 (7.4)	0.323
Hypertensive disorders	6 (15.4)	3 (25.0)	3 (11.1)	0.256
Mode of delivery				
Vaginal delivery	20 (51.3)	5 (41.7)	15 (55.6)	0.427
Cesarean section	19 (48.7)	7 (58.3)	12 (44.4)	0.425
Delivery complications	7 (17.9)	3 (25.0)	4 (14.8)	0.423
Premature rupture of membranes	4 (10.3)	2 (16.7)	2 (7.4)	0.322
Antepartum hemorrhage	3 (7.7)	1 (8.3)	2 (7.4)	0.918

Table 3: Fetal Outcomes in Pregnant Women with IBD

Outcome	Total (n=39)	Crohn's Disease (n=12)	Ulcerative Colitis (n=27)	p-value
	Frequency (%)/Mean±SD			
Preterm birth (<37 weeks)	8 (20.5)	5 (41.7)	3 (11.1)	0.030
Low birth weight (<2500g)	6 (15.4)	3 (25.0)	3 (11.1)	0.228
Intrauterine growth restriction	5 (12.8)	2 (16.7)	3 (11.1)	0.648
Apgar score at 1 min	7.3±1.1	7.0±1.2	7.4±1.0	0.456
Apgar score at 5 min	8.5±0.9	8.3±1.0	8.6±0.8	0.385
Congenital anomalies	1 (2.6)	0 (0)	1 (3.7)	0.441
NICU admission	8 (20.5)	4 (33.3)	4 (14.8)	0.182
Stillbirth	1 (2.6)	0 (0)	1 (3.7)	0.445
Neonatal sepsis	2 (5.1)	1 (8.3)	1 (3.7)	0.586

Table 4: Logistic Regression Analysis of Factors Associated with Adverse Outcomes in Pregnant Women with IBD

Variable	Adjusted OR	95% CI	p-value
Type of IBD (Crohn's vs. UC)	1.75	1.05-2.91	0.030
Use of corticosteroids	2.1	1.20-3.67	0.010
Duration of IBD (years)	1.15	0.98-1.35	0.084
Previous IBD-related surgery	1.9	1.05-3.42	0.044
Age (years)	1.07	0.98-1.17	0.133
BMI (kg/m²)	1.12	0.99-1.27	0.072
Smoking status	1.5	0.65-3.48	0.346
Parity	1.2	0.85-1.70	0.297
Disease flare-ups during pregnancy	2.5	1.30-4.80	0.013
Mode of delivery (Cesarean vs. Vaginal)	1.65	1.00-2.72	0.053

DISCUSSION

In this study, we investigated the fetomaternal outcomes among pregnant women with Inflammatory Bowel Disease (IBD), focusing on various demographic, clinical, and outcome measures. Our findings provide valuable insights into the management and outcomes of pregnancies complicated by IBD.

The demographic profile of our cohort reflects typical characteristics observed in pregnant women with IBD, with a mean age of 30.2 years and a mean BMI of 23.1 kg/m². These parameters are consistent with previous studies that highlight the relatively young age and average BMI among women affected by IBD during pregnancy.[14,15] Notably, disease-specific factors such as smoking status, family history of IBD, and prior IBD-related surgeries did not significantly differ between women with Crohn's Disease and Ulcerative Colitis, aligning with literature suggesting that these factors may not independently influence pregnancy outcomes significantly.[15,16]

Our study revealed significant differences in maternal and delivery outcomes between Crohn's Disease and Ulcerative Colitis. Specifically, women with Crohn's Disease experienced higher rates of disease flare-ups during pregnancy (58.3%) compared to those with Ulcerative Colitis (14.8%), underscoring the distinct disease dynamics and management challenges associated with Crohn's Disease during pregnancy. This finding corroborates earlier studies highlighting the impact of active disease on pregnancy outcomes, including increased risks of complications such as preeclampsia and gestational diabetes.[17,18] For instance, Squirell et al., showed similar trends in disease flare-ups and adverse pregnancy outcomes among women with active Crohn's Disease compared to those with quiescent disease or Ulcerative Colitis.[19]

Regarding mode of delivery, while the rates of vaginal delivery (41.7%) and cesarean section (58.3%) were relatively balanced among women with Crohn's Disease, those with Ulcerative Colitis exhibited a higher prevalence of vaginal deliveries (55.6%) compared to cesarean sections (44.4%). This observation aligns with current literature indicating that disease activity and surgical history can influence the choice of delivery method in IBD patients, aiming to minimize risks of perianal complications and surgical interventions during delivery.[20]

Fetal outcomes in our study highlighted significant differences in preterm birth rates between women with Crohn's Disease (41.7%) and Ulcerative Colitis (11.1%), underscoring the heightened risk of preterm delivery associated with active Crohn's Disease during pregnancy. These findings are consistent with previous studies indicating that disease activity, rather than IBD type per se, contributes to adverse fetal outcomes such as low birth weight and NICU admissions.[21,22] However, our study did not find significant differences in other fetal outcomes such as Apgar scores, congenital anomalies, and neonatal sepsis between the two groups, suggesting that maternal disease management and timely interventions may mitigate some adverse fetal risks associated with IBD.[23]

The logistic regression analysis identified several key predictors of adverse outcomes in pregnant women with IBD. Women with Crohn's Disease had a significantly higher adjusted odds ratio (OR 1.75) for adverse outcomes compared to those with Ulcerative Colitis, emphasizing the differential impact of disease type on pregnancy complications. Additionally, the use of corticosteroids during pregnancy (OR 2.1), previous IBD-related surgeries (OR 1.9), and disease flare-ups during pregnancy (OR 2.5) were associated with increased odds of adverse outcomes, highlighting the importance of disease control and pre-pregnancy counseling in optimizing maternal and fetal health outcomes. Similarly, studies by Jogendran et al., and Wu et al., underscored the impact of corticosteroid use and surgical history on maternal and fetal outcomes, supporting our regression findings.[24,25]

Limitations and Future Directions

This study has several limitations, including its retrospective design and relatively small sample size, which may limit the generalizability of our findings. Future research with larger, prospective cohorts could further elucidate the nuanced effects of IBD management strategies, including biologic therapies and multidisciplinary care models, on pregnancy outcomes. Additionally, long-term follow-up studies assessing childhood developmental outcomes and maternal health beyond the immediate postpartum period are warranted to comprehensively evaluate the impact of IBD on maternal-infant health trajectories.

CONCLUSION

Our study underscores the critical impact of disease type and management on pregnancy outcomes in women with Inflammatory Bowel Disease (IBD). Women with Crohn's Disease face significantly higher risks of adverse fetomaternal outcomes compared to those with Ulcerative Colitis, particularly in the presence of disease flare-ups and prior surgical history. Corticosteroid use during pregnancy emerged as a significant predictor of adverse outcomes. These findings emphasize the importance of preconception counseling, close monitoring during pregnancy, and tailored therapeutic strategies to optimize maternal and fetal health outcomes in this vulnerable population. Further research with larger cohorts and prospective designs is warranted to validate these findings and refine clinical guidelines for managing IBD during pregnancy.

REFERENCES

1. Kaluarachchi A, Fernandopulle N, Ranaweera P, et al. Ulcerative Colitis and Pregnancy. Ulcerative Colitis - Etiology, Diagnosis, Diet, Special Populations, and the Role of Interventional Endoscopy. IntechOpen; 2022.
2. Coward S, Clement F, Benchimol EI, et al. Past and Future Burden of Inflammatory Bowel Diseases Based on Modeling of Population-Based Data. Gastroenterology. 2019;156(5):1345-1353.e4.
3. Bell SJ, Flanagan EK. Updates in the management of inflammatory bowel disease during pregnancy. Med J Aust. 2019;210(6):276-280.
4. Choden T, Mandaliya R, Charabaty A, Mattar MC. Monitoring inflammatory bowel disease during pregnancy: Current literature and future challenges. World J Gastrointest Pharmacol Ther. 2018;9(1):1-7.
5. Padhan RK, Kedia S, Garg SK, et al. Long-Term Disease Course and Pregnancy Outcomes in Women with Inflammatory Bowel Disease: An Indian Cohort Study. Dig Dis Sci. 2017;62(8):2054-2062.
6. Kammerlander H, Nielsen J, Kjeldsen J, Knudsen T, Friedman S, Nørgård B. The Effect of Disease Activity on Birth Outcomes in a Nationwide Cohort of Women with Moderate to Severe Inflammatory Bowel Disease. Inflamm Bowel Dis. 2017;23(6):1011-1018.
7. Bengtson MB, Solberg IC, Aamodt G, et al. Relationships between inflammatory bowel disease and perinatal factors: both maternal and paternal disease are related to preterm birth of offspring. Inflamm Bowel Dis. 2010;16(5):847-55.
8. Friedman S. Pregnancy and IBD: Timing Is Everything. Dig Dis Sci. 2017;62(8):1847-1849.
9. Ramakrishna BS, Makharia GK, Ahuja V, et al. Indian Society of Gastroenterology consensus statements on Crohn's disease in India. Indian J Gastroenterol. 2015;34(1):3-22.
10. Sood A, Ahuja V, Midha V, et al. Colitis and Crohn's Foundation (India) consensus statements on use of 5-aminosalicylic acid in inflammatory bowel disease. Intest Res. 2020;18(4):355-378.
11. Lenin A, Ninan GA, Vijayaselvi R, Rathore S, Rajan SJ. Inflammatory Bowel Disease in Pregnancy: Case Series with Review of Literature. Current Medical Issues. 2022;20(2):95-98.
12. Bennebroek Evertsz' F, Hoeks CC, Nieuwkerk PT, et al. Development of the patient Harvey Bradshaw index and a comparison with a clinician-based Harvey Bradshaw index assessment of Crohn's disease activity. J Clin Gastroenterol. 2013;47(10):850-856.
13. Bennebroek Evertsz' F, Nieuwkerk PT, et al. The patient simple clinical colitis activity index (P-SCCAI) can detect ulcerative colitis (UC) disease activity in remission: a comparison of the P-SCCAI with clinician-based SCCAI and biological markers. J Crohns Colitis. 2013;7(11):890-900.
14. Ma H, Li J, Wang Y. Clinical characteristics of pregnancy complicated with inflammatory bowel disease. Beijing Da Xue Xue Bao Yi Xue Ban. 2024;56(2):260-266.
15. Rekawek P, Johnson S, Bigelow CA, et al. Exposure to biologic therapy and associated maternal and neonatal outcomes in pregnancies complicated by inflammatory bowel disease. Am J Obstet Gynecol MFM. 2022;4(1):100518.
16. Caballero-Mateos AM, Quesada-Caballero M, Cañadas-De la Fuente GA, Caballero-Vázquez A, Contreras-Chova F. IBD and Motherhood: A Journey through Conception, Pregnancy and Beyond. J Clin Med. 2023;12(19):6192.
17. Shand AW, Chen JS, Selby W, Solomon M, Roberts CL. Inflammatory bowel disease in pregnancy: a population-based study of prevalence and pregnancy outcomes. BJOG. 2016;123(11):1862-1870.
18. Avni Biron I, Hayat L, Ollech JE, et al. Pregnancy Outcomes in a Cohort of Patients with Inflammatory Bowel Disease: Data from a Multidisciplinary Clinic in a Tertiary Center. J Clin Med. 2023;12(12):4120.
19. Squirell E, Meade S, Leung Y. The Fundamentals of Inflammatory Bowel Disease Management in Pregnancy: A Practical Review for the Gastroenterologist. J Can Assoc Gastroenterol. 2024;7(1):121-131.
20. Al-Jabri R, Wetwittayakhlang P, Lakatos PL. Monitoring of Inflammatory Bowel Disease in Pregnancy: A Review of the Different Modalities. J Clin Med. 2023;12(23):7343.
21. Wang G, Tandon P, Rodriguez N, et al. Impact of Disease Activity and Inflammatory Bowel Disease Subtype on Quality of Life in Preconception and Pregnant Patients. Dig Dis Sci. 2023;68(4):1156-1166.
22. Abdul Sultan A, West J, Ban L, et al. Adverse Pregnancy Outcomes Among Women with Inflammatory Bowel Disease: A Population-Based Study from England. Inflamm Bowel Dis. 2016;22(7):1621-1630.
23. Costa RV, Simões C, Correia L, Pinto L. Inflammatory Bowel Disease and Pregnancy: Is It a Marker for Adverse Outcomes? Rev Bras Ginecol Obstet. 2022;44(10):915-924.
24. Jogendran R, O'Connor K, Jeyakumar A, et al. Optimizing maternal and neonatal outcomes through tight control management of inflammatory bowel disease during pregnancy: a pilot feasibility study. Sci Rep. 2023;13(1):8291.
25. Wu RY, Tandon P, Ambrosio L, et al. Post-neonatal Outcomes of Infants Born to Women with Active Trimester One Inflammatory Bowel Disease: A Pilot Study. Dig Dis Sci. 2022;67(11):5177-5186.