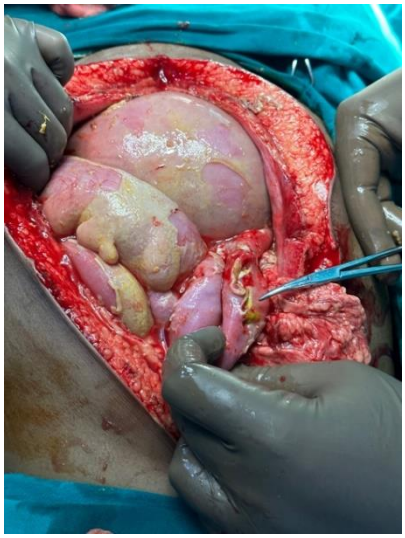
ISAR Journal of Medical and Pharmaceutical Sciences
Vol-2, Iss-4 (Apr- 2024)
Abbriviate Title- ISAR J Med Pharm Sci
ISSN *(Online)*- 2584-0150
https://isarpublisher.com/journal/isarjmps

OPEN ACCESS

A RARE CASE OF SPONTANEOUS PERFORATION PERITONITIS DURING SECOND TRIMESTER PREGNANCY – A CASE REPORT AND LITERATURE REVIEW OF MANAGEMENT CHALLENGES OF DELAYED PRESENTATION



Dr. Harleen Bawa[1*], Dr. Parthasarathi Hota[2], Dr. Archana Sharma[3],

Dr. Mohd Moqeneen Ansari[4], Dr. Pushprajsinh Gohil[5]

[1, 4, 5] Resident, MS- General Surgery, Pacific Institute Of Medical Sciences, Udaipur.

[2]MS FMAS Assistant Professor, Department of General Surgery, Pacific Institute of Medical Sciences, Udaipur.

[3]Associate Professor, Department of Obstetrics and Gynaecology, Pacific Institute of Medical Sciences, Udaipur.

***Corresponding Author**
Dr. Harleen Bawa

Resident, MS- General Surgery, Pacific Institute Of Medical Sciences, Udaipur.

Article History
Received: 20.03.2024
Accepted: 03.04.2024
Published: 25.04.2024

Abstract: Objective – Bowel obstruction or perforation during pregnancy is a rare but life-threatening situation, and the management remains uncertain and patient dependant. We presented a case in our hospital with fever and acute abdomen in her second trimester, so we reviewed literatures and other cases to provide options for management based guidance to deal with this challenging situation.

Case Report – A case at gestational age 19 weeks who was diagnosed with delayed presentation of Intestinal Perforation was referred to our centre from a primary health care centre without any history of previous surgery and was managed surgically with Emergency Laparotomy. The patients WIDAL came positive, that along with low socio economic background supported our diagnosis of Typhoid causing the Intestinal perforation. She had a challenging post operative period the foetus was expelled in view of sepsis one week after the surgery. We researched pubmed and reviewed 10 English literatures to form a a conclusions enlisting management options and how to deal with delayed presentation- A lesson Learnt.

Conclusion – Our case presentation serves as a poignant reminder of the challenges faced by unusual presentations in acute abdomen during pregnancy. Timely intervention and a simultaneous cesarean section could be considered if the gestational age was large enough to avoid the comorbidities like maternal risk of sepsis that outweighs the risk of preterm birth.

Keywords: Typhoid ,Intestinal Perforation, Gastrointetsinal surgery, Exploratory Laprotomy, Gravid Acute Abdomen, Pregnancy, Cesarean section, Salmonella Typhi, Bowel gangrene, Resection and Anastomosis, Ileostomy, Antenatal corticosteroids, Boeys Score, Septic shock, Enteric fever.

INTRODUCTION

The incidence of acute abdominal pain during pregnancy is rare, occurring in approximately 1 in 500–635 pregnancies. It can be attributed to various causes, which can be classified into obstetric and non-obstetric aetiologies. While there is a range of factors responsible for acute abdominal pain, bowel perforation during pregnancy is an exceptionally rare, yet life-threatening condition. This condition not only poses a significant risk to the mother's health but also jeopardises the well-being of the foetus, potentially leading to complications such as miscarriage, preterm labor, and intrauterine death. (1)

Despite its gravity, the incidence of bowel perforation during pregnancy is remarkably low. Consequently, the available clinical literature is limited, consisting mostly of sporadic case reports with no comprehensive systematic reviews to date. In light of this, we present a particularly challenging case of bowel perforation during the second trimester of pregnancy, which was treated at our hospital. (1)(2)

Which also to the best of our knowledge is the first published Intestinal Perforation due to Typhoid during Pregnancy in the Asian Subcontinent. To provide context for our case, we have conducted a meticulous review of existing literature spanning the last 20 years and juxtaposed our findings with our own clinical experience. The ensuing discussion and synthesis of our case with the available literature not only serve to shed light on this rare presentation but also highlight critical aspects of diagnosis, management, and outcomes of bowel perforation in pregnant women presenting due to other unusual diagnosis. (Refer to Literature review chart) (3)

CASE PRESENTATION

Our patient was a 19-week pregnant woman who was referred with acute abdominal pain and high fever, which had persisted for three days despite initial medication. She was uneventful during the previous antenatal visit, She had no past history of cesarean section or any other surgical history. She presented with acute epigastric pain, nausea and vomiting for 1 week. An abdominal erect X-ray was performed, taking the pregnancy into careful consideration and employing a lead cover to protect the foetus as her acute presentation and unstable vitals made radiological investigation imperative. The X-ray unveiled the presence of free air under the diaphragm as seen in Image 1. Further diagnostic evaluation through laboratory tests revealed elevated white blood cell counts (WBC) and lowered levels of hemoglobin (Hb) and albumin. Recognising the severity of the patient's condition, a comprehensive resuscitation approach was initiated, involving fluid resuscitation and blood product transfusion. Following stabilisation, an emergency exploratory laparotomy was performed to assess and address the underlying disease.

During the laparotomy, gross contamination was observed, including the presence of fecal content in sub-diaphragmatic pockets. The examination also revealed a gravid uterus, which is visually depicted in Image 2. Intraoperative exploration of the bowel led to the resection of a 20cm segment of the distal ileum, located 40cm from the ileocecal (IC) junction. This segment of the bowel exhibited necrosis, and three small perforations were identified near the proximal part of the resected bowel, along with three more small perforations near the distal end of the resected bowel. The proximal end of the ileum was deliberately preserved for an End Ileostomy. The resected ileum specimen was sent for histopathological examination, as depicted in Image 3.

Postoperatively, the patient was closely monitored in the intensive care unit (ICU). Her general condition improved, and her vital signs, including fetal heart rate, were within normal limits. However, the persistence of high fever remained a concern, broad-spectrum intravenous antibiotics and antenatal corticosteroids were administered to address potential sources of infection and to improve chances of fetal viability. The possible adverse effects on fetal health were explained to the patient, and consent for both fetal death and increased chances of fetal anomalies were obtained. Subsequently, the biopsy reports revealed a positive diagnosis of Enteric fever, which provided clarity on the persistent fever. Regrettably soon after one day 4 after surgery, fetal distress was observed, and a decline in fetal heart rate occurred. Consequently, the patient's family consented to a induced vaginal delivery, and the fetus was expunged. Following which, the patient's condition was relatively stable but low grade fever and leucotosis persistent, Blood culture reports reconfirmed Sallmonella and indicated us to change management with intravenous antibiotics but the patient subsequently worsened and succumbed to her injuries on day 32 despite after our best efforts.

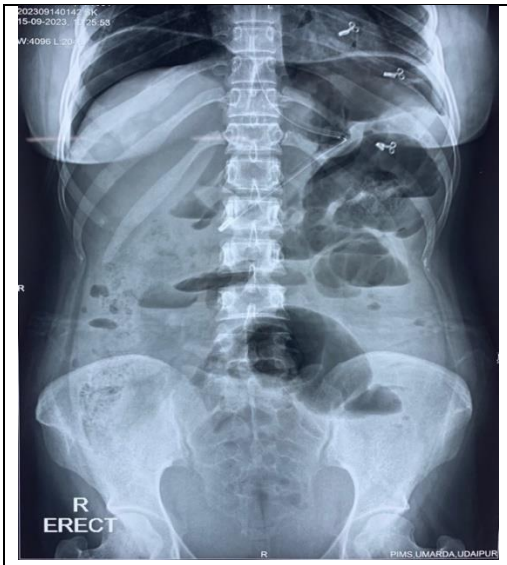


Image 1

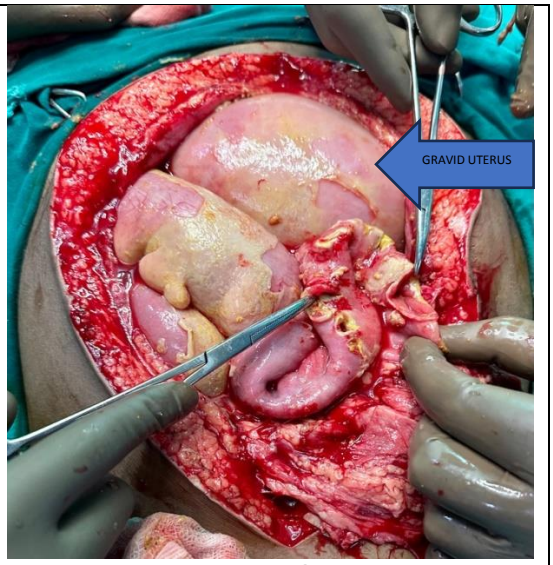


Image 2

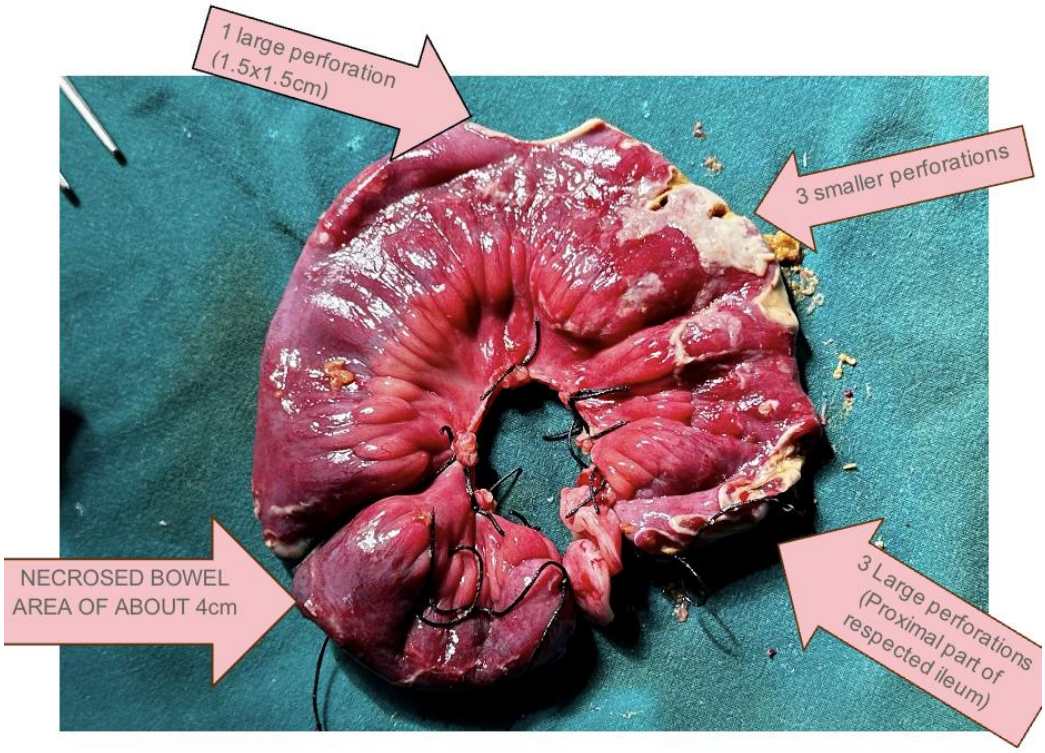


Image 3

DISCUSSION –

Acute abdominal pain during pregnancy a common presentation but challenging clinical situation. The incidence is 0.01%-0.03% for bowel obstruction and even lesser for perforation. It is of paramount importance to appropriately diagnose and treat acute abdomen in Gravid patients and however rare but include intestinal obstruction as a possible diagnosis so as to lead to emergency intervention as it is associated with significant maternal and fetal mortality. Intestinal Obstruction remains the second most common non-obstetric condition for surgical intervention during pregnancy, usually occurring in the second trimester. Reported causes of obstruction include postsurgical adhesion, volvulus, and idiopathic ileus, of which postsurgical adhesion is the commonest cause. Intestinal perforation however rare poses an even larger threat to maternal and fetal well being considering sepsis due to bowel contents leaking and exposing mother and foetus to superimposed infection remains the most important prognostic factor in maternal outcome and fetal viability. (5)(6)

Among varied reasons causing bowel perforation, Perforation caused due to typhoid fever is an extremely rare diagnosis and to the best of our knowledge our case will be the first published case report in Indian Subcontinent.

In our review of a total of 10 cases including our case, Two cases presented with bowel obstruction which is the most commonly recorded presentation amongst all unusual presentations, that too leading cause being post operative adhesions. Two cases including ours presented with delayed perforation peritonitis which in one case underwent primary repair and omental patch, and in our case segmental resection and end ileostomy was done. Other presenting cases were of Crohns disease, Ulcerative colitis, Tubercular tumor, Meckels diverticulum, Appendicitis, which were managed as they would have been in a non-Gravid patient but mostly were accompanied with cesarean section to deliver the foetus in cases where the gestational age was enough for survival. In the group of patients that underwent gastrointestinal surgery only 2 cases has uneventful prenatal course after surgery till term, 3 other cases however who preferred cesarean section simultaneously along with surgery who were healthy fetal outcome. 3 other cases however who did not do a simultaneous procedure had to undergo induced vaginal delivery or cesarean section within a week of of the surgery and either did not survive or were preterm births with foetal distresses. (14-19)

According to our review, 20.5% of cases can be pregnant until term pregnancy after gastrointestinal surgery, so delayed delivery can be considered if the fetal outcome is disturbing because of preterm birth. However there are still 33.3 % cases will face preterm birth in 24 hours due to the high risk of maternal sepsis caused by bowel perforation which led to risk analysis and preterm delivery. Therefore, adequate antibiotic treatment, tocolysis and antenatal corticosteroids must be administered to improve fetal outcomes. On the other hand simultaneous cesarean section and gastrointestinal surgery are also considered if gestational age is acceptable for the foetus, according to our reasearch another important role is if the hospital and neonatolgy department is equipped to handle severe preterm cases. Like in third world countries where access to medical health is in question, acute conditions sometimes present late to higher centres for adequate management. It also can be preferred as it will be easier for a gastroenterology surgeon to perform the procedure after obstetrician delivers the foetus. (8)(14)(16)(17)

In our case, the simultaneous cesarean section was not done because of extreme prematurity and also because the Indian subcontinent and advance medical sciences are equipped for lowest

preterm viability recoded at 24 weeks, with the intention to delay pregnancy up to viability period and start on antenatal corticosteroids after the surgery, However; induced vaginal delivery was indicated within 4 days after surgery, because the patient had very poor quality of life caused by severe wound pain, decelerating fetal heart sounds, not acceptable fetal outcome and Typhoid fever diagnosis which lead to non viable foetus.

Although bowel perforation is a life threatening situation, the outcome of mother and foetus is fair in our reviews. There are fewer maternal deaths recorded due to bowel perforation or other unusual presenting diagnosis however fatality is more in cases like ours with delayed presentation or sepsis. There were 3 unfortunate outcomes as fetal death because gestational age was 20 weeks or less. Thus, preterm birth remained the most important prognostic factor in foetal mortality. (8)(14)

To assess the severity we as took assistance of Boeys scoring for predicting perioperative morbidity and mortality in perforation patients which more commonly used for perforation post peptic ulcer perforation but deemed fit in our case. Our patient presented with a high/ maximum chance of mortality as was a delayed presentation and showed signs of early septic shock as mentioned above and the cause was later diagnosed as enteric fever. (20)

Boey's scoring was used preoperatively, which includes 3 independent risk factors i.e duration of perforation, age of patient, comorbidities and preoperative shock. A value of 1 was applied for each independent risk factor that was-present in a patient. As seen in table 2a and 2b – Our patient presented with a score of 3 suggesting a 38% mortality rate.

Table 1 *- Mannheim Peritonitis Index.*

Factor	Adverse	Points	Favorable	Points
Age	>50	5	<50	0
Sex	female	5	male	0
Organ Dysfunction	present	7	absent	0
Malignancy	present	4	absent	0
Evolution time	>24 hours	4	<24 hours	0
Origin	non-colonic	4	colonic	0
Extent of peritonitis	generalized	6	localized	0
Peritoneal exudate	fecaloid	12	clear	0
	purulent	6		

Table 2a. Boey score

Concomitant severe medical illness
Preoperative shock
Duration of perforation >24 hours
Score: 0–3 (Each factor scores 1 point if positive)

Table 2b. Boey score and outcomes

Risk score	Mortality (OR)	Morbidity (OR)
1	8 percent (2.4)	47 percent (2.9)
2	33 percent (3.5)	75 percent (4.3)
3	38 percent (7.7)	77 percent (4.9)

Postoperatively Mannheim peritonitis index was considered to assess morbidity and mortality- our patient was a 31 score and increasing MPI score correlate with poor outcomes and mortality once again ascertaining the critical condition of our patient and a poor prognosis. Such cases also demand a prompt and aggressive approach which is why induced labour knowing the mortality of the foetus was undertaken seen the deterioration of mother in our case. (20) The adverse factors used in assessing the score is mentioned in Table1.

LITERATURE REVIEW

Case	Year	Author And Paper	Age	Symptoms	Perforation site	Mechanism	Surgery	Gestation age during surgery	Time of delivery	Delivery route	Fetal outcome
1	2004	Asma Aouthmany (4)	30	Uterine contractions	Ileum	Bowel obstruction	Primary repair	27	10hr later	Vaginal delivery	Alive
2	2012	Giorgakis E (14)	35	Right lower quadrant pain, anorexia and fever	Appendix	Endometriosis	Appendectomy	27	N/A	N/A	N/A
3	2014	Atef Youssef (15)	32	Abdominal pain, fever and general weakness	Caeca-appendicular tumor	Tuberculosis	Partial intestinal resection with ileostomy	33	1 day later	Vaginal delivery	Alive
4	2014	Douglas Overbey (16)	23	Abdominal pain, diarrhea, nausea and intermittent emesis	Colon	Ulcerative colitis	Colectomy and end ileostomy	21	39 weeks	N/A	Alive
5	2015	Jessica Burgers (17)	24	Abdominal pain, nausea and vomiting	Ileum	Crohn's disease	Ileocolectomy with primary anastomosis	27	Term	N/A	Alive
6	2016	Z Ahmed (18)	24	Abdominal pain, nausea and vomiting	Meckle's diverticulum	Meckle's diverticulum	Meckle's diverticulectomy with ileostomy	24	Term	Vaginal delivery	Alive
7	2017	Cyrille Kouam (19)	40	Abdominal pain and fullness, bilious vomiting, fever, and asthenia	Cecum	Peritonitis	Primary repair and omental patching	20	N/A	N/A	N/A
8	2019	Ming Ta Chuang (8)	34	Abdominal pain and fullness	Previous ileo-colonic	Bowel obstruction	Small bowel segmental resection and end ileostomy	26	8 days later	Cesarean section	Alive
9	2024	Harleen Bawa	19	Fever and abdominal pain	Ileum	Perforation peritonitis	Exploratory laparotomy	19	N/A	N/A	N/A

CONCLUSION

In conclusion, our case presentation serves as a poignant reminder of the challenges posed by rare clinical conditions such as bowel perforation during pregnancy. Timely intervention, a multidisciplinary approach including the obstetrician, and comprehensive resuscitation measures are crucial in managing such cases. Given the scarcity of literature on this topic, our experience adds a valuable perspective to the existing body of knowledge, emphasising the need for a systematic review of cases to inform better clinical practice and enhance outcomes. (8)

Bowel perforation during pregnancy is an rare and life threatening situation. Management of which should be prompt and a simultaneous cesarean section should be considered if the gestational age was enough for foetal viability or if the risk of severe maternal sepsis is most likely (like in delayed presentation of bowel perforation). In other cases tocolysis should be used in an attempt to delay delivery until the antenatal corticosteroids have worked as it could facilitate fetal maturation and improved fetal outcome. (9)

Taking assistance fro scoring systems like Boey's and Mannheim's peritonitis Index in ascertaining patient prognosis preoperatively and postoperatively gives the treating surgeon an opportunity to have fact based prognostic counselling of the patients families and to assess the need of aggressive management of the cases. To conclude we can say that while these scores do provide a method of estimating mortality, they are no substitute to clinical management. However Boeys score and Modified Boeys score is seen as an accurate scoring index with good reliability.(20)

References

1. Chalya, P. L., Mabula, J. B., Koy, M., Kataraihya, J. B., Jaka, H., Mshana, S. E., ... & Gilyoma, J. M. (2012). Typhoid intestinal perforations at a University teaching hospital in Northwestern Tanzania: A surgical experience of 104 cases in a resource-limited setting. *World journal of emergency surgery*, *7*, 1-11.
2. Chang, Y. T., Lin, J. Y., & Huang, Y. S. (2006). Typhoid colonic perforation in childhood: a ten-year experience. *World journal of surgery*, *30*, 242-247.
3. Glavind, M. T., Møllgaard, M. V., Iversen, M. L., Arendt, L. H., & Forman, A. (2018). Obstetrical outcome in women with endometriosis including spontaneous hemoperitoneum and bowel perforation: a systematic review. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *51*, 41-52.
4. Kumar, S., Karmakar, D., Sharma, J. B., & Kashinath, J. A. (2011). Treatment of typhoid perforation during pregnancy and the postpartum period. *International Journal of Gynaecology and Obstetrics: the Official Organ of the International Federation of Gynaecology and Obstetrics*, *115*(1), 72-73.
5. Oliveira, S. P. L., Sousa, A. I., & Martins, N. N. (2022). Challenging obstetrical management in generalized peritonitis during pregnancy. *Case Reports in Obstetrics and Gynecology*, *2022*.
6. Talwar, N., Andley, M., Ravi, B., & Kumar, A. (2006). Spontaneous biliary tract perforations: an unusual cause of peritonitis in pregnancy. Report of two cases and review of literature. *World Journal of Emergency Surgery*, *1*, 1-4.
7. Francesco, M. A. D., Stefanelli, P., Carannante, A., Corbellini, S., Giagulli, C., Lorenzin, G., ... & Caruso, A. (2020). Management of a case of peritonitis due to Neisseria gonorrhoeae infection following pelvic inflammatory disease (PID). *Antibiotics*, *9*(4), 193.
8. Chuang, M. T., & Chen, T. S. (2021). Bowel obstruction and perforation during pregnancy: Case report and literature review. *Taiwanese Journal of Obstetrics and Gynecology*, *60*(5), 927-930.
9. Alsadery, H. A., Bamalan, O. A., Aljubran, H. J., Albaish, L. J., & Al Ghanim, B. Z. (2023). Non-obstetric acute abdomen in pregnancy: a review of literature. *Medical Archives*, *77*(4), 293.
10. Augustin, G., & Majerovic, M. (2007). Non-obstetrical acute abdomen during pregnancy. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *131*(1), 4-12.
11. Mukherjee, R., & Samanta, S. (2019). Surgical emergencies in pregnancy in the era of modern diagnostics and treatment. *Taiwanese Journal of Obstetrics and Gynecology*, *58*(2), 177-182.
12. Jaffe, R., Schwartz, I., Freund, U., Cohen, I., Rosen, D., & Fejgin, M. (1989). Perforated adenocarcinoma of the colon during pregnancy. *International Journal of Gynecology & Obstetrics*, *30*(4), 371-373.
13. Aouthmany, A., & Horattas, M. C. (2004). Ileal pouch perforation in pregnancy: report of a case and review of the literature. *Diseases of the colon & rectum*, *47*, 243-245.
14. Giorgakis, E., Karydakis, V., & Farghaly, A. (2012). Perforated endometrial appendicitis in pregnancy. *Hippokratia*, *16*(2), 181.
15. Youssef, A., Neji, K., & Reziga, H. (2014). Primitive caeco-appendicular tuberculosis revealed by a perforation at 33 weeks of pregnancy. *La Tunisie Medicale*, *92*(4), 290-291.
16. Overbey, D., Govekar, H., & Gajdos, C. (2014). Surgical management of colonic perforation due to ulcerative colitis during pregnancy: report of a case. *World journal of gastrointestinal surgery*, *6*(10), 201.
17. Burgers, J., Ruiz, O., & Rivers, J. (2015). Perforated Crohn's disease presenting during pregnancy. *Case Reports*, *2015*, bcr2015210109.

18. Ahmed, Z., Chhabra, S., Kankaria, J., & Jenaw, R. K. (2016). Meckel's diverticular perforation presenting as acute abdomen in the second trimester of pregnancy. *Case Reports*, *2016*, bcr2016216643.
19. Kouam, C., Passang, O., Guifo, M. L., & Atem, N. (2017). Spontaneous cecal perforation in a 40-year-old pregnant woman treated by primary repair and omental patch: a case report. *Journal of Medical Case Reports*, *11*, 1-4.
20. Shah, S. A., Shah, B., Viswambharan, V., Shah, B., Agarwal, R., & Gupta, A. (2023). Modified Boey's Score VS Manheim Peritonitis Index for prediction of outcome in perforated peptic ulcer complicated by diffuse peritonitis in a tertiary care center. *Pravara Medical Review*, *15*(2).