BioMed Visions Journal

Volume 2 | Issue 1 Article 4

1-15-2026

Postoperative Duodenal Stricture in a Neonate with Duodenal Atresia – Innovative Approach and Lessons Learned

Raniah I. Alnaser
Nineveh Health Directorate, Mosul, Nineveh province, 41006, Iraq AND Catholic University in Erbil, College of Pharmacy, Erbil, Iraq, raniahimad@yahoo.com

Dr Mussalam L Alobaidy
Consultant surgeon and lecturer at Alnoor University – Iraq AND General Medical Council Associate and Examiner - United Kingdom, mussalam.layth@alnoor.edu.iq

Dr Fawaz A. Alassaf
Assistant professor at the University of Mosul, College of Pharmacy, Department of Pharmacology and Toxicology, Mosul, Nineveh province, 41002, Iraq, Fawaz.Alassaf@uomosul.edu.iq

Dr Mohammed N. Abed
Assistant professor at the University of Mosul, College of Pharmacy, Department of Clinical Laboratory Sciences, Mosul, Nineveh province, 41002, Iraq, m.n.abed@uomosul.edu.iq

Recommended Citation

Alnaser, Raniah I.; Alobaidy, Dr Mussalam L; Alassaf, Dr Fawaz A.; and Abed, Dr Mohammed N. (2026) "Postoperative Duodenal Stricture in a Neonate with Duodenal Atresia – Innovative Approach and Lessons Learned," *BioMed Visions Journal*: Vol. 2: Iss. 1, Article 4.
DOI: https://doi.org/10.63100/3078-6738.1015

BIOMED VISIONS JOURNAL 2026;2:26–31

CASE REPORT

Postoperative Duodenal Stricture in a Neonate with Duodenal Atresia – Innovative Approach and Lessons Learned

Raniah I. Alnaser [a,f,*], **Dr Mussalam L Alobaidy** [b,c], **Dr Fawaz A. Alassaf** [d], **Dr Mohammed N. Abed** [e]

[a] Nineveh Health Directorate, Mosul, Nineveh province, 41006, Iraq
[b] Consultant surgeon and lecturer at Alnoor University – Iraq
[c] General Medical Council Associate and Examiner - United Kingdom
[d] Assistant professor at the University of Mosul, College of Pharmacy, Department of Pharmacology and Toxicology, Mosul, Nineveh province, 41002, Iraq
[e] Assistant professor at the University of Mosul, College of Pharmacy, Department of Clinical Laboratory Sciences, Mosul, Nineveh province, 41002, Iraq
[f] Catholic University in Erbil, College of Pharmacy, Erbil, Iraq

ABSTRACT

Background and aim: Duodenal atresia (DoA) is a congenital condition that is characterized by complete or incomplete duodenal obstruction. This condition needs urgent surgical intervention that carries risks of postoperative complications especially in low-birth-weight babies and with associated comorbidities. The success rate of the surgical procedure was reported to be higher than 90%. This case study details a neonate's clinical course reporting the challenge in the management of delayed stricture and malnutrition after the primary surgery.

Case presentation and results: A female neonate was born at 38 weeks of gestation with 2.6 kg weight. During the immediate postnatal period, she was presented with upper abdominal distention and bilious vomiting. Duodenal atresia was the diagnosis, prompting duodenoduodenostomy surgery. She was discharged five days later after tolerating oral feeds. However, few days later she was readmitted to the hospital because of recurrent vomiting, feeding intolerance, and weight loss then progressed to passage of dark bloody stool. She was resuscitated with intravenous fluids, antibiotics, and antiacids medications. She needed blood transfusion as her Hb level was dropped to 7 g/dL. Adjusted total parenteral nutrition (TPN) as per the body weight and biochemical profile was prescribed to improve the general condition. Water soluble contrast was performed which revealed a stricture at the site of the original pathology. Revision surgery was performed with the insertion of a nasojejunal tube to enhance early feeding distal to the anastomotic site. The baby had uneventful postoperative recovery and tolerated full oral feeds.

Conclusion: Despite the reported surgical success rate, this case illustrates delayed stricture formation. The nasojejunal tube enhanced the recovery and reduced potential postoperative risks due to malnutrition. Therefore, proactive monitoring and structured operative strategies can reduce morbidity and improve survival in neonates with postoperative complications.

Keywords: Duodenal atresia, Postoperative stricture, Redo surgery, Anastomosis

Received 6 April 2025; revised 28 August 2025; accepted 17 September 2025.
Available online 15 January 2026

* Corresponding author.
E-mail addresses: raniahimad@yahoo.com (R. I. Alnaser), Mussalam.layth@alnoor.edu.iq (Dr M. L. Alobaidy), Fawaz.Alassaf@uomosul.edu.iq (Dr F. A. Alassaf), m.n.abed@uomosul.edu.iq (Dr M. N. Abed).

https://doi.org/10.63100/3078-6738.1015

1. Introduction

Duodenal atresia (DoA) is a congenital condition of duodenal obstruction, causing a mechanical blockage that prevents the full passage of digestive fluids and milk (Bishop et al., 2020). Thus, Infants with DoA suffer from frequent vomiting, especially earlier in their lives within 24 hours after the first feeding. If left untreated, these symptoms could progress to serious complications such as dehydration, malnutrition, and even death (Rich, Bornstein and Dolgin, 2022). Therefore, early diagnosis and surgical intervention are important for survival. The success rate of the surgical procedure was reported to be higher than 90% (Mentessidou and Saxena, 2017). However, postoperative surgical complications may occur and could impact the recovery phase, these include infection, feeding issues, electrolyte imbalances, and anastomotic leakage (Ahmadi et al., 2018). Several factors are associated with postoperative outcomes such as early preterm and very low birth weight (<1.5 kg), pulmonary and neurological abnormalities, low Apgar score, and ventilation problems (Moga et al., 2024, Deguchi et al., 2022). These complications could occur in 7.7% of the infants and required re-operation especially for whom with anastomotic leakage and stricture (Cruz-Centeno et al., 2023). To prevent complications, several strategies can be employed, with accurate postoperative care being the most critical. This includes proper care of gastrointestinal catheters and enteral tubes. These strategies will help monitor the amount and color of aspirated stomach contents, assess food tolerance, and track abdominal distension (Sánchez-Juárez et al., 2021).

This case study explores the complications that can occur in infants who undergo surgery for DoA soon after birth. It highlights the importance of careful monitoring and follow-up care following the surgery and potential strategies for preventing postoperative complications. It aims to identify strategies to reduce complications and improve the recovery phase and quality of life.

2. Case representation

A female neonate weighing 2.6 kg was born after 38 weeks of gestation, presented with abdominal distention and bilious vomiting after her first feeding. The vomiting was progressively increased, and the infant was intolerant to oral feeding, suggesting the presence of duodenal atresia. The infant was the second sibling for her parents with no previous family history regarding intestinal malformations. However, a prenatal ultrasound at week 28 revealed an incidence of moderate polyhydramnios (excess amniotic fluid), but aggravated at week 32-34 of the gestation in which the amniotic fluid index reached 41 centimeters. Finally, the infant was delivered via cesarian section without complications.

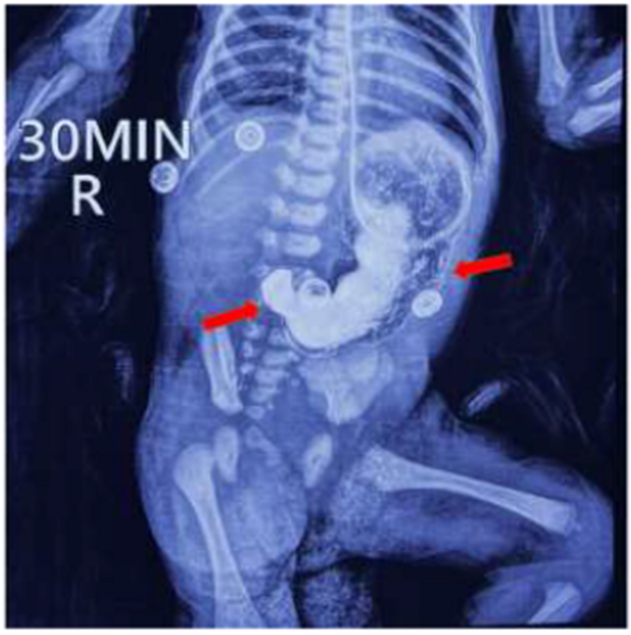

Fig. 1. The X-ray radioscopic image of a neonate with duodenal atresia 30 minutes after contrast administration.

The presence of polyhydramnios during pregnancy may indicate duodenal atresia, as the fetus cannot pass amniotic fluid through the gastrointestinal tract due to intestinal obstruction, resulting in polyhydramnios (Ogunleye et al., 2024).

Ultrasound image of the abdomen was obtained to diagnose the presenting case, but it would not be clear enough to confirm the diagnosis. Therefore, a contrast radiography was performed, which is a method of using X-rays with contrast media dye to study the organ. The initial radiographic finding is illustrated in Fig. 1.

2.1. Diagnostic procedure

A contrast medium, such as barium, a safe and inert element with a high ability to absorb X-ray, was put into the feeding bottle and administered to the infant. Then, the X-ray was taken after 30 minutes as the dye moved to the upper gastrointestinal tract. The radiograph showed a dilated stomach, appearing as a bubble filled with air, as seen in Fig. 1. Moreover, there was a complete absence of air beyond the bubble, confirming the duodenum's blockage that retracted the contrast to pass further to the distal part of the gastrointestinal tract.

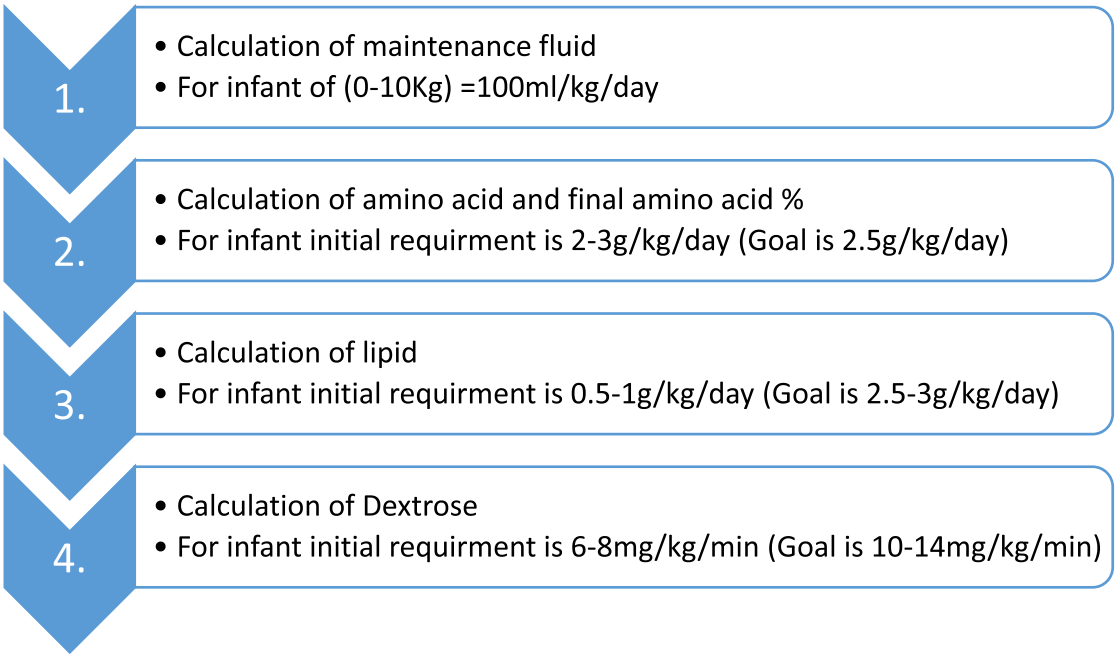

Fig. 2. Calculations of total parenteral nutrition (TPN) Mihatsch et al., 2018.

2.2. Management

At first, the infant was stabilized using a nasogastric tube to relieve bilious vomiting. Intravenous fluid, including 250 ml of glucose saline (4% glucose, with 0.18% sodium chloride), was given for 24 hours to adjust the hydration. At 5 days of age on 21/10/2024 and the newborn weighed 2.6 kg, an immediate surgical intervention was done, and duodenoduodenostomy was performed to open the atretic passage between the proximal duodenum and the distal duodenum. Postoperatively, after detection of the neonate's vital signs and adequate oxygenation, the surgeon inserted a nasogastric tube for temporal feeding after the surgery.

2.3. Outcomes

Following surgery, the neonate was moved to the intensive care unit for careful monitoring of vital signs, gastrointestinal function, abdominal distension, and infection. On day 10 after the surgery, the neonate was discharged to the home, and oral feeding was recommended to be introduced. Several days after the discharge, the infant suffered from frequent vomiting, especially after feeding, and difficulty in passing milk through the digestive tract, and ultimately, weight loss was noticed.

The infant was admitted to the hospital again to manage the frequent and progressive vomiting, which sometimes had a brown color, and the amount of stool was so little and dark in color.

2.4. Management of the complications

At the hospital, the infant was administered 250 ml of glucose saline, which was given for 24 hours to prevent dehydration; a paracetamol vial 15 mg/kg intravenously (IV) every 6 hours for pain; cimetidine ampoule 10 mg/kg/day IV twice daily to manage the ulcer; and meropenem vial 20 mg/kg IV every 8 hours to manage any complicated intra-abdominal infection.

After several weeks of using the mentioned medications, the state of the infant showed no improvement, the weight gradually decreased, and the infant became malnourished. Therefore, total parenteral nutrition (TPN) was introduced to the patient, the dose was adjusted based on the body weight and laboratory findings using several calculations as shown in Fig. 2, and it was monitored by a specialist pharmacist.

Meanwhile, the body temperature, random blood glucose, complete blood count, serum electrolytes, and lipid profile were monitored periodically. Later, the infant's hemoglobin (Hb) levels dropped drastically, reaching 7 grams (g)/deciliter (dl), necessitating a blood transfusion.

Following further evaluation, a contrast X-ray was retaken and unexpectedly revealed a duodenal stricture, as shown in Fig. 3. Therefore, after urgent

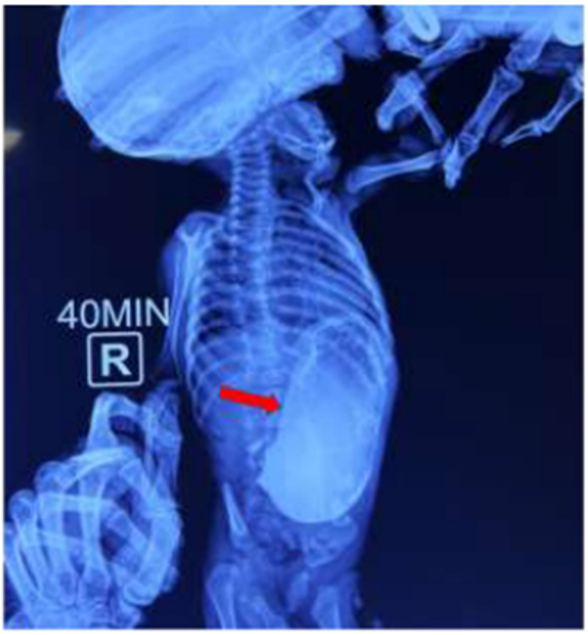

Fig. 3. The X-ray radioscopic image of the infant with complicated postoperative duodenal atresia surgery 40 minutes after contrast administration.

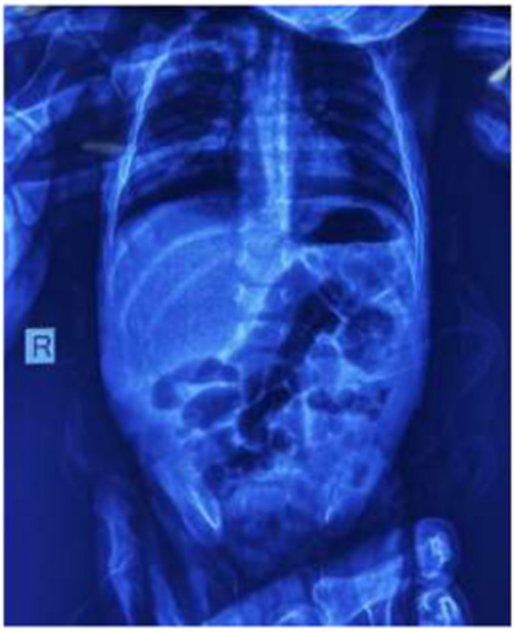

Fig. 4. The X-ray radioscopic image of the infant after the redo surgery.

consultation by a specialist surgeon, a redo surgery and reconnection of the duodenum were done on 5/2/2025 to prevent future obstruction; the weight of the infant at the time of the redo surgery was 2.6 kg. Moreover, two tubes were inserted through the operative field, one was a nasojejunal tube for feeding, which terminated in the jejunum just after the anastomotic site, and the other was a nasgastric tube terminated in the stomach to drain the gastric fluids.

2.5. Outcomes of the redo surgery

After redoing duodenoduodenostomy and anastomosis surgery (connection between duodenal segments), the infant stayed in the intensive care unit for careful monitoring and to avoid surgical complications like leakage at the surgical site and infection. After stabilizing and tolerating oral feeding, the infant moved to the general pediatric unit. Close and continuous monitoring of feeding intolerance signs such as choking, breathing distress, vomiting, and failure to gain weight was done by clinical assessment. Additionally, radiographic imaging was done to confirm the success of the redo surgery, as shown in Fig. 4. Then, the infant was discharged home after careful evaluation of infant signs and feeding toleration. Ultimately, the infant showed fast improvement with efficient oral feeding and gradual weight gain which reach 7 kg corresponding to the 10^{th} month of age. The pediatrician recommended regular follow-ups every two weeks and appointments to monitor the overall growth and health of the infant.

3. Results and discussion

Duodenal atresia (DoA), although a rare congenital disease, represents a significant challenge for neonates, infants, and their parents or caregivers. Timely intervention is crucial mainly due to the common symptom of bilious vomiting, which occurs a few hours after birth and could lead to life-threatening conditions (Miscia et al., 2021). Earlier and proper surgical intervention offers a promising chance of survival, but unexpected risks might be involved. Therefore, this case study explores the complex management of DoA in infants and sheds light on the challenges of surgical intervention, preoperative preparation, and postoperative care.

On primary surgical intervention, the neonate failed to reach the recovery phase due to the prolonged vomiting, especially after the initiation of oral feeding, in addition to delayed gastric emptying and failure to gain weight (Al-Hilou et al., 2011). The mentioned symptoms indicated the presence of duodenal stricture, and a contrast study shown in Fig. 3 confirmed the diagnosis. Several causes of the postoperative surgical duodenal stricture, including the formation of scar at the anastomosis, which could contract and narrow the duodenal lumen. Moreover, the earlier and rapid introduction of oral feeding without gradual induction led to the aggravation

of the condition because gradual feeding will decrease the mechanical pressure at the anastomotic site and enhance the mucosal adaptation and healing, thus preventing scar formation and facilitating the healing process (Moga et al., 2024). The study supports these results, focused on postoperative feeding intolerance by neonates with congenital anomalies, where the recovery phase has significantly achieved after initiation of stepwise incremental rate or gradual feeding induction rather than fast feeding rate, enabling an earlier time to transition to complete oral feeding and hospital discharge (Aroonsaeng, Losty and Thanachatchairattana, 2022).

In 2020, Toby Vinycom conducted a longitudinal study of 100 children who had endured surgery for DoA, the children experienced postoperative issues, including delayed gastric emptying, gastroesophageal reflux, and nutrient malabsorption (Vinycomb et al., 2020). These complications were common in 20–25% of the participants, and some required rehospitalisation and redo surgical interventions consistent with our case.

Regarding the brown vomit and dark stool accompanied by anaemia, the existing blood inside the stomach could be due to the breakdown of haemoglobin, resulting in brown vomit; thus, the infant lost too much blood and necessitated a blood transfusion (Rockey, 2005). These serious complications could result from gastrointestinal bleeding, obstruction, and even infections (Hébert et al., 2019). Gastrointestinal bleeding could be due to surgical leakage at an anastomosis site, which led to internal bleeding or postoperative gastric ulceration, especially following fast feeding induction. Intestinal obstruction at the surgical site is another cause of bloody vomiting (Abukhalaf et al., 2019).

On the other hand, the use of a single nasogastric tube after the first surgery may contribute to the surgical complications in this case because this tube was used just for feeding, and there was no drainage of intestinal fluids or surgical leak. These fluids contributed to the scar formation, infection, and duodenal stricture Wang et al., 2014. Therefore, the placement of two separated tubes in the second surgical repair and the proper technical placement may facilitate the healing process, decrease the pressure on the anastomotic site, reduce the incidence of complications, and improve recovery.

In 2024, Andereea Moga and her colleagues had a retrospective study about the postoperative complication factors of congenital DoA surgery; they found that three cases had anastomosis dysfunction (one duodenojejunostomy and two duodenoduodenostomies) could be associated with low Apgar score at birth and pulmonary and neurological abnormalities without directing the exact mechanism behind these linkages (Moga et al., 2024). In this case, we introduced a possible mechanism that can affect the postoperative complication, including the right technical insertion of nasogastric and nasojejual tubes used after the redo surgery, because the infant did not have any related anomalies. These tubes speeded up the healing process by which the feeding tube that terminated in the duodenum after the anastomotic site aided in the fast absorption of the milk, meanwhile, the second tube that terminated in the stomach was used to drain the gastric fluids and minimized their passage to the anastomotic site thus, supporting decompression.

Importantly, the case recommends postoperative feeding protocols to prevent the stricture, including the gradual induction of feeding, close monitoring of feeding tolerance, earlier use of TPN if feeding was not tolerated, regular clinical assessment, and follow-up imaging.

4. Conclusion

Despite the reported surgical success rate, this case illustrates delayed stricture formation. The nasojejunal tube enhanced the recovery and reduced potential postoperative risks due to malnutrition. Therefore, proactive monitoring and structured operative strategies can reduce morbidity and improve survival in neonates with postoperative complications.

Ethical statement

Informed consent was obtained from the parents for case publication.

Funding statement

Self-funded.

Acknowledgment

We appreciate the support of the Nineveh Health Directorate.

Conflicts of interest

The authors declare no competing conflict of interest.

References

Bishop, J. C., McCormick, B., Johnson, C. T., Miller, J., ... and Jelin, A. C. (2020) The Double Bubble Sign: Duodenal Atresia and Associated Genetic Etiologies. *Fetal Diagn Ther.*, 47(2), 98–103. https://doi.org/10.1159/000500471.

Rich, B. S., Bornstein, E. and Dolgin, S E. (2022 May 1) Intestinal Atresias. *Pediatr Rev.*, 43(5), 266–74. https://doi.org/10.1542/pir.2021-005177.

Mentessidou, A. and Saxena, A. K. (2017 Aug 3) Laparoscopic Repair of Duodenal Atresia: Systematic Review and Meta-Analysis. *World J Surg.*, 41(8), 2178–84. https://doi.org/10.1007/s00268-017-3937-3.

Ahmadi, N., Ahmadi, N., Chan, M. V., Huo, Y. R., ... and Chin, R. (2018 Feb 26) Laryngeal Squamous Cell Carcinoma Survival in the Context of Human Papillomavirus: A Systematic Review and Meta-analysis. *Cureus*, https://doi.org/10.7759/cureus.2234.

Moga, A., Bălănescu, R., Bălănescu, L., Cîmpeanu, P., ... and Caragata, R. (2024 Oct 21) Factors Associated with Postoperative Complications After Congenital Duodenal Obstruction Surgery: A Retrospective Study. *Medicina (B Aires)*, 60(10), 1722. https://doi.org/10.3390/medicina60101722.

Deguchi, K., Tazuke, Y., Matsuura, R., Nomura, M., ... and Yoneda, A. (2022 Feb 17) Factors Associated With Adverse Outcomes Following Duodenal Atresia Surgery in Neonates: A Retrospective Study. *Cureus*, https://doi.org/10.7759/cureus.22349.

Cruz-Centeno, N., Stewart, S., Marlor, D. R., Aguayo, P., ... and Oyetunji, T. A. (2023 Dec 31) Duodenal Atresia Repair: A Single-Center Comparative Study. *Am Surg.*, 89(12), 5911–4. https://doi.org/10.1177/00031348231180910.

Sánchez-Juárez, I. A., De Ávila-Arroyo, M. L., Tenahua-Quitl, I., Torres-Reyes, A. (2021 Jul 20) Proceso enfermero en neonato con retraso en la recuperación quirúrgica por atresia duodenal. *SANUS*, 6, e189. https://doi.org/10.36789/sanus.vi1.189.

Ogunleye, O., Griffin, K., Xia, J., Jackson, J., ... and Diefenbach, K. A. (2024 Mar 1) Duodenal Atresia: Prenatal Diagnosis and Postnatal Management. *Neoreviews*, 25(3), e180–6. https://doi.org/10.1542/neo.25-3-e180.

Mihatsch, W. A., Braegger, C., Bronsky, J., Cai, W., ... and Yan, W. (2018 Dec) ESPGHAN/ESPEN/ESPR/CSPEN guidelines on pediatric parenteral nutrition. *Clin Nutr.*, 37(6), 2303–5. https://doi.org/10.1016/j.clnu.2018.05.029.

Miscia, M. E., Lauriti, G., Di Renzo, D., Riccio, A., ... and Lelli Chiesa, P. (2021 Oct 28) Esophageal Atresia and Associated Duodenal Atresia: A Cohort Study and Review of the Literature. *Eur J Pediatr Surg.*, 31(05), 445–51. https://doi.org/10.1055/s-0040-1716884.

Al-Hilou, H., Carroll, N., Jah, A., Davies, S. and Parkes, M. (2011 Feb 8) A rare cause of duodenal stricture. *Case Reports*, 2011(feb04 1), bcr1020103379–bcr1020103379. https://doi.org/10.1136/bcr.10.2010.3379.

Aroonsaeng, D., Losty, P. D. and Thanachatchairattana, P. (2022 Dec 3) Postoperative feeding in neonatal duodenal obstruction. *BMC Pediatr.*, 22(1), 467. https://doi.org/10.1186/s12887-022-03524-7.

Vinycomb, T., Browning, A., Jones, M. L. M., Hutson, J. M., ... and Teague, W J. (2020 Oct 1) Quality of life outcomes in children born with duodenal atresia. *J Pediatr Surg.*, 55(10), 2111–4. https://doi.org/10.1016/j.jpedsurg.2019.11.017.

Rockey, D C. (2005 Dec 1) Gastrointestinal Bleeding. *Gastroenterol Clin.*, 34(4), 581–8. https://doi.org/10.1016/j.gtc.2005.08.002.

Hébert, J., Eltonsy, S., Gaudet, J. and Jose, C. (2019 Dec 3) Incidence and risk factors for anastomotic bleeding in lower gastrointestinal surgery. *BMC Res Notes*, 12(1), 378. https://doi.org/10.1186/s13104-019-4403-0.

Abukhalaf, S. A., Alzughayyar, T. Z., Baniowda, M. A., Abukarsh, R., ... and Al Hammouri, A. (2019) Postoperative intestinal intussusception in children, an easily missed culprit of postoperative intestinal obstruction: Case series and literature review. *Int J Surg Case Rep.*, 60, 336–9. https://doi.org/10.1016/j.ijscr.2019.06.057.

Wang, J., Du, L., Cai, W., Pan, W. and Yan, W. (2014 Nov) Prolonged feeding difficulties after surgical correction of intestinal atresia: a 13-year experience. *J Pediatr Surg.*, 49(11), 1593–7. https://doi.org/10.1016/j.jpedsurg.2014.06.010.