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CASE REPORTS

Clinical Management and Surgical Outcomes of Wandering Spleen with Splenic Torsion in Pediatric Patients: A Case Report

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Abstract

Introduction: Wandering Spleen is a rare condition in which the splenic ligaments are abnormally loose or absent. This makes the Spleen more mobile and increases the risk of torsion.

This case report outlines the clinical presentation and management of a 10-year-old female patient who presented at our clinic with acute abdominal pain, vomiting episodes, and a severe fever. Imaging tests, such as abdominal ultrasonography and computed tomography, confirmed the diagnosis of splenic torsion by showing a hemorrhagic infarction and a large spleen. We performed a splenectomy to remove the damaged organ, a partial omental resection to remove the dead tissue and removed the mesenteric lymph nodes for further pathological examination.

After the surgical procedure, the intensive care unit carefully observed the patient and treated her with intravenous electrolyte replacement, broad-spectrum antibiotics, pain management, and measures to prevent thrombosis.

This case highlights the critical need for early diagnosis and timely surgical intervention in cases of wandering Spleen to prevent serious complications, including splenic infarction. By presenting this case, we seek to elevate awareness of wandering Spleen among healthcare professionals, mainly within pediatric groups. We emphasize the importance of timely diagnosis and appropriate management to optimize patient outcomes.

Conclusion: Early detection and prompt intervention are crucial in preventing severe complications in pediatric patients. This case emphasizes the necessity of rapid diagnosis and increased awareness in clinical practice. Due to the Spleen's impaired viability, a splenectomy was required. Following surgery, we provided comprehensive monitoring and pharmaceutical assistance to control pain, prevent infection, and maintain nutritional stability.

Keywords: Wandering Spleen, splenic torsion, pediatric surgery, splenectomy, acute abdomen

Introduction

Wandering Spleen, or hypermobile Spleen, occurs when the suspensory ligaments elongate or grow abnormally. It's an uncommon clinical condition primarily affecting children, but the incidence peaks in adult females of reproductive age. Because of its rarity and diverse presentation patterns, clinicians have found it challenging to diagnose and treat. [1]

Unrelated reasons often lead to the accidental detection of a wandering spleen during imaging. However, it may cause symptoms if the Spleen's vascular pedicle twists (torsion), resulting in an infarction, or if the Spleen compresses surrounding organs in its new position. Once

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detected, surgical treatment is usually required, either through splenopexy, which fixes the Spleen in its usual position, or splenectomy, which entails removing the Spleen based on its mobility and condition. [2]

Individuals aged 20 to 40 may also develop the disease due to ligamentous support laxity resulting from splenomegaly or pregnancy. Approximately 15% of children with wandering Spleen are asymptomatic, whereas 55% experience stomach discomfort, and 90% have a palpable mass outside the left upper quadrant. In 64% of pediatric wandering spleens, torsion causes complications. Splenic torsion often occurs in a clockwise direction and can lead to vascular congestion, infarction, or even splenic gangrene. [3]

Case Presentation

A 10-year-old female patient presented to our clinic with symptoms of an acute abdomen. She presented with stomach pain lasting 4 to 5 days, two episodes of vomiting, and a fever of 39.5°C one day before admission.

Upon examination, she indicated discomfort in the left upper quadrant, abdominal distension, and symptoms of peritonitis. Vital signs suggested tachycardia and hypotension, necessitating an urgent examination. Laboratory studies showed elevated white blood cell counts and inflammatory markers, indicating the possibility of an acute abdominal process. A CT scan of the abdomen with contrast confirmed the diagnosis of splenic torsion, which revealed hemorrhagic infarction and significant splenomegaly (Figure 3).

The patient underwent extensive preoperative preparation, which included the placement of a nasogastric tube and urine catheter. The surgeon performed a median laparotomy under general anesthesia. Intraoperative examinations revealed a twisted spleen with necrosis (Figure 4). The surgery included a splenectomy to remove the affected organ, a partial omental resection of necrotic tissue, and an excision of mesenteric lymph nodes for pathological investigation. We inserted an intra-abdominal drain for postoperative monitoring.

According to histopathological examination, the removed spleen tissue showed clear evidence of infarction, consistent with splenic torsion. The infarcted tissue looked like areas of bleeding and clotting in the splenic parenchyma, as well as widespread necrosis and damage to the splenic architecture (Fig. 1a, Fig. 1b).

We saw ischemic changes like cell death and loss of standard splenic tissue structure with hematoxylin and eosin (HE) staining at low magnification (Fig. 1a, HE x100) and high magnification (Fig. 1b, HE x200). Furthermore, histological examination of the omental fat tissue revealed notable inflammatory changes, including bleeding regions and noticeable fat necrosis (Fig. 2). These results suggested localized tissue damage brought on by ischemia and torsion. Pathological examination of the mesenteric lymph nodes that were removed during surgery showed no signs of infection or cancer, which further supports the limited nature of the inflammatory process.

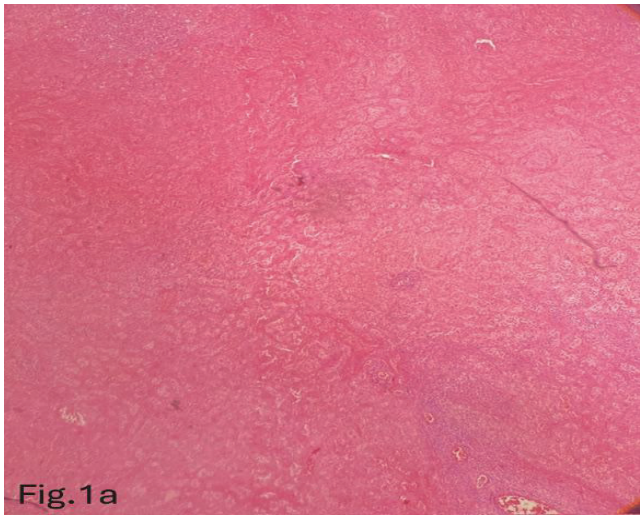

Figure 1a. Microscopic view of splenic infarct HE x100

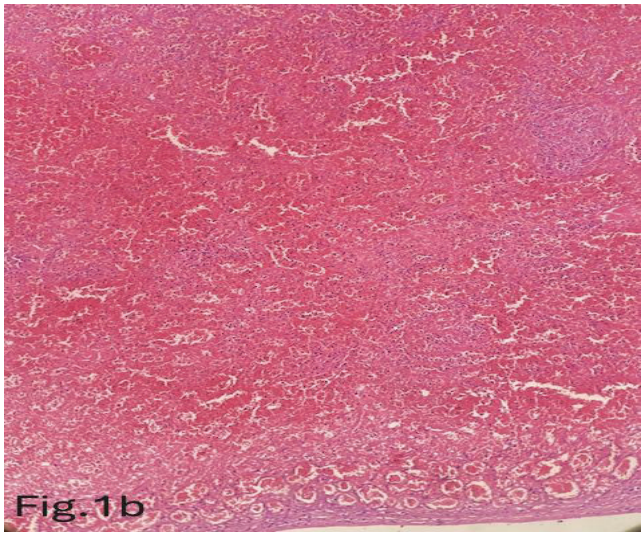

Figure 1b. Microscopic view of splenic infarct HE x200

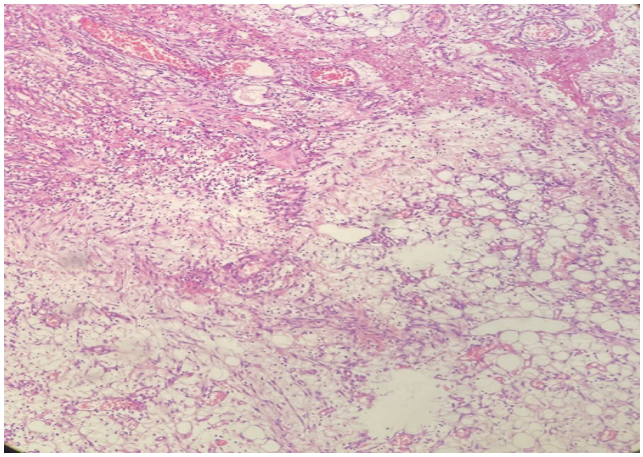

Figure 2. Omental fat tissue showed inflammation, fat necrosis, and hemorrhage.

The intensive care unit closely monitored the patient after surgery. On the first day after surgery, she was hemodynamically stable, spontaneously breathing, and her vital signs were within normal ranges.

We managed the condition with parenteral electrolyte replacement, antibiotics, gastric-protecting medications, analgesics, and thromboprophylaxis therapy. The patient remained stable for the next few days, and routine blood tests and an abdominal ultrasound were performed on the second day. On the sixth day, the patient was moved to the general ward and continued to receive IV antibiotics and analgesics.

As her condition stabilized, we began her oral intake to ensure proper nutrition and hydration for recuperation. Throughout her stay, we continuously monitored her vital signs (heart rate, blood pressure, and respiratory status). We checked her blood counts regularly to assess her response to therapy. We intended these procedures to manage her increased platelet counts and aid her recovery correctly.

By post-splenectomy treatment standards, we scheduled her vaccination against encapsulated pathogens such as Pneumococcus, Haemophilus influenza type B, and Meningococcus. The surgical team, nursing staff, and pediatric specialists worked collaboratively throughout her recuperation to ensure her stability and progress.

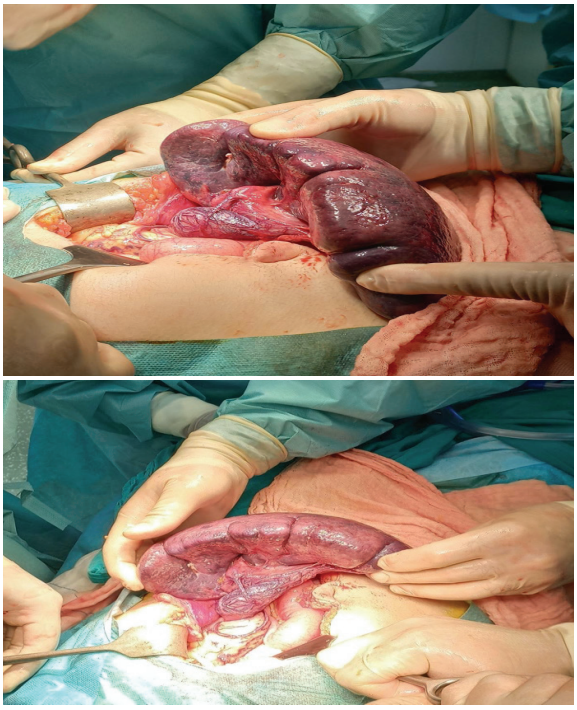

Figure 4. Surgical procedure: Splenectomy with partial omental resection and mesenteric lymph node excision

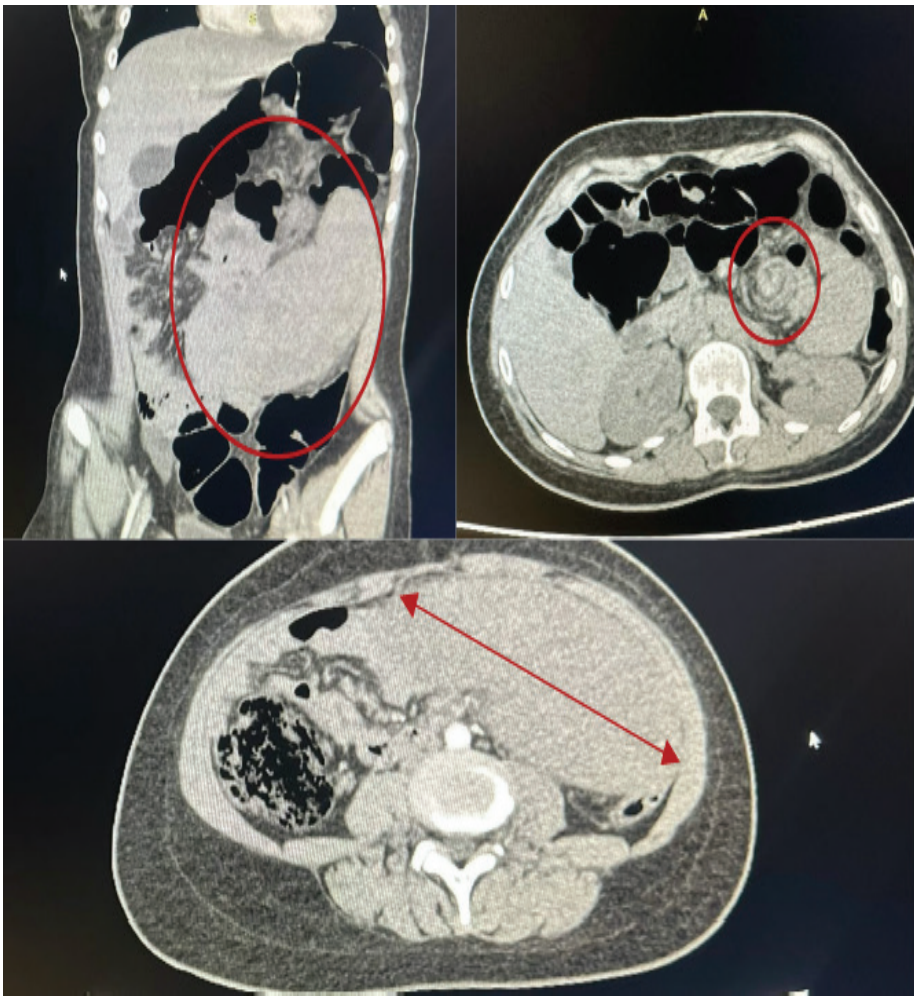

Figure 3. CT image of splenic torsion with hemorrhagic infarction and splenomegaly

Discussion

Wandering Spleen can be identified by laxity or lack of splenic ligaments, resulting in more significant movement and increasing the risk of torsion, hypoperfusion, thrombosis, or necrosis. The cause may be congenital, usually due to incorrect mesogastrium development, or acquired as a result of splenomegaly, trauma, or pregnancy. The incidence is low, with less than 500 instances documented, with peaks in children under 10 and people aged 20 to 40, particularly females. [4]

Trauma and connective tissue conditions can weaken or damage the suspensory ligaments, contributing to acquired WS. On the other hand, congenital etiology is thought to be the most common cause of WS, especially in children. This means that one or more ligaments were not present or developed correctly, which makes the Spleen move around a lot. This is related to inadequate union of the mesogastric and posterior abdominal walls during the second month of pregnancy. [5] The Spleen

can then move to several locations in the abdomen or pelvis, resulting in a complicated clinical condition.[6]

Abdominal ultrasonography (US) and computed tomography (CT) are essential imaging modalities for detecting WS and giving important preoperative information. Early detection of complications such as splenic torsion or infarction is critical to preventing symptom progression. [7, 8]

There are two surgical alternatives for the WS approach: splenopexy and splenectomy. The viability of the Spleen is the most critical factor in selecting the correct type of therapy. Splenopexy is performed in uncomplicated cases by suturing the spleen capsule to the left upper quadrant of the abdomen and creating a posterolateral extra peritoneal pocket at the 12th rib level.

Other procedures include dislocating the splenic flexure of the colon and suturing the stomach's more significant curvature to the anterior abdominal wall. Recently, there have been descriptions of using a polyglycolic mesh as a "snood" to anchor the Spleen. Despite complications such as sepsis and a high mortality rate, if the splenic blood supply is not restored after manual detorsion (non-viable Spleen), splenectomy is essential. On the other hand, there is a high recurrence rate after splenectomy. [9]

When a wandering spleen is found after surgery for other reasons, splenopexy or splenectomy should be discussed. Complex cases like infarction, hypersplenism, substantial size, or splenic vein thrombosis typically necessitate splenectomy, while mild cases may benefit from splenopexy. Although laparoscopic procedures are currently considered the highest standard, open approaches are still possible for splenopexy and splenectomy. [10]

This case is consistent with the results of other pediatric reports of wandering spleens, in which torsion and subsequent infarction are frequent complications. In contrast to specific instances in which splenopexy is feasible, our patient necessitated a splenectomy as a result of the extensive infarction and non-viable Spleen.

The literature frequently links wandering spleens (WS) to serious consequences such as splenic torsion, infarction, rupture, and gangrene. Although less severe, chronic or intermittent torsion can cause splenic congestion and mass effects. Delaying treatment can lead to problems such as bleeding and infection, often necessitating a splenectomy.

Early detection by imaging methods, such as CECT displaying the "whirl sign," is essential to avoid these potentially fatal consequences. [11] Significant surgery frequently results in thrombocytosis, which prompts early intervention and raises concerns about thrombotic events.

In this particular case, our patient experienced postoperative complications such as thrombocytosis and an increased platelet count, which raised concerns about potential thrombotic complications, given her recent surgery. Pediatric hematology specialists advised beginning antiaggregatory medication with aspirin to address this.

This strategy aims to lower the danger of thrombus formation by suppressing platelet aggregation, improving vascular health, and maintaining patient safety during healing. We chose aspirin because of its well-established safety profile in pediatric patients and its ability to reduce platelet aggregation effectively.

We set up a comprehensive medication plan to provide our patients with the necessary support. We administered 100 mg of acetylsalicylic acid once daily to relieve inflammation and pain. To prevent constipation, we administered bisacodyl 10 mg as needed. To alleviate fever and agony, we administered 500 mg of paracetamol every six hours.

We injected 50 ml of 20% albumin intravenously to maintain plasma volume. Parenteral feeding with a 500-mL ampule of 5% amino acids provided the necessary nutrients. To avoid nausea and vomiting, we gave 4 mg of ondansetron intravenously in 2 ml of ondansetron and 100 ml of 0.9% NaCl. To reduce stomach acid, we injected 40 mg of pantoprazole intravenously in 100 mL of 0.9% NaCl.

For pain relief and fever management, we administered 50 mg of Tramadol intravenously twice daily and 1 g of metamizole sodium in 2 ml thrice daily. We also administered metronidazole 500 mg in 100 ml three times a day to prevent infections and cefotaxime 1,000 mg intravenously thrice daily for broad-spectrum protection. We injected 1,000 cc of sodium chloride (0.9% solution) and glucose to restore fluids and address nutritional needs.

Conclusion

Early detection and prompt intervention are crucial in preventing severe complications in pediatric patients. This case emphasizes the necessity of rapid diagnosis and increased awareness in clinical practice. Due to the Spleen's impaired viability, surgical intervention, namely a splenectomy, was required in this case. Following surgery, we provided comprehensive monitoring and pharmaceutical assistance to control pain, prevent infection, and maintain nutritional stability. This case illustrates the necessity of awareness of wandering spleens, especially in juvenile populations, and quick surgical surgery to reduce potential complications and assist patient recovery.

COI Statement: This paper has yet to be submitted in parallel, presented fully or partially at a meeting, podium, or congress, published, or submitted for consideration beforehand.

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References

1. Faridi, M. S., Kumar, A., Inam, L., & Shahid, R. (2014). Wandering Spleen- A diagnostic Challenge: Case Report and Review of Literature. *The Malaysian journal of medical sciences: MJMS*, *21*(6), 57–60.
2. Steinberg, R., Karmazyn, B., Dlugy, E., Gelber, E., Freud, E., Horev, G., & Zer, M. (2002). Clinical presentation of wandering spleen. *Journal of pediatric surgery*, *37*(10), E30. https://doi.org/10.1053/jpsu.2002.35443
3. Liu, H. T., & Lau, K. K. (2007). Wandering spleen: an unusual association with gastric volvulus. *AJR. American journal of roentgenology*, *188*(4), W328–W330. https://doi.org/10.2214/AJR.05.0672
4. Koliakos, E., Papazarkadas, X., Sleiman, M. J., Rotas, I., & Christodoulou, M. (2020). Wandering Spleen Volvulus: A Case Report and Literature Review of This Diagnostic Challenge. *The American journal of case reports*, *21*, e925301. https://doi.org/10.12659/AJCR.925301
5. Ahmad, H., Hamdar, H., Nahle, A. A., Martini, N., & Alkhatib, Z. (2023). A wandering spleen with 720° torsion and persistent ascending and descending mesocolon in a 5-year-old Syrian male: A case report. *International Journal of Surgery case Reports 107*, 108319. https://doi.org/10.1016/j.ijscr.2023.108319
6. Zhao, S., Wang, Y., Wan, Z., Chen, H., Zhao, X., & Li, R. (2022). A case report of wandering spleen with pedicle torsion and splenic infarction being misdiagnosed as organ inversion complicated with acute appendicitis. *Frontiers in surgery*, *9*, 916426. https://doi.org/10.3389/fsurg.2022.916426
7. Nhungo, C. J., Nsato, S. B., Lwakatare, F. A., Mbaga, A. A., Lyimo, F. R., & Mwanga, A. H. (2024). Wandering Spleen in a 47-year-old female treated by non-operative conservative management. Case report and literature review. *International journal of surgery case reports 120*, 109834. https://doi.org/10.1016/j.ijscr.2024.109834
8. Andrea G, Biberaj P, Shehi E, Laci I, Dogjani A. An incomplete torsion of the wandering enlarged spleen: a case report. Arch Balk Med Union. 2024;59(3):302-307. https://doi.org/10.31688/ABMU.2024.59.3.06
9. Virani, P., Farbod, A., Niknam, S., & Akhgari, A. (2021). Wandering spleen with splenic torsion: Report of two cases. *International journal of surgery case reports*, *78*, 274–277. https://doi.org/10.1016/j.ijscr.2020.12.039
10. Shibiru, Y. A., Wondimu, S., & Almaw, W. (2024). Wandering spleen presenting in the form of right sided pelvic mass and pain in a patient with AD-PCKD: a case report and review of the literature. *Journal of Medical Case Reports*, *18*(1), 259. https://doi.org/10.1186/s13256-024-04580-6
11. Bairwa, B. L., Gupta, S., Singh, A. K., & Gupta, P. (2022). Wandering spleen with torsion: a rare cause of acute abdomen in a 14-year-old girl. *Archive of clinical cases*, *9*(2), 56–61. https://doi.org/10.22551/2022.35.0902.10204