

Case Report:

Obstructed left – sided Amyand's hernia in a toddler

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Abstract:

Amyand's hernia refers to an inguinal hernia which contained the vermiform appendix in the hernia sac. It is more commonly found on the right side in relation to anatomical location of the vermiform appendix and left – sided Amyand's hernia is very rare. Herein, we report a case of left – sided Amyand's hernia with bowel obstruction in a 1 year 4 months old boy. The left groin mass was firm and tender, with skin erythema. However, the mass could not be completely incarcerated into the abdominal cavity. His abdomen was distended with sluggish bowel sound. A diagnosis of intestinal obstruction secondary to obstructed left inguino – scrotal hernia was made, and laparotomy was performed. During laparotomy, transverse skin incision was made on the upper abdomen, and the left inguinal canal was opened in accordance with the usual inguinal hernia repair. The hernia sac contained the appendix, caecum and twisted terminal ileal loops. Small bowel resection with primary anastomosis was performed with left herniorrhaphy. Appendix was preserved due to its normal appearance. He remained well during follow up with no hernia recurrence and testicular atrophy

Keywords: Amyand's hernia; Obstructed inguinal hernia; Mobile cecum

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Introduction:

Amyand's hernia refers to an inguinal hernia in which its sac contained the vermiform appendix¹. It is more commonly found on the right side in relation to anatomical location of the vermiform appendix and left – sided Amyand's hernia is very rare. Its clinical findings resembled incarcerated inguinal hernia; most reported cases were detected incidentally during surgery. Debates remained regarding whether to remove the non-inflamed vermiform appendix intra operatively. We hereby report a case of left – sided Amyand's hernia in a 1 year 4 months old boy with bowel obstruction.

Case presentation

We report a 1 year 4 months old boy, presented to emergency department with complaint of vomiting and left inguino – scrotal swelling, which had been irreducible for 2 days. The child had similar episode of an irreducible left inguinal hernia at the age of 1 year 2 months old, in which had been successfully reduced manually using sedation. He was initially scheduled for an early left herniotomy. Unfortunately, the case was postponed due to the child having active upper respiratory tract infection prior to scheduled surgery. On examination, he was tachycardiac and dehydrated. His abdomen was distended with no guarding. Examination of groin revealed a tender,

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irreducible left – sided inguino – scrotal swelling, with audible bowel sound(Figure 1).



Figure 1: An irreducible left inguino – scrotal swelling with thinning and erythema of overlying skin.

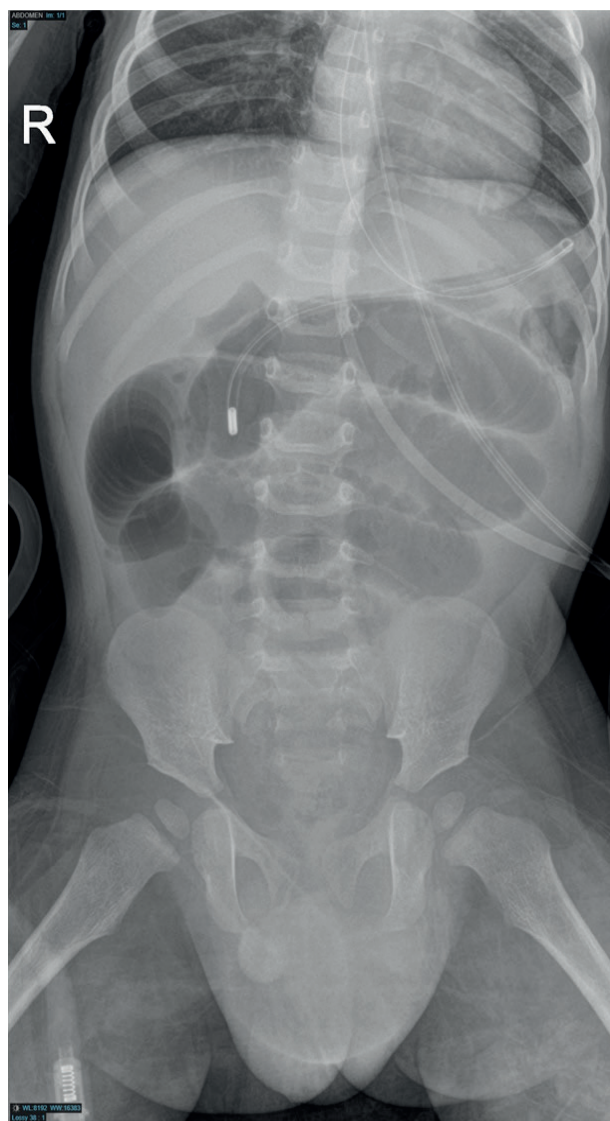


Figure 2: Plain abdominal radiograph showed dilated small bowel with absent large bowel gas in lower abdomen.

The laboratory results were within normal limits. Supine abdominal X-ray showed that there was no abnormal gas in the patient's left groin or scrotum but showed moderate dilatation of the small bowel with gas(Figure 2).

Our clinical diagnosis was intestinal obstruction secondary to obstructed left – sided inguino - scrotal hernia. Decision was made for emergency laparotomy.

After induction by general anesthesia, transverse skin incision made over the upper abdomen, the small bowel appeared dilated. However, we encountered difficulty in releasing the incarcerated hernia sac via

laparotomy. Therefore, another transverse skin incision was performed on the left inguinal region, which we were able to mobilize the hernia sac. The hernia sac contained a non-viable loop of terminal ileum, normal appendix and normal cecum. The ileal loop was twisted at the neck of the hernia sac(Figure 3).

Affected ileal loop was resected at 3 cm from the ileocaecal junction followed by primary anastomosis. Appendectomy was not performed due to its normal appearance. After the contents of the hernia were reduced into the peritoneal cavity, the hernia sac was dissected free from the spermatic cord, followed by left herniorrhaphy with high ligation of the sac (Potts procedure). Right inguinal canal was intact

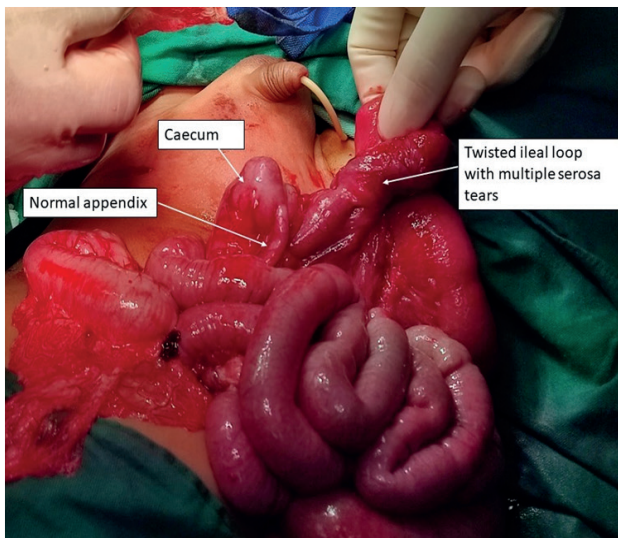


Figure 3: Intra operative finding during emergency surgery which showed the incarcerated hernia containing the normal appendix, caecum, and twisted ileal loops

on inspection during laparotomy. The child’s post-operative recovery was uneventful. His preoperative chest and abdominal X-ray reviewed did not indicate situs inversus. No inguinal hernia recurrence or testicular atrophy identified during his last follow – up visit 6 months post operatively.

Discussion:

Amyand’s hernia refers to an inguinal hernia sac containing vermiform appendix, which also present in our patient¹. Amyand’s hernia occurred in 0.4 – 0.6% among inguinal hernia in the general population, while it is estimated around 1% in the paediatric population¹. The appendix is usually found in the right hernia sac in view of its anatomical location, which occasionally followed with the caecum and/or right colon.

Table 1 illustrates clinical features of the reported cases of rare left–sided Amyand’s hernia based on our literature search, including our case^{1–11}. It is peculiar that those affected were boys except in few cases where their genders were not mentioned. We were unsure about the reason behind the male predominance. Analysis of reported cases shown that majority of cases were caused by mobile caecum, while intestinal malrotation or situs inversus were little^{1–11}. This may be related to weaker organ fixation and broader caecal movement in those young infants and toddlers¹¹.

In our case, preoperative radiograph did not suggest situs inversus, correlating with our operative findings,

Table 1: Characteristics of reported cases of left – sided pediatric Amyand’s hernia, including our case 1 in our manuscript was missing and we had included it below for your reference, we would appreciate if you can include it in our manuscript within discussion part.

Author	Year	Gender	Age (months)	Symptoms	Hernia contents	Appendicitis	Associated condition	Surgical managements
Gupta S (2)	2005	Male	9	Billous vomiting	Appendix, caecum	(-)	Mobile caecum	Herniorrhaphy
Gupta N (3)	2007	Male	11	Billous vomiting	Appendix, caecum, terminal ileum	(+)	Mobile caecum	Herniorrhaphy, appendectomy
Kaymakci A (4)	2009	NR	NR	NR	NR	(+) in one of three	Mobile caecum	Herniorrhaphy in three, appendectomy in one with appendicitis
	2009	NR	NR	NR	NR			
	2009	NR	NR	NR	NR			
Cankorkmaz L (5)	2010	Male	4	Vomiting	Appendix	(-)	Mobile caecum in the one, not known in the other	Herniorrhaphy, appendectomy in both cases
	2010	Male	2	Irreducible inguinal swelling	Appendix	(-)		
Khan R (6)	2011	Male	10	Scrotum swelling	Appendix, part of the caecum	(+)	Mobile caecum	Herniorrhaphy, appendectomy, another midline incision to explore malrotation, caecopexy
Singh K (7)	2011	Male	18	Billous vomiting, fever	Appendix, caecum (perforation)	(-)	Mobile caecum	Herniorrhaphy, closure of caecal perforation
Singh K (7)	2011	Male	18	Scrotum swelling	Appendix, caecum, terminal ileum (serosal tear)	(-)	Not known	Herniorrhaphy, repair of serosal tear
Pun A (8)	2013	Male	18	Vomiting	Appendix, sigmoid colon	(+)	Mobile caecum	Herniorrhaphy, appendectomy
Al-Mayoof (9)	2014	Male	4	Vomiting	Appendix, caecum	(-)	Situs inversus	Herniorrhaphy, appendectomy
	2014	Male	10	Billous vomiting, fever	Appendix, caecum	(-)	Mobile caecum	Herniorrhaphy, appendectomy
	2015	Male	8	Vomiting and left inguinal swelling	Appendix, caecum (serosal tears), terminal ileum	(-)	Mobile caecum	Herniorrhaphy with repair of serosal tears
Cigsar EB (10)	2016	Male	1	None	Appendix	(-)	Mobile caecum	Herniorrhaphy
Cigsar EB (10)	2016	Male	3	None	Appendix	(-)	Mobile caecum	Herniorrhaphy
Kurahachi T (11)	2019	Male	10	Left irreducible inguinal swelling	Appendix, terminal ileum, caecum and ascending colon	(-)	Mobile caecum	Bilateral herniorrhaphy
Our case	2021	Male	16	Vomiting, left inguinal swelling	Appendix, caecum, twisted ileal loop	(-)	Mobile caecum	Herniorrhaphy, small bowel resection with anastomosis

NR denotes not reported

we suspect that the mobile cecum is responsible for our child's incarcerated left – sided Amyand's hernia. Mechanical obstruction of the appendix at the deep inguinal ring can cause increased intra – appendix pressure, disruption of blood supply, and bacterial overgrowth, leading to associated appendicitis in Amyand's hernia⁵, which fortunately does not happen in our patient.

Role of appendectomy in Amyand's hernia is controversial. Some authors support prophylactic appendectomy in Amyand's hernia, in view of vermiform appendix adhesion to the base of the hernia sac, mobile cecum, coupled with possible intestinal malrotation, or situs inversus can create diagnostic dilemma for future appendicitis following herniorrhaphy. However, we did not perform prophylactic appendectomy in view of no sign of inflammation and loss of blood perfusion, as well as concern about risk of surgical site infection and longer operative time¹². Appendix in paediatric population has its function as gut microbiomes reservoirs, which normal appendix found during surgery should be preserved. Prophylactic appendectomy might risk causing surgical site infection, leading to morbidity¹³.

Our patient presented with groin swelling with skin erythema initially suspected as incarcerated inguinal hernia, however Amyand's hernia was detected intra operatively, which is rare and often difficult to diagnose preoperatively. Imaging modalities such as ultrasound or computed tomography can be helpful to confirm diagnosis of Amyand's hernia¹⁴.

We diagnosed our child as left – sided incarcerated inguinal hernia on clinical basis without those imaging studies, as we feel that immediate closed or surgical reduction is more important to relieve the damage to the incarcerated hernia contents.

Conclusion:

Clinicians should consider possibility of Amyand's hernia in cases of incarcerated left – sided inguinal hernia, especially in boys aged < 18 months. Preoperative imaging studies might not be useful as early reduction and appropriate surgery are needed. Normal appendix if found intraoperatively can be safely preserved, but an appendectomy should be performed if it was inflamed.

Patient consent: Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Conception and design: TSS, NO

Collection and assembly of data: TSS, MSMS

Critical revision of the article for important intellectual content: MSMS, NO

References:

1. Yoneyama F., Tanaka H., Ono K. *et al.* An incarcerated appendix and the ileocecum within a left inguinal hernia in an infant. *surg case rep* **1**, 61 (2015). <https://doi.org/10.1186/s40792-015-0064-y>
2. Gupta S, Sharma R, Kaushik R. Left-sided Amyand's hernia. *Singapore Med J.* 2005;**46**:424–5. PMID: 16049614
3. Gupta N, Wilkinson T, Wilkinson A, Akhtar M. Left-sided incarcerated Amyand's hernia. *Indian J Surg.* 2007;**69**:17–8. <http://dx.doi.org/10.2147/IMCRJ.S147177>
4. Kaymakci A., Akillioglu I., Akkoyun I. *et al.* Amyand's hernia: a series of 30 cases in children. *Hernia* 2009;**13**: 609–612 (). <https://doi.org/10.1007/s10029-009-0528-8>
5. Cankorkmaz L, Ozer H, Guney C, Atalar M, Arslan M, Koyluoglu G. Amyand's hernia in the children: a single center experience. *Surgery.* 2010;**147**:140–3. <https://doi.org/10.1016/j.surg.2009.09.038>
6. Khan RA., Wahab S. & Ghani I. Left-sided strangulated Amyand's hernia presenting as testicular torsion in an infant. *Hernia* **15**, 83–84 (2011). <https://doi.org/10.1007/s10029-009-0616-9>
7. Singh K, Singh RR, Kaur S. Amyand's hernia. *J Indian Assoc Pediatr Surg* [serial online] 2011 [cited 2022 Jan 24]; **16**: 171–2. Available from: <https://www.jiaps.com/text.asp?2011/16/4/171/86890>
8. Pun A, Khatri R. Left sided Amyand's hernia with sliding component. *J Nepal Med Assoc.* 2013;**52**:285–7. <https://doi.org/10.31729/jnma.577>
9. Al-Mayoof AF, Al-Ani BH. Left-sided Amyand hernia: report of two cases with review of literatures. *Eur J Pediatr Surg Rep.* 2014;**2**:63–6. <http://dx.doi.org/10.1055/s-0033-1347131>
10. Cigsar EB, Karadag CA, Dokucu AI. Amyand's hernia: 11 years of experience. *J Pediatr Surg* 2016; **51**(8): 1327–9. <https://doi.org/10.1016/j.jpedsurg.2015.11.010>
11. Kurahachi T, Higashidate N, Hashizume N, Fukahori S, Ishii S, Saikusa N, *et al.* Left – sided Amyand's hernia in an infant with bilateral inguinal hernia. *Journal of Pediatric Surgery Case Reports.* 2021; **67**: 101832. <https://doi.org/10.1016/j.epsc.2021.101832>
12. Losanoff JE, Basson MD. Amyand hernia: a classification to improve management. *Hernia* 2008; **12**(3): 325 – 6. <https://doi.org/10.1007/s10029-008-0331-y>
13. Michalinos A, Moris D, Vernadakis S. Amyand's hernia: a review. *Am J Surg.* 2014; **207**: 989–95. <https://doi.org/10.1016/j.amjsurg.2013.07.043>
14. Perrotti S, Bosco D, Miano D, Amico A, Latino R, Di Cataldo A. Incarcerated Amyand's hernia: a case report. *Int J Surg Case Rep* **51** (9): 265–267.