



Case Report

Large intestine as content of congenital inguinal hernia: A case report of intestinal obstruction



Dinesh Prasad Koirala^a, Surya Prakash Joshi^b, Sujan Timilsina^b, Vijay Shress^b, Saroj Gc^b,
Sujan Sharma^{b,*}

^a Department of Pediatric Surgery, Tribhuvan University Teaching Hospital, Kathmandu, Nepal

^b Maharajgunj Medical Campus, Institute of Medicine, Kathmandu, Nepal

ARTICLE INFO

Keywords:

Herniotomy
Inguinoscrotal
Large bowel
Obstruction
Processus vaginalis

ABSTRACT

Introduction and importance: Hernias containing appendix, caecum and transverse colon are uncommon in contrast with usual inguinal hernias containing small intestine. The patient usually presents with inguinoscrotal swelling.

Case presentation: We present a case of a 2 months old male child presented with inguinoscrotal swelling, vomiting with abdominal distention. On Ultrasonography (USG) of the scrotum, protrusion of the abdominal cavity contents through the right inguinal canal into the scrotum of approximately 3.4 cm × 0.7 cm was found which indicates right inguinal hernia. On the opening of the hernia sac during surgical management, the appendix, caecum and transverse colon were lying inside the hernia sac. Open Herniotomy was performed and the abdomen was closed in layers. Postoperative period of the patient was uneventful.

Discussion: Congenital inguinal hernia in the child occurs mostly due to persistent processus vaginalis. History and clinical examination reveals the appearance of lump in the inguinal region or scrotum. Preoperative Ultrasonography can be used to supplement the physical examination and increase the accuracy of its diagnosis. Although the laparoscopic approach is increasingly used nowadays, open hernia repair is preferred in young children.

Conclusion: Appendix, caecum and transverse colon are unusual contents of an inguinal hernia. Open herniotomy combined with relieving of the intestinal obstruction is the treatment of choice in young children.

1. Introduction

Inguinal hernia is protrusion of peritoneum, with or without its contents, through the anterior abdominal wall in the inguinal region [1]. Inguinal hernia are classified into direct and indirect hernia, depending on whether the protrusion is medial or lateral to the inferior epigastric vessels [2]. The majority of inguinal hernias in children and newborns are indirect and caused by a patent processus vaginalis [2,3]. Usually inguinal hernia comprises of omentum and small intestine [4]. In contrast, our case had an inguinal hernia containing appendix, caecum and transverse colon.

Here, we present a case of a congenital inguinal hernia in a 2 months old boy who presented with inguinoscrotal swelling, vomiting and abdominal distention.

This work has been reported in line with the SCARE criteria [5].

2. Case presentation

A 2 months male child presented in our Emergency Room with a chief complaint of inguinoscrotal swelling for 3 days and vomiting for 2 days with a distended abdomen. The swelling was not prominent during crying. He had not passed stool and urine for the last 2 days and flatus since a day back. Vomiting was severe followed by nausea and was bile stained. Parents had not recognized the rise in body temperature during those episodes. His feeding habit was altered during that period and he used to cry and avoid breastfeeding. That was the first time a child had such complaints and before that, he was all right. According to his father, the birth of the baby was normal with a weight of 2.4 Kg, and there were not any complications after the birth. He had suckled mother milk and passed meconium within 3 hours of birth.

On examination of vitals, the temperature was 99.5°F, pulse rate was

* Corresponding author. Maharajgunj Medical Campus, Institute of Medicine, Kathmandu, P.O. Box: 1524, Nepal.

E-mail addresses: koiraladinesh1@hotmail.com (D.P. Koirala), surya.joshi091@iom.edu.np (S.P. Joshi), sujan.s10@iom.edu.np (S. Timilsina), creezvj@gmail.com (V. Shress), gcsaroj88@gmail.com (S. Gc), sharmasujan@iom.edu.np (S. Sharma).

<https://doi.org/10.1016/j.amsu.2022.103396>

Received 8 January 2022; Received in revised form 10 February 2022; Accepted 21 February 2022

Available online 3 March 2022

2049-0801/© 2022 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

159 beats per minute, respiratory rate was 64 breaths per minute, capillary refill time was less than 2 sec and normal oxygen saturation in room air. Examination regarding primary assessment was found to be normal except for hydration. He had mild dehydration at the time of presentation. Then systemic examination was performed, the abdomen was found to be distended and bowel sound was diminished. The scrotal sac was swollen, tender and inflamed. Other systems were grossly intact and unremarkable during an examination.

Emergency management was done before sending for diagnostic tests. Intravenous infusion of ½ normal saline along with 5ml KCl was administered at the rate of 16 ml per hour in order to manage dehydration.

On investigations, all the blood parameters were found to be in normal range except for the differential count of white blood cells where lymphocytes count increased to 63% and neutrophils count decreased to 24%. Hemoglobin level was 8 gm per dl. A plain upright x-ray (Fig. 1) of abdomen and pelvis was done which showed dilated bowel loops with multiple air-fluid levels suggesting intestinal obstruction. A USG of the scrotum was performed for further distinction, which revealed protrusion of the abdominal cavity contents through the right inguinal canal into the scrotum of approximately 3.4 cm × 0.7 cm, indicating a right obstructed inguinal hernia.

Under general anesthesia, surgical management of the obstructed hernia was performed with the lowermost transverse crease to reach the abdomen. On the opening of the hernia sac, the appendix, caecum and transverse colon were lying inside the hernia sac (Fig. 2). No content of the hernial sac was necrosed; viability of the intestine was ensured and the appendix was not inflamed. All the contents were reduced in the abdominal cavity. Open herniotomy was performed and the abdomen was closed in layers. The postoperative period of the patient was uneventful. And he was discharged after three days in the hospital, with all vital signs stable and blood parameters within the normal range at the time of discharge.

3. Clinical discussion

Inguinal hernias commonly occur in males due to weakness in the region of inguinal canal where spermatic cord passes [1]. One third of males are diagnosed with an inguinal hernia at some point in their lives which have a bimodal age distribution with the highest incidence in childhood and beyond 50 years of age [6]. In children, congenital inguinal hernia occurs as a result of patent processus vaginalis [7]. About 1–5% of full-term babies are estimated to have inguinal hernia

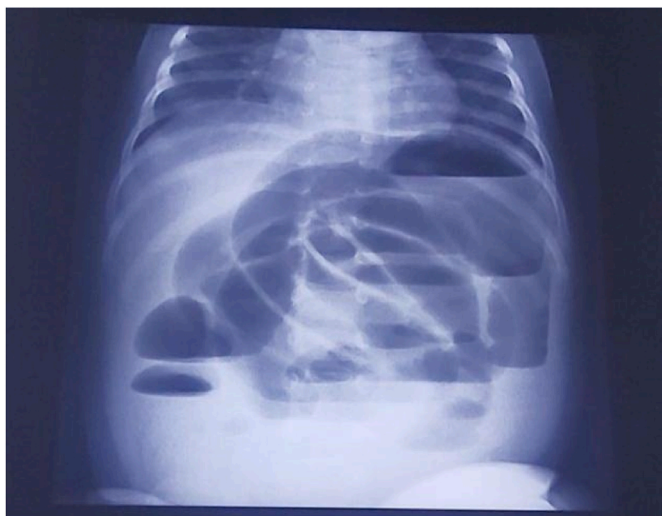


Fig. 1. Erect abdominal X-ray showing dilated bowel loops and multiple fluid levels.

among which most of them are boys. Indirect inguinal hernias account for nearly all of these hernias [8]. Our patient was a 2-months old boy with an obstructed indirect inguinal hernia.

Inguinal hernias are diagnosed clinically based on the common signs and symptoms [1]. Initially, the patients are assessed based on their history and clinical examination which reveals the appearance of lump in the inguinal region or scrotum [9]. The lump may be more noticeable or change its size with coughing and crying [8]. In our case the patient presented with inguinoscrotal swelling.

Hydrocele, encysted hydrocele of the cord and undescended testis were kept as differentials for the presenting complaint of an inguinoscrotal swelling. These differentials were ruled out by physical examinations. To get above the swelling was not possible and transillumination test was negative which narrowed down the diagnosis to inguinal hernia [8].

Inguinal hernias can be reducible or irreducible. In irreducible hernias, presence or absence of strangulation should be differentiated [1]. Strangulated hernia complicates the situation as the blood supply to the intestine is compromised subsequently leading to intestinal obstruction, necrosis and perforation [8]. Our patient had irreducible hernia associated with signs of intestinal obstruction but there were no signs of strangulation. Confirmation of the intestinal obstruction in our patient was made on the basis of presence of dilated bowel loops and multiple air fluid levels in the erect abdominal x-ray (Fig. 1) [8,10].

Ultrasonography(USG) is the first choice of investigation in case of occult hernias that are not discovered on clinical examination [11]. Moreover, preoperative USG can be used as a diagnostic tool to supplement the clinical examination findings and hence increase the accuracy of diagnosis of inguinal hernia [12]. Our patient also underwent USG of the scrotum which showed the herniation of abdominal cavity through right inguinal canal confirming it to be a right inguinal hernia.

Clinical experience and consensus suggest that surgical intervention is an effective treatment for inguinal hernia [1]. By assessing the risk of incarceration and strangulation in our case, surgeons preferred immediate open herniotomy. Watchful waiting strategy should be chosen after considering risk and benefit by the surgeons [13]. Herniotomy is the most preferred management strategy for inguinal hernia in younger children. However, the laparoscopic approach is increasingly used nowadays as it offers better visualization of the inguinal region, thereby helping in detection of contralateral patent processus vaginalis [14].

Overall, inguinal hernias are associated with a good prognosis. There is no significant difference regarding the recurrence rate of open hernia repair (0–6%) and laparoscopic hernia repair (0–5.5%). Other postoperative complications are chronic pain, hydrocele, wound infection, iatrogenic cryptorchidism, testicular atrophy, and injury to the spermatic cord elements [15].

4. Conclusion

Inguinal hernias are diagnosed solely based on clinical examination supplemented by preoperative ultrasonography. Such hernias containing appendix, caecum and transverse colon are rare and usually associated with intestinal obstruction. Hernia repair along with relief of the intestinal obstruction is the mainstay of the treatment.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval

Not Required.

Sources of funding

None.

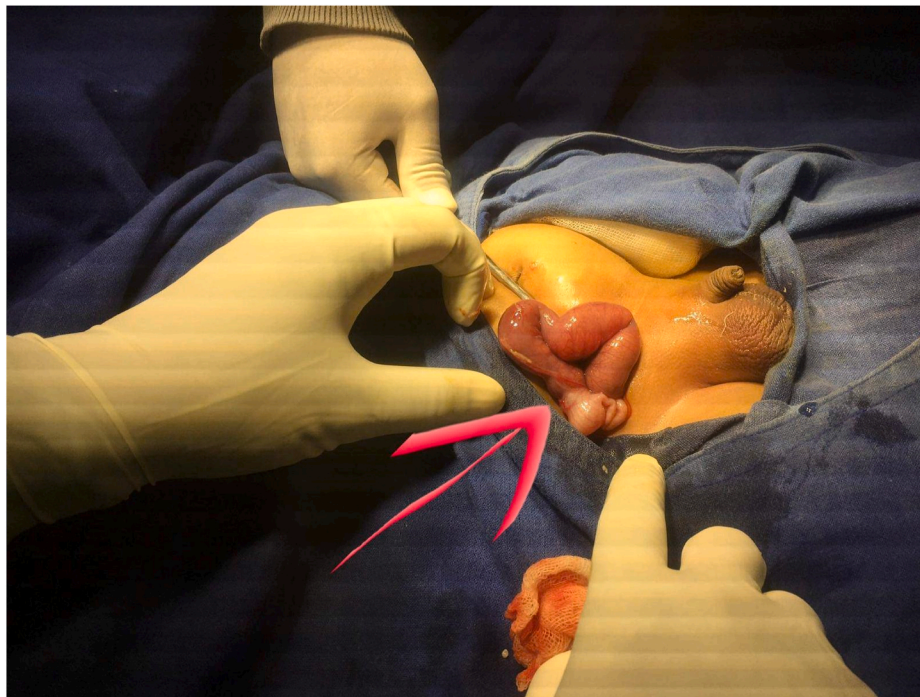


Fig. 2. Intraoperative findings: Hernia containing portions of large intestine.

Authors contribution

Dinesh Prasad Koirala(DPK), Sujan Sharma (SS) = Study concept, Data collection, and surgical therapy for the patient.

Sujan Sharma (SS), Sujan Timilsina (ST), Surya Prakash Joshi (SPJ), Saroj GC(SG) = Writing- original draft preparation.

Sujan Timilsina (ST), Surya Prakash Joshi (SPJ), Vijay Shress (VS) = Editing and writing.

Dinesh Prasad Koirala(DPK) = Senior author and manuscript reviewer.

All the authors read and approved the final manuscript.

Registration of research studies

1. Name of the registry: N/A.
2. Unique Identifying number or registration ID: N/A.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): N/A.

Consent

Written informed consent was obtained from the patient father for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Guarantor

Dinesh Prasad Koirala accepts full responsibility for the work and/or the conduct of the study, has access to the data, and controls the decision to publish.

Declaration of competing interest

None.

Acknowledgement

None.

References

- [1] S. Purkayastha, A. Chow, T. Athanasiou, P. Tekkis, A. Darzi, Inguinal hernia, *BMJ Clin. Evid.* [Internet] (2008 Jul 16;2008). Available from: <https://www.ncbi.nlm.nih.gov/pubmed/19445744>.
- [2] A. Shakil, K. Aparicio, E. Barta, K. Munez, Inguinal hernias: diagnosis and management, *Am. Fam. Phys.* [Internet] 102 (8) (2020 Oct 15) 487–492. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/33064426>.
- [3] A. Bonnard, Y. Aigrain, [Inguinal hernias in children], *Rev. Prat.* [Internet] 53 (15) (2003 Oct 15) 1667–1670. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/14689912>.
- [4] S. Goyal, M. Shrivastva, R.K. Verma, S. Goyal, “Uncommon contents of inguinal hernial sac”: a surgical dilemma [internet], *Indian J. Surg.* 77 (2015), <https://doi.org/10.1007/s12262-013-0806-7>, 305–9. Available from:.
- [5] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, A. Thoma, et al., The SCARE 2020 guideline: updating consensus surgical CAse REport (SCARE) guidelines [internet], *Int. J. Surg.* 84 (2020) 226–230, <https://doi.org/10.1016/j.ijvs.2020.10.034>. Available from:.
- [6] M.R. Berndsen, T. Gudbjartsson, F.H. Berndsen, [Inguinal hernia - review], *Laeknabladid* [Internet] 105 (9) (2019 Sep) 385–391, <https://doi.org/10.17992/ibl.2019.09.247>. Available from:.
- [7] V. Cascini, G. Lisi, D. Di Renzo, N. Pappalepore, P. Lelli Chiesa, Irreducible indirect inguinal hernia containing uterus and bilateral adnexa in a premature female infant: report of an exceptional case and review of the literature, *J. Pediatr. Surg.* [Internet] 48 (1) (2013 Jan) e17–e19, <https://doi.org/10.1016/j.jpedsurg.2012.09.065>. Available from:.
- [8] E. Yeap, M. Pacilli, R.M. Nataraja, Inguinal hernias in children, *Aust. J. Gen. Pract.* [Internet] 49 (1–2) (2020 Jan) 38–43, <https://doi.org/10.31128/AJGP-08-19-5037>. Available from:.
- [9] C. Esposito, M. Escolino, F. Turrà, A. Roberti, M. Cerulo, A. Farina, et al., Current concepts in the management of inguinal hernia and hydrocele in pediatric patients in laparoscopic era, *Semin. Pediatr. Surg.* [Internet] 25 (4) (2016 Aug) 232–240, <https://doi.org/10.1053/j.sempepsurg.2016.05.006>. Available from:.
- [10] P.G. Jackson, M.T. Raiji, Evaluation and management of intestinal obstruction, *Am. Fam. Phys.* [Internet] 83 (2) (2011 Jan 15) 159–165. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/21243991>.
- [11] A. Robinson, D. Light, A. Kasim, C. Nice, A systematic review and meta-analysis of the role of radiology in the diagnosis of occult inguinal hernia, *Surg. Endosc.* [Internet] 27 (1) (2013 Jan) 11–18, <https://doi.org/10.1007/s00464-012-2412-3>. Available from:.
- [12] B.M. Kraft, H. Kolb, B. Kuckuk, S. Haaga, B.J. Leibl, K. Kraft, et al., Diagnosis and classification of inguinal hernias, *Surg. Endosc.* [Internet] 17 (12) (2003 Dec) 2021, <https://doi.org/10.1007/s00464-002-9283-y>, 4. Available from:.

- [13] C.S. Olesen, L.Q. Mortensen, S. Öberg, J. Rosenberg, Risk of incarceration in children with inguinal hernia: a systematic review, *Hernia* [Internet] 23 (2) (2019 Apr) 245–254, <https://doi.org/10.1007/s10029-019-01877-0>. Available from:.
- [14] K. Dreuning, S. Maat, J. Twisk, E. van Heurn, J. Derikx, Laparoscopic versus open pediatric inguinal hernia repair: state-of-the-art comparison and future perspectives from a meta-analysis, *Surg. Endosc.* [Internet] 33 (10) (2019 Oct) 3177–3191, <https://doi.org/10.1007/s00464-019-06960-2>. Available from:.
- [15] C. Esposito, S.D. St Peter, M. Escolino, D. Juang, A. Settimi, G.W. Holcomb 3rd, Laparoscopic versus open inguinal hernia repair in pediatric patients: a systematic review, *J. Laparoendosc. Adv. Surg. Tech. A* [Internet] 24 (11) (2014 Nov) 811–818, <https://doi.org/10.1089/lap.2014.0194>. Available from:.