

# World Journal of *Clinical Cases*

*World J Clin Cases* 2019 October 26; 7(20): 3168-3383



**OPINION REVIEW**

- 3168** Clinical use of low-dose aspirin for elders and sensitive subjects  
*Zhang Y, Fang XM, Chen GX*

**ORIGINAL ARTICLE****Retrospective Study**

- 3175** Distribution and drug resistance of pathogenic bacteria in emergency patients  
*Huai W, Ma QB, Zheng JJ, Zhao Y, Zhai QR*
- 3185** Comparative analysis of robotic *vs* laparoscopic radical hysterectomy for cervical cancer  
*Chen L, Liu LP, Wen N, Qiao X, Meng YG*
- 3194** Feasibility of laparoscopic isolated caudate lobe resection for rare hepatic mesenchymal neoplasms  
*Li Y, Zeng KN, Ruan DY, Yao J, Yang Y, Chen GH, Wang GS*
- 3202** Rh-incompatible hemolytic disease of the newborn in Hefei  
*Bi SH, Jiang LL, Dai LY, Zheng H, Zhang J, Wang LL, Wang C, Jiang Q, Liu Y, Zhang YL, Wang J, Zhu C, Liu GH, Teng RJ*
- 3208** Soft tissue release combined with joint-sparing osteotomy for treatment of cavovarus foot deformity in older children: Analysis of 21 cases  
*Chen ZY, Wu ZY, An YH, Dong LF, He J, Chen R*

**Observational Study**

- 3217** Clinical characteristics of sentinel polyps and their correlation with proximal colon cancer: A retrospective observational study  
*Wang M, Lu JJ, Kong WJ, Kang XJ, Gao F*

**Prospective Study**

- 3226** Longitudinal observation of intraocular pressure variations with acute altitude changes  
*Xie Y, Sun YX, Han Y, Yang DY, Yang YQ, Cao K, Li SN, Li X, Lu XX, Wu SZ, Wang NL*

**Randomized Controlled Trial**

- 3237** Combination of propofol and dezocine to improve safety and efficacy of anesthesia for gastroscopy and colonoscopy in adults: A randomized, double-blind, controlled trial  
*Li XT, Ma CQ, Qi SH, Zhang LM*

**META-ANALYSIS**

- 3247** Prognostic significance of malignant ascites in gastric cancer patients with peritoneal metastasis: A systemic review and meta-analysis  
*Zheng LN, Wen F, Xu P, Zhang S*

**CASE REPORT**

- 3259** Gonadotrophin-releasing hormone agonist-induced pituitary adenoma apoplexy and casual finding of a parathyroid carcinoma: A case report and review of literature  
*Triviño V, Fidalgo O, Juane A, Pombo J, Cordido F*
- 3267** Constrictive pericarditis as a cause of refractory ascites after liver transplantation: A case report  
*Bezjak M, Kocman B, Jadrijević S, Gašparović H, Mrzljak A, Kanižaj TF, Vujanić D, Bubalo T, Mikulić D*
- 3271** Endoluminal closure of an unrecognized penetrating stab wound of the duodenum with endoscopic band ligation: A case report  
*Kim DH, Choi H, Kim KB, Yun HY, Han JH*
- 3276** Spontaneous superior mesenteric artery dissection following upper gastrointestinal panendoscopy: A case report and literature review  
*Ou Yang CM, Yen YT, Chua CH, Wu CC, Chu KE, Hung TI*
- 3282** Hepatic amyloidosis leading to hepatic venular occlusive disease and Budd-Chiari syndrome: A case report  
*Li TT, Wu YF, Liu FQ, He FL*
- 3296** De Winter syndrome and ST-segment elevation myocardial infarction can evolve into one another: Report of two cases  
*Lin YY, Wen YD, Wu GL, Xu XD*
- 3303** Next generation sequencing reveals co-existence of hereditary spherocytosis and Dubin-Johnson syndrome in a Chinese girl: A case report  
*Li Y, Li Y, Yang Y, Yang WR, Li JP, Peng GX, Song L, Fan HH, Ye L, Xiong YZ, Wu ZJ, Zhou K, Zhao X, Jing LP, Zhang FK, Zhang L*
- 3310** Recognizable type of pituitary, heart, kidney and skeletal dysplasia mostly caused by SEMA3A mutation: A case report  
*Hu F, Sun L*
- 3316** Dermatofibrosarcoma metastases to the pancreas: A case report  
*Cai HJ, Fang JH, Cao N, Wang W, Kong FL, Sun XX, Huang B*
- 3322** Repeated lumps and infections: A case report on breast augmentation complications  
*Zhang MX, Li SY, Xu LL, Zhao BW, Cai XY, Wang GL*

- 3329** Severe mental disorders following anti-retroviral treatment in a patient on peritoneal dialysis: A case report and literature review  
*He QE, Xia M, Ying GH, He XL, Chen JH, Yang Y*
- 3335** Fish bone-induced myocardial injury leading to a misdiagnosis of acute myocardial infarction: A case report  
*Wang QQ, Hu Y, Zhu LF, Zhu WJ, Shen P*
- 3341** Potentially fatal electrolyte imbalance caused by severe hydrofluoric acid burns combined with inhalation injury: A case report  
*Fang H, Wang GY, Wang X, He F, Su JD*
- 3347** Ureter - an unusual site of breast cancer metastasis: A case report  
*Zhou ZH, Sun LJ, Zhang GM*
- 3353** Alternative technique to save ischemic bowel segment in management of neonatal short bowel syndrome: A case report  
*Geng L, Zhou L, Ding GJ, Xu XL, Wu YM, Liu JJ, Fu TL*
- 3358** Sister Mary Joseph's nodule in endometrial carcinoma: A case report  
*Li Y, Guo P, Wang B, Jia YT*
- 3364** Synchronous quadruple primary malignancies of the cervix, endometrium, ovary, and stomach in a single patient: A case report and review of literature  
*Wang DD, Yang Q*
- 3372** Ureteral Ewing's sarcoma in an elderly woman: A case report  
*Li XX, Bi JB*
- 3377** Anaplastic lymphoma kinase-negative anaplastic large cell lymphoma masquerading as Behcet's disease: A case report and review of literature  
*Luo J, Jiang YH, Lei Z, Miao YL*

**ABOUT COVER**

Editorial Board Member of *World Journal of Clinical Cases*, Faycal Lakhdar, MD, Professor, Department of Neurosurgery, University Hospital Center of Fes, University Sidi Mohammed Ben Abdellah, FES 10000, Morocco

**AIMS AND SCOPE**

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

**INDEXING/ABSTRACTING**

The WJCC is now indexed in PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2019 Edition of Journal Citation Reports cites the 2018 impact factor for WJCC as 1.153 (5-year impact factor: N/A), ranking WJCC as 99 among 160 journals in Medicine, General and Internal (quartile in category Q3).

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Responsible Electronic Editor: Ji-Hong Liu

Proofing Production Department Director: Yun-Xiaojuan Wu

**NAME OF JOURNAL**

*World Journal of Clinical Cases*

**ISSN**

ISSN 2307-8960 (online)

**LAUNCH DATE**

April 16, 2013

**FREQUENCY**

Semimonthly

**EDITORS-IN-CHIEF**

Dennis A Bloomfield, Bao-Gan Peng, Sandro Vento

**EDITORIAL BOARD MEMBERS**

<https://www.wjnet.com/2307-8960/editorialboard.htm>

**EDITORIAL OFFICE**

Jin-Lei Wang, Director

**PUBLICATION DATE**

October 26, 2019

**COPYRIGHT**

© 2019 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

<https://www.wjnet.com/bpg/gerinfo/204>

**GUIDELINES FOR ETHICS DOCUMENTS**

<https://www.wjnet.com/bpg/GerInfo/287>

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

<https://www.wjnet.com/bpg/gerinfo/240>

**PUBLICATION MISCONDUCT**

<https://www.wjnet.com/bpg/gerinfo/208>

**ARTICLE PROCESSING CHARGE**

<https://www.wjnet.com/bpg/gerinfo/242>

**STEPS FOR SUBMITTING MANUSCRIPTS**

<https://www.wjnet.com/bpg/GerInfo/239>

**ONLINE SUBMISSION**

<https://www.f6publishing.com>

# Alternative technique to save ischemic bowel segment in management of neonatal short bowel syndrome: A case report

Lei Geng, Lei Zhou, Guo-Jian Ding, Xiao-Liang Xu, Yu-Mei Wu, Ji-Jun Liu, Ting-Liang Fu

**ORCID number:** Lei Geng (0000-0002-0114-8627); Lei Zhou (0000-0003-4615-645X); Guo-Jian Ding (0000-0002-9114-7483); Xiao-Liang Xu (0000-0003-3994-6154); Yu-Mei Wu (0000-0001-6532-3503); Ji-Jun Liu (0000-0002-9254-6734); Ting-Liang Fu (0000-0002-3048-1357).

**Author contributions:** Zhou L and Geng L contributed equally to this work; Fu TL designed research; Fu TL, Geng L, Ding GJ, Xu XL, Wu YM and Liu JJ performed research; Zhou L and Ding GJ wrote the paper; Fu TL is the guarantor.

## Informed consent statement:

Written informed consent was obtained from the guardians of the patient for publication of this case report and accompanying images.

**Conflict-of-interest statement:** The authors declare that there is no conflict of interest related to this report.

## CARE Checklist (2016) statement:

The manuscript was prepared and revised according to the CARE Checklist (2016).

**Open-Access:** This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and

**Lei Geng, Guo-Jian Ding, Xiao-Liang Xu, Ting-Liang Fu,** Department of Pediatric Surgery, Binzhou Medical University Hospital, Binzhou 256603, Shandong Province, China

**Lei Zhou,** Department of Hepatobiliary Surgery, Binzhou Medical University Hospital, Binzhou 256603, Shandong Province, China

**Yu-Mei Wu,** Department of Neonatology, Binzhou Medical University Hospital, Binzhou 256603, Shandong Province, China

**Ji-Jun Liu,** Department of Anorectal Surgery, Binzhou Medical University Hospital, Binzhou 256603, Shandong Province, China

**Corresponding author:** Ting-Liang Fu, MD, PhD, Chief Doctor, Director, Department of Pediatric Surgery, Binzhou Medical University Hospital, Binzhou 256603, Shandong Province, China. [drfutl@sina.com](mailto:drfutl@sina.com)

**Telephone:** +86-543-3258672

## Abstract

### BACKGROUND

Congenital short bowel syndrome (SBS) associated with malrotation, gut volvulus and jejuno-ileal atresia is a very rare condition. It is a severe challenge for surgeons to preserve residual ischemic bowel segment in the management of short bowel syndrome, especially in neonates.

### CASE SUMMARY

We report a newborn baby with gut malrotation associated with jejuno-ileal atresia, congenital SBS and jejunal volvulus. Hematemesis and abdominal distention were noted. At laparotomy, malrotation associated with jejuno-ileal atresia, congenital SBS and jejunal volvulus was confirmed. The total length of the small bowel was 63 cm with proximal jejunal bowel segment measuring 38 cm, including 18 cm necrotic segment below the Treitz's ligament and 20 cm severe ischemic segment. The distal part of the small bowel was 25 cm in length and only about 0.8 cm in diameter. Ladd's procedure, necrotic segment resection and end-to-back duodeno-ileal anastomosis were performed. The residual severe ischemic jejunum was preserved with single proximal stoma and distal end closure. Three months later, to restore the continuity of the isolated gut segment, end-to-end duodeno-jejunal and jejuno-ileal anastomosis was performed. The entire functional small bowel length increased to 80 cm. Intravenous fluid therapy and parenteral nutrition were discontinued on the 10<sup>th</sup> day postoperatively. Twelve months later, her body weight was 9.5 kg.



the use is non-commercial. See:  
<http://creativecommons.org/licenses/by-nc/4.0/>

**Manuscript source:** Unsolicited manuscript

**Received:** July 19, 2019

**Peer-review started:** July 22, 2019

**First decision:** August 2, 2019

**Revised:** September 3, 2019

**Accepted:** September 9, 2019

**Article in press:** September 9, 2019

**Published online:** October 26, 2019

**P-Reviewer:** Akarsu M, Sikiric P

**S-Editor:** Zhang L

**L-Editor:** Filipodia

**E-Editor:** Qi LL



## CONCLUSION

Isolation of severe ischemic bowel segment and staged anastomosis to restore the gut continuity for infants with SBS are safe and feasible.

**Key words:** Ischemic bowel segment; Short bowel syndrome; Bowel isolation technique; Staged salvaging procedure; Case report

©The Author(s) 2019. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** Congenital short bowel syndrome (SBS) associated with malrotation, gut volvulus and jejuno-ileal atresia is a very rare condition. A newborn baby with gut malrotation associated with jejuno-ileal atresia, congenital short bowel syndrome, and jejunal volvulus. Ladd's procedure, necrotic segment resection, end-to-back duodeno-ileal anastomosis were performed. Isolation of severe ischemic bowel segment and staged anastomosis to restore the gut continuity for infant with SBS are safe and feasible.

**Citation:** Geng L, Zhou L, Ding GJ, Xu XL, Wu YM, Liu JJ, Fu TL. Alternative technique to save ischemic bowel segment in management of neonatal short bowel syndrome: A case report. *World J Clin Cases* 2019; 7(20): 3353-3357

**URL:** <https://www.wjnet.com/2307-8960/full/v7/i20/3353.htm>

**DOI:** <https://dx.doi.org/10.12998/wjcc.v7.i20.3353>

## INTRODUCTION

Massive resection of bowel segment with severe ischemia and doubtful necrosis usually leads to short bowel syndrome (SBS)<sup>[1]</sup>. Patients with SBS have a high risk of being permanently dependent on parenteral nutrition, late severe complications and poor life quality<sup>[2]</sup>. Therefore, extensive small bowel ischemia and necrosis always present a severe challenge for surgeons. The need for and extent of resection necessary during laparotomy are difficult to determine<sup>[3]</sup>. In order to avoid SBS, many techniques have been performed. Several methods directed at increasing absorption by prolonging transit time through the residual small intestine, like vagotomy and pyloroplasty<sup>[4]</sup> and recirculating small bowel loops<sup>[5]</sup> have been used. There are reports of methods for increasing the absorptive mucosal surface area by stimulating the development of jejunal neomucosa<sup>[6]</sup>. Some studies have been designed to increase the length of the residual small bowel<sup>[7]</sup>. Palmieri *et al*<sup>[8]</sup> introduced a three-staged method for ischemic bowel management, which provided an approach to maximally preserve the bowel with reversible high-grade ischemic changes instead of extensive resection of severe ischemic bowel segment. Here we describe an alternative two-staged approach to save severe ischemic bowel segment in a newborn baby with malrotation associated with jejunal volvulus, jejuno-ileal atresia and congenital SBS.

## CASE PRESENTATION

### Chief complaints

A female neonate at 5 h after birth with multiple episodes of vomiting.

### History of present illness

A female neonate of 38 wk gestation, weighing 2.95 kg and born by cesarean delivery. She was transferred to our hospital at 5 h after birth with multiple episodes of hematemesis and abdominal distention.

### Physical examination upon admission

Gross distention and visible bowel loops in upper abdomen, without tenderness, rigidity or visible peristalsis were observed. No bowel sounds were heard, and no mass or organomegaly was palpated. No meconium passed after enema with warm normal saline. No abnormalities were found in other organ systems.

### Laboratory examinations

Peripheral white blood cell count and serum C-reactive protein level increased.

### Imaging examinations

Abdominal plain X-ray film showed a few air-fluid levels in the left upper abdomen. Ultrasound of the abdomen revealed a dilated small bowel measuring 3.4 cm in the maximum diameter.

## FINAL DIAGNOSIS

After informed consent was obtained from her guardians, the newborn baby underwent a laparotomy and diagnosed with intestinal atresia and volvulus. There were 100 mL turbid dark-green ascites in the abdominal cavity, indicating the existence of meconium peritonitis. Ladd's band was noted in the second part of duodenum. The cecum located beneath the liver and terminal ileum was not fixed. A 360 degree clockwise jejunum volvulus was observed. Type IIIa jejuno-ileal atresia with V-shaped mesenteric defect was identified. The total length of the small bowel was 63 cm with the proximal jejunal bowel segment measuring 38 cm in length and 2.0-3.5 cm in diameter, including 18 cm necrotic segment just below the Treitz's ligament and 20 cm severe ischemic segment with perforation at the proximal end of the atresia. The distal part of the small bowel was 25 cm in length and 0.8 cm in diameter. The ileocecal valve was intact. The diagnosis of gut malrotation associated with jejuno-ileal atresia, congenital SBS and jejunal volvulus and segmental bowel necrosis (Figure 1) was made.

## TREATMENT

Ladd's procedure was performed. The proximal necrotic jejunal segment (18 cm in length) was excised. A single-layer end-to-back duodeno-ileal anastomosis was done. The residual severe ischemic jejunum was preserved with single proximal stoma and distal end closure. The total functional small bowel was 25 cm in length with intact ileal-cecal valve.

Postoperatively, intermittent parenteral nutrition combined with enteral feeding (including breastfeeding) was applied. The stoma gradually became normal 1 wk later following severe ischemia and edema. To improve the isolated gut adaptation, normal saline and hydrolyzed protein formula were infused through the stoma 1 mo later. Her body weight decreased from 2.95 kg at birth to 2.2 kg at 3 mo of age. After 1-wk parenteral nutrition through central venous catheter and breastfeeding, a second procedure was planned to restore the gut continuity of the isolated jejunal segment. Intraoperative findings showed that ileum adaption was achieved and measured 48 cm in length (*vs* 25 cm at birth) and 2 cm in diameter (*vs* 0.8 cm at birth). The isolated segment also became adapted and measured 32 cm in length and 1.5-2 cm in diameter with normal color and peristalsis. Following the primary anastomosis, end-to-end duodeno-jejunal and jejuno-ileal anastomosis was performed using two-layer sutures to restore the continuity of the bowel. The bowel mucosal structure from the site of the ileal stoma was observed (Figure 2).

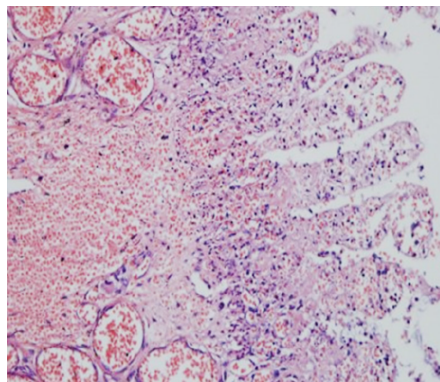
## OUTCOME AND FOLLOW-UP

After the gut continuity of the isolated segment was restored, the entire functional small bowel length became 80 cm. Intravenous fluid therapy and parenteral nutrition were discontinued on the 10<sup>th</sup> day postoperatively. She tolerated total enteral nutrition well and was discharged from hospital on postoperative day 13 without complications. Twelve months later, her body weight increased to 9.5 kg (25<sup>th</sup> percentile for her age).

## DISCUSSION

Congenital SBS is a rare gastrointestinal disorder. The management of congenital SBS has improved in recent decades due to refinement in operative technique<sup>[9]</sup> and postoperative nutrition therapy<sup>[10]</sup>. The surgical management of congenital SBS is individualized and mainly involves autologous gastrointestinal reconstruction including tapering enteroplasty<sup>[11]</sup>, Bianchi's longitudinal intestinal lengthening and tailoring<sup>[12]</sup> and serial transverse enteroplasty<sup>[13]</sup>. Intestinal transplantation is the last resort for cure<sup>[14]</sup>.





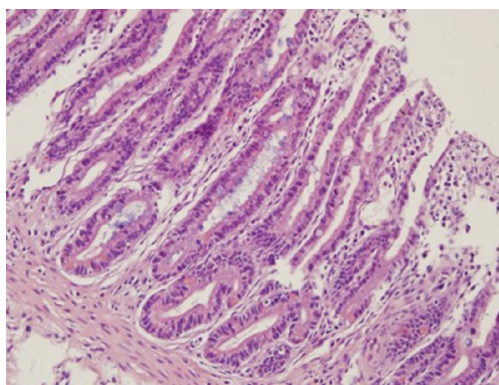
**Figure 1** Pathologic section of resected ileum showing transmural necrosis (×200).

Bowel with clearly irreversible full-thickness injury or no evidence of peristalsis or blood flow at “second look” operations needs to be resected. However, persistent ischemia or perforation of involved bowel may require further resection in the early postoperative period. The judgment and experience of the surgeons play a vital role in determining which bowel segment should be preserved or resected. Whatever surgical approach is used in the management of SBS to preserve as much bowel as possible is an important factor to prevent and treat SBS<sup>[15]</sup>. In our experience, by establishing isolation segment, the viability of the bowel segment can be monitored through the stoma instead of a “second look” surgery. If this segment became necrotic, resection of the bowel is easier to perform through the stoma. Moreover, single proximal stoma might be superior to two-end stomas for three reasons: (1) Bowel segment dilatation and elongation may occur due to fluid retention in the lumen; (2) One incision is easier to take care and has a cosmetic result; and (3) It is helpful to implement tube feeding.

We successfully managed this difficult case by an alternative technique. The proximal necrotic bowel segment was resected, and the severe ischemic jejunum (20 cm in length) was preserved by isolation with proximal single stoma. Moreover, we used enteral feeding to enhance the adaptation of the isolated jejunal segment. Meticulous administration of fluid, electrolyte and nutrition is the mainstay of treatment for such patients<sup>[16]</sup>. In the preoperative period of the second stage procedure, the baby received parenteral nutrition through a central venous catheter. Initiation of oral feeding was given 2 d after surgery. The intestinal function recovered, and the baby totally tolerated enteral nutrition and weaned off parenteral nutrition sooner than expected. She is well with short-term parenteral nutrition, total enteral feeding, and breastfeeding. In the 1-year follow-up period, the baby was thriving on a regular diet with normal growth and development.

## CONCLUSION

Bowel isolation technique was successfully used to save severe ischemic bowel segment in this case. Enteral nutrition improved the adaptation of the isolated bowel segment. However, time to restore the continuity of the isolated bowel needs to be investigated.



**Figure 2** Pathologic section of mucosal biopsy at the site of ileal stoma of isolated bowel segment after two months of tube feeding showing increased villus length and crypt depth (x200).

## REFERENCES

- 1 **Marino IR**, Lauro A. Surgeon's perspective on short bowel syndrome: Where are we? *World J Transplant* 2018; **8**: 198-202 [PMID: [30370230](#) DOI: [10.5500/wjt.v8.i6.198](#)]
- 2 **Chandra R**, Kesavan A. Current treatment paradigms in pediatric short bowel syndrome. *Clin J Gastroenterol* 2018; **11**: 103-112 [PMID: [29280097](#) DOI: [10.1007/s12328-017-0811-7](#)]
- 3 **Duro D**, Kamin D, Duggan C. Overview of pediatric short bowel syndrome. *J Pediatr Gastroenterol Nutr* 2008; **47** Suppl 1: S33-S36 [PMID: [18667916](#) DOI: [10.1097/MPG.0b013e3181819007](#)]
- 4 **Safioleas M**, Stamatakis M, Safioleas P, Diab A, Karanikola E, Safioleas C. Short bowel syndrome: amelioration of diarrhea after vagotomy and pyloroplasty for peptic hemorrhage. *Tohoku J Exp Med* 2008; **214**: 7-10 [PMID: [18212482](#) DOI: [10.1620/tjem.214.7](#)]
- 5 **Selznor M**, Isenberg J, Keller HW. Current status of surgical treatment of short bowel syndrome. *Zentralbl Chir* 1996; **121**: 1-7 [PMID: [8852733](#)]
- 6 **Mackby MJ**, Richards V, Gilfillan RS, Florida R. Methods of increasing the efficiency of residual small bowel segments: A preliminary study. *Am J Surg* 1965; **109**: 32-38 [PMID: [14248293](#) DOI: [10.1016/s0002-9610\(65\)80099-x](#)]
- 7 **Bianchi A**. Intestinal loop lengthening--a technique for increasing small intestinal length. *J Pediatr Surg* 1980; **15**: 145-151 [PMID: [7373489](#) DOI: [10.1016/s0022-3468\(80\)80005-4](#)]
- 8 **Palmieri T**, Kimura K, Soper RT, Mitros FA. A staged surgical approach to save ischemic bowel. *J Pediatr Surg* 1993; **28**: 861-862 [PMID: [8331521](#) DOI: [10.1016/0022-3468\(93\)90346-m](#)]
- 9 **Höllwarth ME**. Surgical strategies in short bowel syndrome. *Pediatr Surg Int* 2017; **33**: 413-419 [PMID: [28039510](#) DOI: [10.1007/s00383-016-4043-6](#)]
- 10 **Modi BP**, Langer M, Ching YA, Valim C, Waterford SD, Iglesias J, Duro D, Lo C, Jaksic T, Duggan C. Improved survival in a multidisciplinary short bowel syndrome program. *J Pediatr Surg* 2008; **43**: 20-24 [PMID: [18206449](#) DOI: [10.1016/j.jpedsurg.2007.09.014](#)]
- 11 **Hukkinen M**, Kivisaari R, Koivusalo A, Pakarinen MP. Risk factors and outcomes of tapering surgery for small intestinal dilatation in pediatric short bowel syndrome. *J Pediatr Surg* 2017; **52**: 1121-1127 [PMID: [28185632](#) DOI: [10.1016/j.jpedsurg.2017.01.052](#)]
- 12 **Hosie S**, Loff S, Wirth H, Rapp HJ, von Buch C, Waag KL. Experience of 49 longitudinal intestinal lengthening procedures for short bowel syndrome. *Eur J Pediatr Surg* 2006; **16**: 171-175 [PMID: [16909355](#) DOI: [10.1055/s-2006-924251](#)]
- 13 **Barrett M**, Demehri FR, Ives GC, Schaedig K, Arnold MA, Teitelbaum DH. Taking a STEP back: Assessing the outcomes of multiple STEP procedures. *J Pediatr Surg* 2017; **52**: 69-73 [PMID: [27865472](#) DOI: [10.1016/j.jpedsurg.2016.10.024](#)]
- 14 **DiBaise JK**. Short bowel syndrome and small bowel transplantation. *Curr Opin Gastroenterol* 2014; **30**: 128-133 [PMID: [24445328](#) DOI: [10.1097/MOG.0000000000000035](#)]
- 15 **Thomson AB**, Chopra A, Clandinin MT, Freeman H. Recent advances in small bowel diseases: Part II. *World J Gastroenterol* 2012; **18**: 3353-3374 [PMID: [22807605](#) DOI: [10.3748/wjg.v18.i26.3353](#)]
- 16 **Duggan CP**, Jaksic T. Pediatric Intestinal Failure. *N Engl J Med* 2017; **377**: 666-675 [PMID: [28813225](#) DOI: [10.1056/NEJMr1602650](#)]



Published By Baishideng Publishing Group Inc  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA  
Telephone: +1-925-2238242  
E-mail: [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)  
Help Desk: <https://www.f6publishing.com/helpdesk>  
<https://www.wjgnet.com>

