

# Survival With 45 Cm Of Bowel: Managing Short Bowel Syndrome Following Pancreaticojejunostomy

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## Abstract

Short bowel syndrome (SBS) is a rare but severe condition characterized by malabsorption and intestinal failure following significant small bowel loss. This case presents a 27-year-old male with only 45 cm of functional small intestine remaining after resection for intestinal ischemia following a prior pancreaticojejunostomy. Initial management involved TPN, with gradual introduction of enteral nutrition. With meticulous multidisciplinary care, the patient transitioned to oral intake and maintained adequate nutrition and hydration. This case highlights the adaptive potential of the gastrointestinal tract and the importance of individualized long-term care in SBS patients.

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## I. Introduction

Short bowel syndrome (SBS) represents a complex clinical entity that results from the loss of functional small intestine, typically when less than 200 cm of bowel remains (1). The condition leads to malabsorption of macronutrients, fluids, electrolytes, and micronutrients, and is often classified as intestinal failure (2). Mesenteric ischemia is the most common cause in adults, while necrotizing enterocolitis predominates in neonates (3).

SBS has an estimated prevalence of 1 per million individuals, with a median age of onset of 52.5 years and a slight female preponderance (4). The presence of an intact colon and ileocecal valve, as well as the length and segment of remaining bowel, greatly influences prognosis (5). Patients with less than 100 cm of small intestine typically require long-term parenteral nutrition (PN) unless the colon is preserved, in which case 60 cm may suffice (6).

SBS can be anatomically classified as:

- **Type I:** Jejunio-ileal anastomosis
- **Type II:** Jejunio-colic anastomosis
- **Type III:** End-jejunostomy (7)

## II. Case Report

### Presentation

A 27-year-old male with a history of Roux-en-Y longitudinal pancreaticojejunostomy (LPJ) performed 8 years ago for chronic calcific pancreatitis presented with signs of acute intestinal obstruction for 2 days.

### Examination

He was hypotensive and tachycardic. Abdominal examination revealed distension, generalized guarding, and absent bowel sounds. Diagnostic abdominal paracentesis yielded hemorrhagic peritoneal fluid, suggestive of bowel compromise.

### Investigations

Laboratory results showed leucopenia ( $2.21 \times 10^3/\text{mm}^3$ ), elevated serum creatinine (1.86 mg/dL), and increased total bilirubin (2.45 mg/dL).

- **X-ray abdomen** revealed dilated bowel loops with multiple air-fluid levels and absence of pelvic gas.
- **Ultrasound** demonstrated dilated bowel loops (largest measuring 7 cm) with minimal ascites and sluggish peristalsis.

## Management

The patient underwent urgent laparotomy following aggressive resuscitation. Intraoperatively, extensive small bowel gangrene was noted, necessitating resection with preservation of only 45 cm of small intestine.

Postoperatively, the patient was stabilized on TPN. Electrolytes were monitored and corrected daily. Anemia was treated with 3 units of packed red blood cells.

From postoperative day 8, enteral nutrition was gradually introduced, emphasizing protein and fat-rich feeds. He was discharged on day 30 with a customized diet and oral medications: proton pump inhibitor, cholestyramine, calcium, methylcobalamin, probiotics, oral rehydration salts, and loperamide as needed.

## Follow-Up

The patient has been followed for a year through outpatient visits and telemedicine. He currently tolerates a homemade diet and experiences intermittent diarrhea, managed with metronidazole, PPI, and antimotility agents.

## III. Discussion

SBS significantly impacts patient survival and quality of life. A 5-year survival rate of 78% has been reported, with poorer outcomes in those on lifelong TPN or with <50 cm of bowel, end-enterostomy, or aetiologies such as ischemia or radiation enteritis (8).

Intestinal adaptation begins within 24–48 hours after resection and continues for up to 2 years. This includes villous hypertrophy, crypt deepening, and increased mucosal surface area (9). The colon plays a crucial compensatory role, absorbing short-chain fatty acids and reclaiming up to 500 kcal/day (10).

Complications include:

- **Early:** Dehydration, electrolyte imbalance, hypergastrinemia-induced ulcers
- **Late:** TPN-associated liver disease (PNALD), catheter-related sepsis, micronutrient deficiencies, small bowel bacterial overgrowth (11)

Surgical options for SBS are reserved for refractory cases and include techniques aimed at increasing absorptive surface (STEP, Bianchi procedure, SILT) or modifying motility and continuity (colonic interposition, segment reversal) (12).

**Intestinal transplantation** is indicated when PN complications arise, such as:

- PNALD
- Recurrent catheter sepsis
- Multiple central venous thromboses
- Lifelong PN dependence (13)

This case exemplifies that with appropriate nutritional and medical therapy, even patients with extremely short bowel lengths can survive and adapt. Long-term management requires a tailored, multidisciplinary approach with active patient and caregiver education.

## IV. Conclusion

This report demonstrates the successful management of SBS in a young patient with only 45 cm of remaining small bowel. Transitioning from parenteral to enteral nutrition is crucial and achievable with careful monitoring. Individualized plans, early identification of complications, and ongoing support are key to optimizing long-term outcomes.

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