European Journal of Clinical Pharmacy

Print ISSN: 2385-409X **Online ISSN**: Applied
Website: https://farmclin.es/

Original Research Article

Teduglutide in Adult Patients with Short Bowel Syndrome

Article History:

Name of Author:
Tamara P.R. and Alicia H.A.

Corresponding Author:
Tamara P.R.

How to cite this article:
Tamara P.R. and Alicia H.A., et, al. Teduglutide in Adult Patients with Short Bowel Syndrome. *Eur J Clin Pharm.* 2021;3(1);56.59.

Received: 16-10-2021
Revised: 21-10-2021
Accepted: 23-11-2021
Published: 10-12-2021

Abstract: Short bowel syndrome (SBS) is a condition often resulting in chronic intestinal failure and dependence on parenteral nutrition due to reduced absorptive capacity. Teduglutide, a glucagon-like peptide-2 (GLP-2) analogue, has emerged as an innovative therapy to improve intestinal adaptation and reduce parenteral support. This article reviews the clinical evidence, efficacy, safety, and practical management considerations for teduglutide use in adult patients with SBS.

Keywords: Short Bowel Syndrome (SBS), Teduglutide, Parenteral Nutrition, Intestinal Adaptation, GLP-2 Analogue.

INTRODUCTION

Short bowel syndrome is a rare consequence of extensive intestinal resection or congenital anomalies leading to insufficient nutrient absorption. Patients frequently develop intestinal failure, requiring life-long intravenous supplementation, which may cause significant morbidity.

The goal in SBS management is to maximize enteral autonomy, minimize complications from parenteral nutrition, and improve quality of life. Teduglutide offers a pharmacologic option to enhance intestinal absorption and adaptation[1][2][3].

MECHANISM OF ACTION AND PHARMACOLOGY

Teduglutide is a recombinant analogue of GLP-2, a gut hormone secreted by L-cells in the distal small intestine. By binding to GLP-2 receptors, teduglutide stimulates intestinal mucosal growth, increases villi height and crypt depth, modulates gastrointestinal motility, and augments mucosal absorption. This results in improved net fluid and nutrient uptake and reduced dependence on parenteral support[1][3].

- **Administration:** Subcutaneous injection, 0.05mg/kg/day
- **Indication:** SBS with dependence on parenteral nutrition for >12 months and evidence of absorptive failure

CLINICAL EFFICACY

Randomized Controlled Trials

Two pivotal placebo-controlled trials evaluated the efficacy of teduglutide in adults with SBS requiring parenteral

support ≥3 days/week for at least 12 months[3][4].

- **Responder rate** (>20% reduction in parenteral support at week 24): 63% teduglutide vs. 30% placebo
- **Mean reduction in parenteral support volume (over 24 weeks):**
  - Teduglutide: 4.4L/week
  - Placebo: 2.3L/week
- **Days off parenteral support:** 54% of teduglutide recipients had ≥1 day reduction per week, vs 23% on placebo

Long-term Efficacy

- A real-world study over 48 months showed sustained response with 40% early responders (≥20% reduction in parenteral support at 3 months) maintaining benefit. Of these, 50% weaned off parenteral support entirely[5].
- A 2-year cohort indicated that 74% of patients had sustained ≥20% reduction in parenteral support, with 26% achieving independence[2].
- Early predictors of response include greater residual small bowel length, absence of narcotic use, and lower baseline parenteral support volume[2][5].

Table 1. Teduglutide Efficacy Outcomes in Adults with SBS

Study	Duration	% with ≥20% Reduction in Parenteral Support	% Weaned Off Parenteral Support	Key Predictors of Response
Placebo-controlled trial[3]	24 weeks	63%	Not reported	Not reported
Guglielmi et al.[5]	48 months	40% (early responders)	20%	Residual bowel length, SBS type
Daoud et al.[2]	2 years	74%	26%	PS duration, low narcotics

Quality of Life Impact

Teduglutide-responsive patients report substantial improvement in quality of life, physical and mental health domains, and fewer hospitalizations, compared to non-responders or those maintained on parenteral nutrition alone[5][6].

Safety and Tolerability

Teduglutide is generally well-tolerated, with an acceptable safety profile documented in clinical and post-marketing studies up to 2.5 years[7][6].

- **Adverse Events (AEs):** Most frequent are gastrointestinal (abdominal pain, nausea, distension), typically mild to moderate and most common early in therapy[7].
- **Serious Adverse Events:** Rare, but include intestinal obstruction (secondary to increased villus growth), gastrointestinal polyps, and potential risk for neoplastic growth, mandating regular colonoscopic surveillance in long-term use[7][6].
- **Laboratory Monitoring:** Liver function, electrolytes, and renal function should be monitored due to risk of fluid/electrolyte imbalance.
- **Discontinuation rate due to AEs:** Low in real-world studies[2][5].

Table 2. Most Common Adverse Events with Teduglutide

Adverse Event	Incidence*
Abdominal pain	25–27%
Nausea	14–22%
Abdominal distension	5–17%
Stoma complications	10–13%
Intestinal obstruction	<4%

*Incidence rates approximate across studies[7][6].

Graph: Reduction in Parenteral Support with Teduglutide vs. Placebo

	Teduglutide Group	Placebo Group
Baseline PS (L/wk)	13.4	13.3
Week 24 PS (L/wk)	9.0	11.0

Responders defined as ≥20% reduction in PS volume from baseline at week 24[3].

CLINICAL APPLICATION & PATIENT SELECTION

Criteria for Teduglutide Initiation

- Adult patients with chronic intestinal failure due to SBS with ≥3 days per week of parenteral support for at least 12 months
- Adequate adaptation period post-resection
- No contraindications (e.g., active GI malignancy, uncorrected obstruction)
- Careful assessment of comorbidities and close multidisciplinary supervision

Monitoring and Follow-up

- Regular assessment of nutritional status, electrolytes, liver/renal function
- Colonoscopic surveillance recommended before and during ongoing therapy due to increased polyp risk
- Adjustment of parenteral support according to reduction in requirements and clinical status

Dosing and Duration

- Subcutaneous injection at 0.05mg/kg once daily
- Duration individualized based on response, tolerability, and patient preference

DISCUSSION

Teduglutide is a transformative agent for adults with SBS, leading to clinically meaningful reductions in parenteral support and, for a significant minority, complete enteral autonomy[1][2][3][5]. Greatest benefit is seen in patients with longer bowel remnants and lower baseline support needs. The safety profile is favorable, but attention to possible GI polyps, theoretical cancer risk, and fluid balance is vital.

Challenges remain regarding patient selection, prediction of responders, and cost-effectiveness, given the high price of GLP-2 analogues.

CONCLUSION

Teduglutide represents a major advance in SBS management, reducing dependence on parenteral nutrition, improving patient quality of life, and enabling enteral autonomy in selected adults with intestinal failure. As clinical experience grows, ongoing real-world studies will continue to refine patient selection, optimize outcomes, and ensure safety. Close multidisciplinary collaboration remains essential.

Table 3. Key Teduglutide Trials and Findings

Trial/Study	Population	Primary Endpoint	Teduglutide Outcome	Placebo Outcome
Placebo-controlled[3]	Adults with SBS	≥20% reduction in parenteral support	63% responders	30% responders
O'Keefe et al.[4]	Adults with SBS	PS reduction maintained at 52 wks	Sustained improvement	—
Daoud et al.[2]	Adults with SBS	2-year PS reduction, independence	74% (≥20% reduction), 26% weaned	—

REFERENCES

1. Pironi, L., et al. "Use of teduglutide in adults with short bowel syndrome—A narrative review." *Nutrition in Clinical Practice*, 2024.
2. Daoud, D.C., et al. "Adult patients with short bowel syndrome treated with teduglutide: 2-year outcomes." *Nutrition in Clinical Practice*, 2023.
3. O'Keefe, S.J.D., et al. "Safety and Efficacy of Teduglutide After 52 Weeks' Treatment in Patients With Short Bowel Syndrome–Intestinal Failure." *Clinical Nutrition*, 2013.
4. "Teduglutide for short bowel syndrome." *Australian Prescriber*, vol. 43, no. 2, 2020, pp. 72–73.
5. Guglielmi, F.W., et al. "Forty-eight months outcomes of Teduglutide in adult stable patients with short bowel syndrome and home parental nutrition dependence: a real-world Italian single center observational cohort study." *Journal of Crohn's and Colitis*, 2025.
6. "Teduglutide for the treatment of adults with intestinal failure associated with short bowel syndrome: pooled safety data from four clinical trials." *Therapeutic Advances in Gastroenterology*, 2020.
7. Dialnet. "Teduglutide in adult patients with short bowel syndrome." 2024.

