

Clinical Study

Long-Term Evaluation of Transanal Pull-Through For Hirschsprung Disease: A Prospective Study of 18 Cases from Senegal

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Keywords

Colonic aganglionosis
Congenital megacolon
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Hirschsprung disease
Transanal pullthrough

Abbreviations

HD - Hirschsprung disease
TAP - Transanal pull-through

Abstract

Introduction: Distal colonic aganglionosis is increasingly been treated with transanal pull-through that avoids a laparotomy. This study is intended to evaluate the results of this approach in a resource-limited setting.

Methods: This is a descriptive study done prospectively between 2016 and 2023 at the Albert Royer Children's Hospital, Dakar, Senegal. It includes 18 children operated upon exclusively by De la Torre-Mondragon's technique of trans-anal pull-through for Hirschsprung disease. Morbidity and anal continence were evaluated using the simplified Holschneider and Krickenbeck scores.

Results: The mean follow-up duration was 6 yr (range 4-7 yr). Immediate complications were diaper rash and anal fissures. According to the Holschneider scoring system continence was normal in 11 patients (61%), good in 5 (28%), and satisfactory in 2 (11%). However, occasional soiling was noted in 56%. According to the Krickenbeck score, continence was noted in 16 patients (89%), while 10 patients (56%) suffered from fecal incontinence and 4 patients (22%) from constipation. Three patients (17%) reported restricted social life as a direct consequence of impaired bowel function.

Conclusion: Transanal colonic pull-through may lead to long-term morbidity, such as soiling, which can significantly affect the quality of life.

INTRODUCTION

Several surgical techniques have been described in the treatment of Hirschsprung disease (HD), the latest of which is the transanal approach of Torre-Mondragon and Ortega-Salgado.⁽¹⁾ This approach avoids a laparotomy and its complications. It also reduces hospital-stay and is a scarless surgery. For these reasons, it is now gaining more popularity. The present study was conducted to evaluate the long-term outcome of exclusive transanal pull-through (TAP) in HD.

METHODS

This prospective, single-center, descriptive study was conducted over a period of 7 yr, from 1 March 2016 to 28 February 2023, in the department of pediatric surgery at the Albert Royer Children's Hospital, Dakar, Senegal. Children, who were diagnosed with HD based on clinical or radiological features, underwent exclusive TAP. Only those with a minimum follow-up of 4 yr were included. There were 14 boys and 4 girls, with a sex ratio of 3.5. All the children were operated on using the same surgical technique. (Fig. 1) Anal canal was exposed using guide threads and Farabeuf retractors. Circumferential dissection of mucosal sleeve was followed by myectomy or myotomy.

The studied parameters included the age at the time of surgery, the length of the resected colon, operative difficulties, operating time, short-term morbidity, mortality, and the evaluation of anal continence using the simplified Holschneider and Krickenbeck scores.

RESULTS

The mean age of the patients at the time of surgery was 47 months (range 2m-13yr). There were 7 infants (39%) aged 1-30 months. Five patients (28%) were operated after the age of 5 yr and two after the age of 10 yr. At the time of continence evaluation, all the children were over 3-yr of age.

The mean length of the resected colon was 29 cm (range 15-35 cm). Intra-operative difficulties were encountered in 2 cases (11%). The mean duration of surgery was 102 min (range 70-150 min). In the immediate postoperative period, minor complications (e.g. diaper rash and anal fissures) occurred in 7 cases (39%). Histopathological examination of the surgical specimen confirmed HD in all the children. Inadequate resection margin necessitated surgical revision in 2 patients.

Table 1. Anal continence results according to the modified Holschneider score

| Parameter | Score | n | (%) |
|---------------------------------|-------|----|-----|
| Stool Frequency | | | |
| Normal (1-2 /day) | 2 | 11 | 61 |
| Often (3-5 /day) | 1 | 7 | 39 |
| Abnormal (>6 /day) | 0 | 0 | 0 |
| Stool Consistency | | | |
| Firm (Solid) | 2 | 9 | 50 |
| Loose (Semi-solid) | 1 | 7 | 39 |
| Liquid | 0 | 2 | 11 |
| Ability to Retain Stools | | | |
| Minutes | 2 | 16 | 89 |
| Seconds | 1 | 2 | 11 |
| None | 0 | 0 | 0 |
| Soiling | | | |
| None | 2 | 8 | 44 |
| Sometimes | 1 | 4 | 22 |
| Always | 0 | 6 | 34 |
| Use of Laxatives | | | |
| None | 2 | 15 | 83 |
| Sometimes | 1 | 3 | 17 |
| Always | 0 | 0 | 0 |

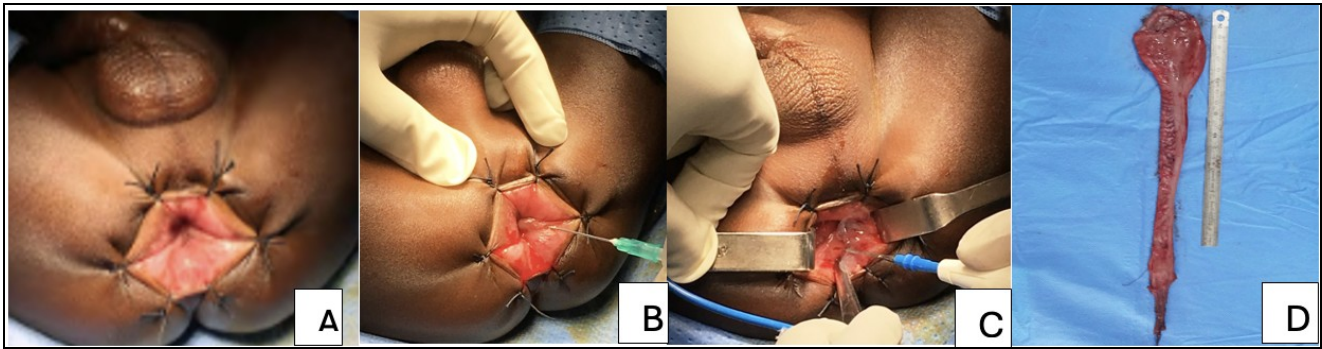


Fig 1. Different Steps of Transanal Pull-Through: (A) Setup and exposure of the anal canal; (B) Submucosal infiltration with adrenaline-laced lidocaine; (C) Dissection of the anal mucosa; (D) Resected colonic specimen demonstrating the transition zone

Long-term evaluation was done after a mean follow-up of 6 yr (range 4-7 yr). All the patients were aged more than 3yr at the time of continence evaluation. Stool continence, evaluated by modified Holschneider score, was normal in 11 cases (61%), good in 5 (28%) and fairly satisfactory in 2 (11%).(Table 1) Stool continence according to the Krickenbeck questionnaire was satisfactory in 16 children (89%) while 10 (56%) reported soiling. Fecal soiling occurred daily in 6 (33%), with significant social impact in 3 of them. Finally, 14 (78%) did not report any constipation.

DISCUSSION

Exclusive TAP for HD has revolutionized the treatment of this condition, especially the rectal and rectosigmoid forms.^(1,2) This technique has several advantages. It can be done without covering colostomy or abdominal approach, and can even be performed during the neonatal period.^(3,4) But, in our practice, the mean age at surgical intervention was higher (47 months), than that reported from developed countries.⁽⁵⁾ In infants and young children, TAP facilitates dissection with reduced intraoperative bleeding.

In our experience, mobilization of the rectum in infants was easy with less blood loss.⁽²⁾ In older children, dissections were difficult probably due to adhesions from previous episodes of entero-

colitis and prior rectal biopsies.⁽⁶⁾ Our patients did not have prior biopsies. Clinical presentation and barium enema were used to diagnose HD and the extent of aganglionic colon.

The mean operating time in this series was 102 min. The duration of TAP depends on the age, of patients, being longer in those over one year of age. Maturation of the mesenteric vascular system, huge colonic dilation and frequent preoperative episodes of enterocolitis contribute to difficult dissections and hence prolonged operative time.⁽²⁾

The immediate postoperative outcomes of TAP are generally straightforward.⁽⁷⁻⁹⁾ Common complications include soft-tissue abscess, perianal excoriations, mucosal prolapse and anal stenosis.^(10,11,12) In this study, diaper rash and anal fissures due to frequent postoperative stools were the common post-operative complications, which resolved with local treatment.

Long-term functional outcome of HD surgery is concerned with persistence of fecal incontinence and constipation. In our study, the common long-term complaint was significant soiling, with social impact in some children. Constipation was less frequent, likely due to the routine myotomy or myectomy done during the TAP. This suggests that soiling was due to true incontinence rather than overflow incontinence. Fecal continence depends

on several factors: anal sphincter function, colonic motility, and anorectal sensitivity, all of which can be affected by transanal surgery, leading to soiling.^(13,14,15) Soiling rates of 29-65% have been reported in various studies.^(5,16,17)

Concerns exist regarding the impact of the TAP on the anal sphincter due to prolonged exposure and increased traction on the anal canal.^(16,18,19) To minimize these effects, some authors recommend a laparoscopic-assisted TAP rather than an exclusive transanal approach.^(14,20) Fig. 2 depicts some of the published outcomes of colonic pull-through for HD in terms of constipation.

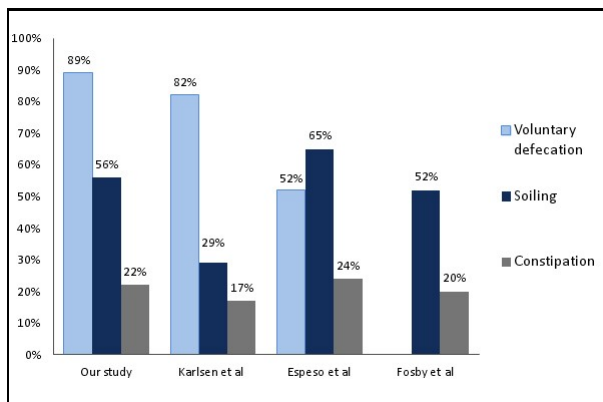


Fig 2. Continence rate after transanal pull-through reported by various authors^(5,16,19)

CONCLUSION

Long-term follow-up of patients undergoing TAP for HD reveals that fecal incontinence persists in many patients despite a technically successful operation. TAP done with initial laparoscopic mobilization is an option to minimize the operative damage to the anal sphincter. Nevertheless, when the facilities of minimally invasive surgery are not available, forceful retraction of the anal sphincter should be limited during the operation.

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