

Surgically Correctable Fecal Incontinence Associated with Traumatic Duhamel Operation: A Report of Three Cases

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We present 3 cases of fecal incontinence associated with traumatic injury during Duhamel procedure. Three male patients suffered from persistent fecal soiling and incontinence for more than 7 years after definitive surgery for Hirschsprung's disease by a pediatric surgeon. They showed grade 4 frequent major soiling, mild patulous anus, and flattening of the anorectal angle due to traumatic injury of the external sphincter and puborectalis muscle on the posterior midline of the anorectal junction. On Parks postanal pelvic floor repair procedures, the incontinent symptoms were abated, anatomic changes were normalized, and postoperative Kirwan classification scales were markedly improved from grade 4 to grade I. Patients with fecal incontinence after Duhamel operation for Hirschsprung's disease may have a traumatic injury of the anal sphincter. Careful physical and laboratory examinations should be performed for the confirmation of traumatic injury in these patients, and Parks postanal repair could be the treatment of choice for the correction of incontinence. **J Korean Soc Coloproctol 2002;18:137-140**

Key Words: Anal incontinence, Duhamel operation, Traumatic sphincter injury, Parks postanal repair

변실금, 두하멜 술식, 외상성 괄약근 손상, 항문 후방 복원술

INTRODUCTION

The Duhamel procedure using a GIA stapler is believed a safe and easy procedure for correction of Hirschsprung's

disease, but 5% to 8% of incontinence or soiling was reported after definitive surgery.¹⁻³ Since this occurrence of incontinence or soiling is frequently considered to be due to incomplete division of the colorectal septum and retained feces, other causes of incontinence may not have been recognized. Although the Duhamel procedure is very safe, the chance of the injury of anal sphincter during dissection of the retrorectal space just above the dentate line in perineal phase of this procedure is still present.

Over the past 5 years, we have experienced 3 cases of Parks postanal pelvic floor repair of anal incontinence that was associated with the injury of the external sphincter and puborectalis muscle during the Duhamel procedure for Hirschsprung's disease. We present three cases and describe the long-term results of Parks postanal repair.

REPORT OF CASES

Three male patients (9, 12, and 12 years of age) suffered from persistent fecal soiling and incontinence for more than 7 years after definitive procedures (Duhamel operation) performed by a pediatric surgeon around one year of their age for Hirschsprung's disease. According to Kirwan classification,⁴ they showed grade 4 frequent major soiling (Table 1). On digital rectal examination, flattening of the anorectal angle, mild patulous anus, and separation of the puborectalis muscle on the posterior midline, presumably due to traumatic Duhamel procedures for Hirschsprung's disease, were identified. The patients had no congenital anomalies such as anorectal malformations, Down syndrome, sacral and spinal anomalies, or urogenital defects. Anorectal electromyography (EMG) revealed a defective muscle function of the deep por-

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tion of the external sphincter and puborectalis muscle not primarily due to pudendal nerve lesions in all cases (Fig. 1). Endoanal ultrasonography showed defects of the internal and external anal sphincter on posterior aspect of the upper anal canal. We decided to correct the injured external sphincter and puborectalis muscle with Parks postanal pelvic floor repair.

Patients were anesthetized and placed in prone jack-knife position to facilitate access to the posterior perineal region. After povidone iodine preparation of the perineum, a posterior angular incision with a gentle curvature extending to the tip of the coccyx to minimize postoperative wound infection was made. During dissection of the intersphincteric and retrorectal space, nearly transected, attenuated fibrotic deep external sphincter and puborectalis muscle, and densely ad-

hered thick fibrotic Waldeyers fascia probably due to previous traumatic disruption were encountered. Bilateral levator muscles including pubococcygeus and ileococcygeus were loosely approximated medially using 3 to 4 2/0 monofilament Prolene sutures. The puborectalis muscle was also approximated in the midline using the same suture materials and the deep external sphincter was plicated medially with interrupted 2/0 Vicryl sutures. Skin was approximated with interrupted 4/0 nylon sutures. The patients were discharged from the hospital 4 to 6 postoperative days with a continent state. There was no wound infection or dehiscence. The follow-up periods of postanal repair were 11 months, 2 years, and 5 years. Postoperative Kirwan classification scales were markedly improved from grade 4 to grade 1 (Table 1). On the findings of digital rectal examination and endoanal sono-

Table 1. Change of incontinence scale and patients characteristics

	Age (yr), gender	Previous surgery (yr)	Kirwan class.*	Date of postanal repair	Postop. Kirwan class.*
1	14, M	Duhamel (1987)	4	1995.2	1
2	12, M	Duhamel (1988)	4	1998.2	1
3	12, M	Duhamel (1988)	4	2000.1	1

Grade 1 = perfect; 2 = incontinence to gas; 3 = occasional minor leak; 4 = frequent major soiling; 5 = colostomy.

*Kirwan classification.

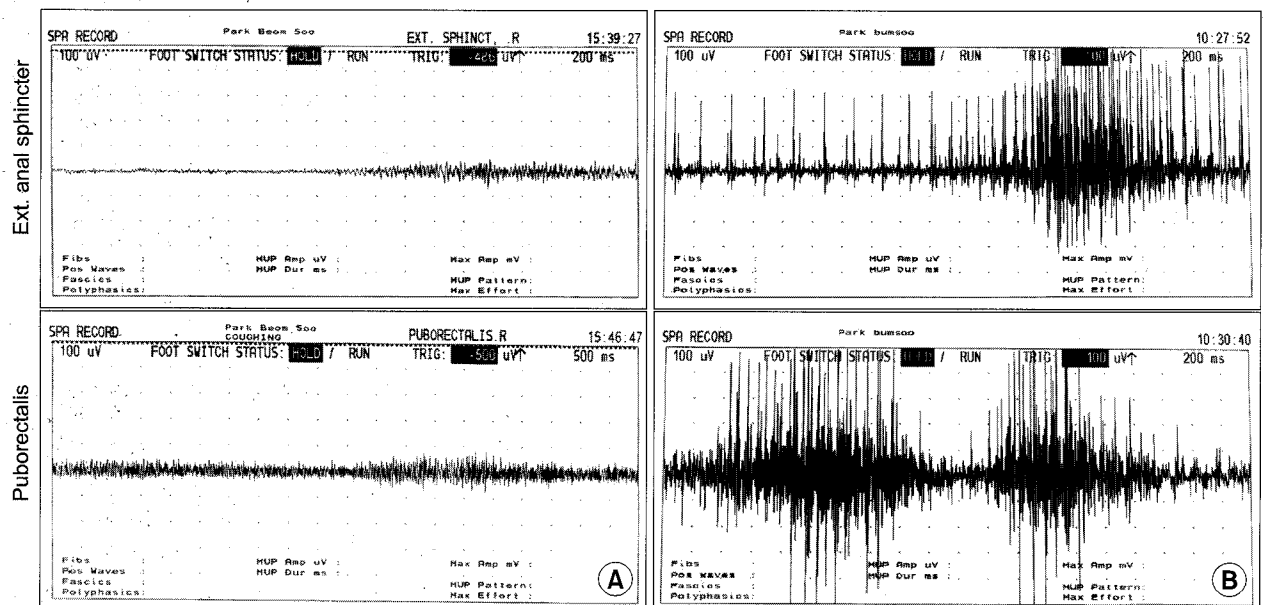


Fig. 1. Electromyographic findings of the external anal sphincter and puborectalis muscle before (A) and after (B) postanal repair.

graphy, lengthening of the anal canal and normalized anorectal angle due to reconstructed deep external sphincter and puborectalis muscle were identified. In addition, anorectal EMG demonstrated normal electrical activities arising in the external sphincter and puborectalis muscle fibers during contraction and at rest (Fig. 1).

DISCUSSION

A significant percentage of fecal incontinence in children is due to improper operation or failure to recognize a surgically correctable problem.⁵ The long-term results of treatment of Hirschsprung's disease are not uniformly successful. Some patients who had undergone the Duhamel operation showed some degree of fecal incontinence and most surgeons are prone to regard the incontinence as a pouch problem or overflow. During the Duhamel procedure, dissection of the presacral space and transanal incision of the posterior rectal wall above the dentate line entering the previously dissected retrorectal space should be employed. Great attention is needed in this abdominal and perineal phase of this procedure because the injury of the anal sphincter and puborectalis muscle may occur. We experienced 3 cases of anal incontinence associated with operative injury during Duhamel operation. The external sphincter and puborectalis injury should be considered in patients with anal incontinence patients after Duhamel operation. In cases of suspicious sphincter and puborectalis injury, meticulous studies such as digital rectal examination, endoanal sonography, anorectal manometry and EMG may be necessary for the detection of this type of injury, and Parks postanal repair could be the treatment of choice. The original intent of Parks postanal repair was to correct an obtuse anorectal angle.⁶ Postanal repair is usually reserved for the treatment of neurogenic fecal incontinence without sphincter injury or for the treatment of incontinence after rectopexy or anal dilatation.^{7,8} As shown in this report, however, this procedure might be very useful in anal incontinence associated with the external sphincter and puborectalis injury after traumatic Duhamel operation for Hirschsprung's disease.

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국 문 초 록

Duhamel 술식과 관련된 외상성 변실금 3예 보고

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Hirschsprung병 환아에서 GIA를 이용한 Duhamel 술식은 안전하고 용이한 근본치료법으로 알려져 있으나 술후 약 5~8%의 환아에서 변실금이 초래된다고 하며 이는 흔히 결장직장 간의 격막에 의한 대변저류가 원인이라고 생각되고 있으나 수술 중 발생할 수 있는 괄약근손상에 의한 가능성도 배제할 수 없다. 저자들은 선천성 거대결장으로 한 명의 소아외과의로부터 Duhamel 술식을 받은 후 7년 이상 지속되는 변실금을 주소로 내원한 3명의 남아에서 수술에 의한 괄약근 손상으로 인한 변실금으로 진단하고 치료한 증례들을 보고하고자 한다.

변실금 진단 시 환아들의 나이는 12~14세였으며 모두 4도의 빈번한 변실금 증상이 있었다. 진찰 시 항문관의 이완, 항문직장각의 소실 등이 관찰되었고 경항문 초음파와 근전도검사서서 외괄약근과 치골직장근의 손상이 발견되어 수술에 의한 외상성 변실금으로 진단하고

Parks postanal pelvic floor repair를 시행하였다.

수술 후 변실금 증상은 4도에서 1도로 호전되었고 항문관의 해부학적인 결손도 모두 정상화되었으며 현재 3에 모두 기저귀 착용 없이 학교생활을 하고 있다.

선천성 거대결장증에서 Duhamel 술식이 안전하고 용이하게 시술할 수 있는 근본수술법이지만 괄약근 손상의

가능성이 있을 수 있기 때문에 술 후 변실금을 호소하는 경우 이 가능성을 고려해야 한다. 비록 본 증례에서 항문내압검사 등을 시행하지는 못하였으나 생리학적 검사를 통해 정확한 진단을 내린 후 괄약근 손상이 의심될 경우 Parks postanal repair를 시행하는 것이 바람직하다고 생각한다.