

## Alimentary Tract

# Cone-like resection, fistulectomy and mucosal rectal sleeve partial endorectal pull-through in paediatric Crohn's disease with perianal complex fistula



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## ABSTRACT

**Background:** Perianal abscesses and fistulae have been reported in approximately 15% of patients with paediatric Crohn's disease and they are associated with poor quality of life. Several surgical techniques were proposed for the treatment of perianal Crohn's disease, characterized by an elevated incidence of failure, incontinence, and relapse.

**Aim** of our study was to present the technical details and results of our surgical technique in case of recurrent, persistent, complex perianal ano-rectal destroying Crohn's disease not responding to medical treatment.

**Methods:** Data of patients who underwent surgical treatment (cone-like resection, fistulectomy, sphincter reconstruction, endorectal advancement sleeve flaps like in Soave endorectal pull-through) for complicated high-level trans, inter or suprasphincteric fistulae between January 2009 and June 2014 were retrospectively reviewed.

**Results:** 20 surgical procedures were performed in 11 patients (males 72.7%) with transsphincteric ( $n=5$ ), intersphincteric ( $n=4$ ) and suprasphincteric ( $n=2$ ) fistulae. Three patients needed a second treatment. Two patients needed more than 2 surgeries and one temporary colostomy. No patient presented anal incontinence at 15 months' median follow-up.

**Conclusions:** Although several procedures may be required to obtain a complete remission of perianal lesions, in our series the proposed surgical technique seemed effective and safe, preserving anal continence in all treated cases and reducing the need of faecal diversion.

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## 1. Introduction

Paediatric Crohn's disease (PCD) accounts for 20–25% of total diagnosis of this inflammatory bowel disease, with an incidence ranging from 0.2 to 9.5:100,000 children in the United States.

Perianal disease has been reported in 8–15% of paediatric patients [1,2].

Complex fistula can have transsphincteric, suprasphincteric, intrasphincteric and extrasphincteric perianal localization [3] and represents a challenge for paediatric surgeons.

In recent years, magnetic resonance imaging (MRI) has become an important instrument to evaluate complex fistula severity and

pelvic anatomy, providing indications for the correct type of surgical intervention. However, many false negative results and poor sensitivity of this tool have been reported [4,5].

Different approaches have been described for the treatment of complex fistula in children, including simple drainage, mobilization of tissue flaps, seton placement, fistulotomy, anus-sparing proctocolectomy, and defunctioning ileostomy [6–8]. However, the risk of complications remained high, with more than one procedure for recurrence in 29–50% of cases [8–10].

Aim of this study was to report on the surgical technique used in our institution, describing surgical details and main results.

## 2. Materials and methods

### 2.1. Study population

All patients with diagnosis of perianal PCD admitted to our Institute for complex fistula (defined according to Bell criteria)

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with recurrent/persistent, anorectal involvement not responding to medical treatment, between January 2009 and June 2014 were prospectively included in a database.

Patients with simple fistula (subcutaneous fistula) were excluded from the study.

This study was performed according to national ethical guidelines and informed consent was obtained for surgical treatment and data collection from parents or guardians. Data including demographics, previous surgical and medical treatments, surgical details of interventions, and clinical follow-up were retrospectively analyzed.

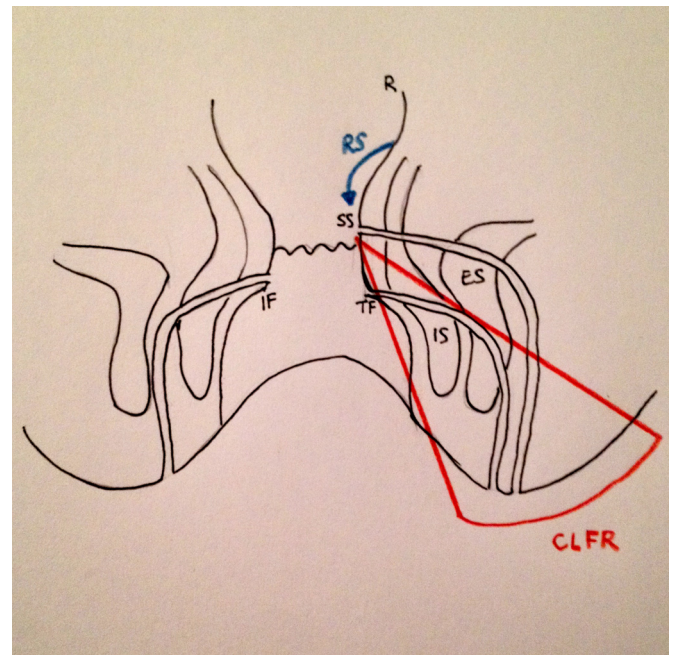
All patients were studied with pre-operative MRI. All patients were continent before surgical procedures.

## 2.2. Cone-like resection technique (CLR)

Peri-operative antibiotic prophylaxis with metronidazole was administered. Patients were placed in the lithotomy position under general anaesthesia without preoperative bowel preparation. A probe was inserted through the fistula to measure the distance from its internal opening. The fistula tract was completely mobilized en-bloc with the granulation tissue reaching the normal fatty tissue near the pelvic floor. A cone-like excision of skin and perianal tissue was performed with the cone base in the perineum including the anal canal if affected, and the cone apex in the rectal wall where the fistula opened (Figs. 1 and 2).

Exposure of levator ani was needed to completely remove the affected tissue, including also rectal wall and anal sphincters if involved.

The second step of this surgical approach was to recreate the anal canal. The rectal sleeve was prepared proximally to the internal opening of the rectum. We used Soave endorectal pull-through (ERPT), pulling the normal rectal mucosa to the anal skin and suturing the sphincters to recreate anal ring normal shape. The perianal skin was always left open in order to reduce infection risks. No more than two areas were treated simultaneously (Figs. 2 and 3).

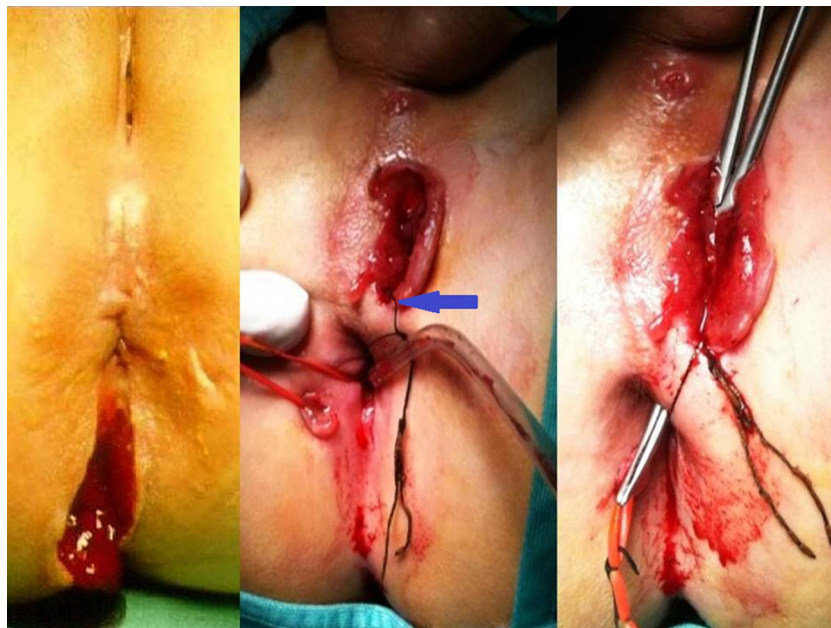


**Fig. 1.** Illustration of cone-like resection and rectal sleeve. IS, internal sphincter; ES, external sphincter; IF, intersphincteric fistula; TF, transsphincteric fistula; SS, suprasphincteric fistula; R, rectum; RS, rectal sleeve; CLFR, cone-like fistulectomy resection.

## 2.3. Endpoints

The primary endpoint was clinical recurrence, defined symptomatic recurrence requiring surgical treatment.

Secondary endpoints were definition of 30-day post-operative complication rate using Clavien-Dindo classification [11], assessment of post-operative faecal incontinence using Yamataka score



**Fig. 2.** The chronic Crohn's granulation tissue involves skin, fatty tissue, anal sphincter and rectal wall. In selected cases, when there is recurrence despite adequate medical treatment, therefore the inflamed tissue should be completely removed before complete destruction of sphincter activity due to risk of sepsis. The blue arrow indicates the previously placed seton.

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