

## Original Article

# Prevalence of Anal Diseases After Scopinaro's Biliopancreatic Bypass for Super Obese Patients

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### Abstract

**Introduction.** Biliopancreatic diversion by Scopinaro (BD) is a mixed (malabsorptive and restrictive) bariatric technique that is successful in achieving long lasting weight lost in super obese patients. In fact, the diarrhoea (steatorrhea) that is expected after any malabsorptive technique can sometimes cause significant nutritional changes and anal disease: these patients are frequently referred to our coloproctology outpatient clinic due to haemorrhoids, fissures, anal sepsis and fistula basically due to changes in quality and quantity of their faeces. The aim of this paper is to find out not only the prevalence of anal disease in our series of super obese surgical patients but also to compare the incidence between the 2 surgical techniques we perform in our department.

**Material and method.** We analyzed 263 consecutive patients operated on BD of Scopinaro (50-200 cm) and modified-BD (75-225 cm) in our Department. Patients who had previously suffered from anal surgery were excluded.

**Results.** There were 45 patients (18%) who suffered from anal problems of which 38 cases (84.4%) were BD-S and only 7 cases with BD-M complained of anal disorders ( $P < .05$ ). Overall, at the 18th month review, the mean number of motions per day was 3.5 (range, 1-15). Patients with BD-S had 5 motions per day as a mean. The mean number of motions for BD-M was 2. The frequency order of anal pathology observed was: anal fissure, haemorrhoids, abscess and fistula.

**Conclusions.** Higher incidence of anal pathology after BD of Scopinaro is another factor to take into account to avoid performing classic Scopinaro BD as opposed to modified BD for the treatment of morbid super obesity. It is mandatory to be conservative when facing anal problems in these patients, and firstly we must modify eating habits and the nutritional status. Surgery must be highly respectful to anal sphincters to avoid incontinence.

**Key words:** *Biliopancreatic diversion. Steatorrhea. Anal disease.*

### PREVALENCIA DE AFECCIÓN ANAL EN EL PACIENTE SUPEROBESO MÓRBIDO TRAS BYPASS BILIOPANCREÁTICO DE SCOPINARO

**Introducción.** El bypass biliopancreático de Scopinaro es una técnica bariátrica mixta. Los efectos secundarios indeseables derivados de las diarreas y los cambios de composición cualitativa típicos de las heces esteatorreicas observados con mayor frecuencia en este tipo de pacientes son: hemorroides, fisuras, abscesos y fístulas de ano. El objetivo de esta publicación es valorar la prevalencia de afección anal en los superobesos operados, así como comparar su incidencia entre ambas variantes de bypass biliopancreático practicadas en nuestro servicio.

**Material y método.** Analizamos la afección anal que presentaron 263 pacientes intervenidos de obesidad mórbida en nuestro servicio (1995-2005) tras bypass biliopancreático clásico (BD-C) y bypass biliopancreático modificado (BD-M).

**Resultados.** Un 18% (n = 45) de los pacientes presentó afección anal: BD-C, 38 pacientes, y BD-M, 7 pacientes ( $p < 0,05$ ). La media de deposiciones diarreicas fue de 3,5 (intervalo, 1-15) deposiciones/día. Los pacientes del grupo BD-C realizaban 5 deposiciones de media frente a 2 del grupo BD-M. Por orden de frecuencia fueron: fisura, hemorroides, absceso y fístula.

**Conclusiones.** La mayor incidencia de afección anal tras BD-C es otro factor que nos debe hacer abandonar esta técnica a favor del BD-M para el tratamiento de la superobesidad mórbida. Además, es fundamental ser conservadores en el tratamiento de la afección anal en este grupo de pacientes; siempre se debe corregir primero las alteraciones digestivas y el estado nutricional y no olvidar que la anatomía del canal anal debe ser preservada al máximo para evitar la incontinencia.

**Palabras clave:** *Bypass biliopancreático. Esteatorrea. Patología anal.*

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## Introduction

Biliopancreatic diversion as described by Scopinaro<sup>1</sup> in 1979 is a mixed, surgical bariatric technique (restrictive and malabsorptive) which successfully achieves long term satisfactory weight loss and can cure or improve comorbidity.<sup>2</sup> The biggest drawbacks are some potentially undesirable side effects which if not controlled can lead to major alterations in the patient's quality of life.<sup>3</sup>

The aim of mixed techniques such as biliopancreatic diversion in maintaining long term weight loss is to produce malabsorption for fats and starch which will lead to an important qualitative change in the patient's faeces.<sup>1</sup>

Diarrhoea (steatorrhea), due to malabsorption is one of the common consequences of this type of operation which can become incapacitating and in extreme cases can lead to severe nutritional disorders. This situation does not solely depend on the operation alone, but also on the adaptive mechanisms of each individual and, more importantly, on frequent dietetic transgressions in the morbidly obese who have undergone the operation.<sup>4</sup>

Although a large amount of the possible metabolic side effects can be controlled with vitamin complexes, micro-nutrients and protein prophylactics, chronic diarrhoea can be the cause of different proctologic disorders,<sup>5</sup> which imply an increase in the assistance required by these patients and that therefore need intervention and re-intervention with a consequential increase to the health expenditure.

The aim of this project is to analyse the most common anal disorders seen in patients who come in for biliopancreatic bypass (classic Scopinaro and modified) and to compare them with the incidence of the same disorders in the general population.

The most commonly recorded anal disorders seen in this type of patient are haemorrhoids, fissures, abscesses, and anal fistulae mainly due to repeated, continuous diarrhoea and changes in qualitative composition which are typical of steatorrhea in malabsorptive processes.

Since 1995 our surgery department has treated morbid obesity (body mass index [BMI] >50) using the classic Scopinaro technique (50 cm, common tract; 200 cm, alimentary tract; and 4/5, gastrectomy). However, we have expanded intestinal lengths since 2001 (75 cm, common tract; 225 cm, alimentary tract.)

In publications on malabsorptive bariatric surgery we have not found any specific articles which refer to secondary proctological pathology nor to the consequent alterations to quality of life.

## Material and Methods

We analysed the anal disorders of 263 morbidly obese patients who attended the Surgery B Department of the Hospital Clínico Universitario of Zaragoza (1995-2005) to undergo mixed techniques (classic biliopancreatic bypass, using the Scopinaro procedure, with 50 cm common tract and 200 cm alimentary tract, and modified biliopancreatic bypass, 75 cm common tract and 225 cm alimentary tract).

Our protocol for the morbidly obese (BMI>50) from 1995 until 2001 was to carry out classic biliopancreatic bypass surgery and from then on, based on the analysis of our results published in *Obesity Surgery*<sup>6</sup> and as communicated in the Spanish Society for Bariatric Surgery conferences, we decided to increase the length of the common tract to 75 cm and the

digestive tract to 225 cm (modified biliopancreatic bypass) so as to try to decrease the incidence of adverse effects.

We have classified the pathological protocol according to the criteria found in relevant literature:

- We define diarrhoea as the increase in the number and/or reduction in the consistency of bowel movements, and steatorrhea as the presence of fat in the faeces (>7 g/day), where the faeces is yellowed in colour, greasy, foul-smelling, and floats on the surface of the water

- We have divided haemorrhoids up into the 4 groups as classified in most published works<sup>6</sup>

- For abscesses and fistulae, we have followed the Parks<sup>7</sup> classification and for the diagnosis we carried out a classic anal examination (inspection, rectal probe, anoscope, etc), endoanal ultrasound, and magnetic resonance (MR) for cases of high transsphincteric complex fistulae, suprasphincteric, or extrasphincteric fistulae

- The Pescatori<sup>8</sup> scale was used to define the degree of incontinence, and as well as an endoanal ultrasound we used manometry and kept an incontinence diary

This study did not include patients who had shown symptoms of anal infection before anti-obesity surgery.

We analysed the relationship between quantitative variables and normal distribution using the Student's *t* test. The variables which follow normal distribution have been analysed using the Mann-Whitney *U* test. For relationships between qualitative variables the  $\chi^2$  test was used.

## Results

Of the 263 patients involved, 13 were excluded from the study as they presented cases of previous anal conditions. From the remaining 250 patients, 150 underwent classic biliopancreatic diversion (C-BPD) and 100 underwent modified biliopancreatic diversion (M-BPD). Fifty-eight (23%) of the patients were male and 192 (77%) were female. The age range was from 18 to 64 years. The mean number of loose stools per day after 18 months of intervention was 3.5 (range, 1-15). The average follow-up period was 5 years (range, 1-10).

Of the 250 patients studied, 45 (18%) showed signs of an anal condition.

This group was 36% male and 64% female, with ages ranging between 35 and 64 years. The average number of loose stools per day for this group was 5 (range, 2-15). Of these patients, 84.4% (38/45) underwent C-BPD and the remaining 15.6% (7/45) underwent M-BPD.

The average number of bowel movements per day, 1 year after intervention was 5 per day for patients that had undergone C-BPD and 2 per day for those who underwent M-BPD. The frequency of anal disorder was higher in the patients with C-BPD (25%) than in those with M-BPD (7%). This difference was statistically significant ( $P>.05$ ).

Over the course of the follow-up, of the 45 patients included, 3 (6.6%) had an episode of malnutrition which required hospitalisation and classic biliopancreatic diversion.

The complications that developed are as follows:

### Anal Fissure

Twenty cases were recorded: 18 (90%) in patients who underwent classic diversion and 2 (10%) who underwent modified diversion. This group consisted of 14 females and 6 males. Location of fissure: 12 at the rear of the anus, 6 at the front (all females), and 2 at the side. The diagnosis came

following the intense pain experienced following a bowel movement (90%) and from rectorrhagia experienced in the other 10%. Eight patients required surgical treatment, namely internal lateral sphincterotomy, as they did not respond to the initial conservative medical treatment administered, such as tepid water baths, analgesics, dietetic measures for combating diarrhoea, calcium antagonists, nitro-glycerine ointment, etc.

#### *Anal Abscesses*

Ten cases of anal abscesses were recorded in 8 patients; 6 patients (75%) with classic bypass and 2 (25%) with modified bypass. Location of abscesses: 3 perianal, 4 ischiorectal, and 1 horseshoe abscess. In all cases urgent surgical drainage was carried out. Two patients suffered from recurring abscesses. One patient (C-BPD) who had been admitted for malnutrition had Fourniers Gangrene which required 4 revisions with anaesthesia for drainage.

#### *Fistulae*

Over the course of the follow-up, 7 patients showed chronic anal suppuration conditioned by an anal fistula. Of these patients, 6 of these had undergone C-BPD and 1 M-BPD.

Location of fistulae: 5 were simple, intersphincteric, and were treated with a fistulotomy. The other 2 were high, transsphincteric fistulae which were treated using a drainage seton with periodic revisions, until achieving better dietetic control and a decrease in the number of bowel movements.

In this group, for the 2 high transsphincteric fistulae we did not want to carry out any aggressive techniques such as *flap* advancement due to the higher risk of incontinence. Instead we chose to monitor the fistulae for necessary drainage and subsequent assessment in a multi-centric study in which treatments which present lower risks of incontinence are used, such as biological adhesives, stem cells, etc.

#### *Haemorrhoids*

During the follow up, 15 patients have had symptomatic haemorrhoids. These were most prevalent in the patients who had undergone classic bypass (14 patients.) Only 1 of the patients that underwent the modified bypass had haemorrhoids.

Of the 15 patients, 3 had to attend casualty due to a non-thrombotic haemorrhoidal prolapse which was treated using reduction (application of sugar to reduce the oedema) and traditional hygienic/dietetic measures. Surgery was necessary in 4 patients (grade III-IV haemorrhoids) where a classic haemorrhoidectomy was carried out and 3 packets removed in accordance with the Milligan-Morgan technique. In another 2 of the patients with rectal mucosa prolapse, a stapled anopexy was carried as per the Longo technique.

In this last paragraph we have only commented on the patients that showed some type of complication or required

surgical treatment for haemorrhoids (9 patients), the rest of the patients were given relevant hygiene/dietetic measures to follow and therefore are not mentioned here.

#### *Incontinence*

In total, 5 patients (3 from the C-BPD group and 2 from the M-BPD group) experienced gas incontinence (A2 according to the Pescatori scale); 2 of these had undergone some of the interventions as mentioned previously (a sphincterotomy, where the incontinence was temporary and corrected itself after 6 months, and a classic haemorrhoidectomy where the endoanal ultrasound did not show any signs of structural alteration). The 3 remaining patients were females with a history of having had a traumatic birth (forceps). The manometry showed a reduction in the pressure of the internal and external sphincter but no alterations were shown in the ultrasound.

There were 2 cases of severe incontinence (C6) in the patients with C-BPD who experienced 15 bowel movements a day and protein-calorie malnutrition which required further surgery to elongate the common tract. The ultrasound and manometry showed the anal canal to be normal.

#### *Anal Pruritus*

In total, 80% (200/250) of the morbidly obese patients studied experienced postoperative pruritus ani. Anal pruritus affected 100% of the patients with anal disorder. As it was so prevalent and difficult to quantify during the follow-up period it has not been included in the total percentage of patients with anal disorder.

Table lists the patients and the relative disorders they presented according to the surgical procedures undergone. It also shows the percentage that the disorders occurred and the comparison with the prevalence of these illnesses in the general population (obese and not obese).<sup>9</sup>

#### **Discussion**

Biliopancreatic diversion, as developed by Scopinaro,<sup>1</sup> is one of the most controversial anti-obesity techniques available. Although it has been shown that the more aggressive a bariatric technique, the better the results in terms of fat loss and maintenance of that fat loss over time, and also there is an improvement of co-morbidity too, the price paid by the patient in relation to undesirable and adverse side effects and associated illnesses derived from these aggressive techniques is high. On many occasions, the quality of life of the patient is negatively affected by these "collateral effects." It also produces an increase in the requirement for medical consultations, both scheduled and urgent, and it increases the number of treatments and interventions derived from these secondary effects, thereby increasing the health expenditure.<sup>2</sup>

The aetiology of anal pathology is multifactorial. One trigger-factor present following intervention (as well as the patients' bad dietetic habits), is diarrhoea (steatorrhea), due to chemical irritation of the liquid faeces.<sup>10</sup> Biliopancreatic

**Anal Disorders Presented in Patients**

|  | <b>Fissure</b> | <b>Abscesses</b> | <b>Fistulae</b> | <b>Haemorrhoids</b> | <b>Incontinence</b> |
|--|----------------|------------------|-----------------|---------------------|---------------------|
| Classic Scopinaro (38/150 patients; 25%) | 18 (12%)       | 7 (4.6%)         | 6 (4%)          | 14 (9.3%)           | 5 (3.3%)            |
| Modified Scopinaro (7/100 patients; 7%)  | 2 (2%)         | 3 (3%)           | 1 (1%)          | 1 (1%)              | 2 (2%)              |
| Total (45/250 patients; 18%)             | 20 (8%)        | 10 (4%)          | 7 (3%)          | 15 (6%)             | 7 (3%)              |
| General population <sup>a</sup>          | 7%             | –                | –               | 5%                  | 1%-10%              |

<sup>a</sup>Data according to the Clinical Guide to Colon-rectal Surgery from the Spanish Association of Surgeons.<sup>9</sup>

bypass produces an increase in the number of bowel movements and a decrease in their consistency due to the malabsorption of fat. Diarrhoea generally appears during the first months after intervention and then it stabilises between the 18th and 24th months when in general, fat loss has also stabilised. Therefore we assessed the number of bowel movements at that point. However, there is a significant number of patients who have autolimited episodes of colitis during follow-up as they have failed to adapt appropriately or have not fulfilled the postoperative dietetic indications or both. Amongst other adverse effects, this can cause anal pathological processes.

When observing our results, we can see that the higher the number of bowel movements, the higher the incidence of anal disorders, which occurred significantly more frequently in the patients who had undergone classic bypass (more aggressive intervention) than in the group of patients with modified bypass.

We can also establish from our results that the patients who presented episodes of severe malnutrition and required hospitalisation, suffered from the most significant and severe septic cases such as Fourniers gangrene described in states of immunosuppression in up to 75% of the cases, caused by malnutrition.<sup>11</sup>

Although comparison with the general population is difficult due to the lack of studies into the actual prevalence of anal disorders, we have seen that it is similar in M-BPD and more frequent in C-BPD. Perianal abscesses in the general population are more frequent in males, as was the case in our group of obese males studied. The age range is generally between 20 and 60 years of age and although the cryptoglandular theory is more accepted; its aetiology is not well known.<sup>12</sup> It has also been related to diarrhoea and with bad hygiene in the perianal area which were common occurrences amongst the group we worked with. The treatment for this should always be urgent surgical drainage. In this group of patients we also recommended the use of antibiotics as the majority of them had metabolopathies or immunosuppression as a cause of the malnutrition that this intervention caused.<sup>13</sup> In our results, fistulae appeared in 7 patients. Five of them had previously had an abscess that had been drained. The open debate surrounding the surgical treatment of this problem is always in the context of continence preservation and in reducing the number of recurrences as much as possible. For simple fistulae, flattening them out or a fistulotomy is the treatment of choice, which is indicated for intersphincteric and low transsphincteric fistulae and which leads to the resolution of 80%-90%.<sup>14</sup> In our results the 5 patients treated in this way progressed satisfactorily during the follow-up period with no recurrences. However, when proposing surgical treatment for this type

of patient we should try to be as conservative as possible due to the associated increased risk of incontinence. Therefore, we chose instead to locate drainage setons in the 2 high transsphincteric fistulae that were present. We also insisted upon adequate dietetic habits to achieve a decrease in the number of bowel movements and avoid or treat the overgrowth of bacteria (metronidazole / oral neomycin) before carrying out more aggressive surgery procedures such as flap advancement, where the percentage of recurrence can rise to 33% in suprasphincteric and extrasphincteric fistulae, and incontinence although light, can rise to up to 31%.<sup>15</sup> Also, the appearance of new treatments generates new hope for the management of these complex fistulae.<sup>16-18</sup>

Many of our patients refer to pruritus ani in the follow-up period. It is most probably a secondary effect of the perianal irritation due to the inadvertent escape of faecal material from the anus, which, together with excess sweat, the lack of hygiene and continuous scratching causes perianal lacerations which can be seen during anal examination. The hygiene of this area must be extreme, preferably by having a shower or sit-bath after each bowel movement whenever possible.<sup>19</sup>

Haemorrhoidal prolapse can also occur, generally due to serious constipation (as in the case of our patients) following severe episodes of diarrhoea.<sup>20</sup> All patients responded well to the reduction of oedema with sugar and gentle reduction procedures, as well as analgesic treatment and hygiene/dietetic measures (fibre, abundant intake of liquids, the restriction of food and drink that irritates the anus such as coffee, spices, etc, and venotonic medication).

Surgical treatment of symptomatic haemorrhoids should be restricted. Particularly in patients with grade III haemorrhoids and most importantly those with grade IV which cannot be improved with conservative treatment as a not inconsiderable percentage of incontinence following a haemorrhoidectomy can be attributed to two main factors: the temporary loss of sensitivity of the anal canal and the lesser consistency of the bowel movements.<sup>21</sup>

Our 4 patients did not display any postoperative complications directly after the operation or during the follow-up phase.

Although anal fissures are generally associated with constipation, in 7%, diarrhoea could be the trigger as passing irritant liquid faeces is a factor in the deterioration of the situation more often than with the patients who are constipated.<sup>22</sup> This appeared in 20 (8%) of our patients, together with the increase in the number of bowel movements following dietetic transgressions. Scopinaro describes noting up to 2%.<sup>23</sup> In our group, the figure was noticeably higher, perhaps because we had long-term follow-up with 80% of

our patients. In 90% of our cases, pain following a bowel movement was the main motivating factor for going to the hospital emergency department. In contrary to the general public, where the fissure was most commonly located at the rear of the anus, in this group, the fissures were most commonly located atypically at the side of the anus (lateral fissure), and at the front (most common in females, up to 10%). Treatment in these cases was sufficient with the use of conservative measures (correction of alimentary habits, sit-baths with warm water, lubricated ointments or low-absorbent cortisones, as well as using metronidazole to treat the overgrowth of bacteria, as proposed by Scopinaro<sup>24</sup>). Four of these patients had a posteriorly located exacerbated chronic fissure. They were all male and had good sphincter tone so underwent open internal lateral sphincterotomy without experiencing incontinence in the medium to long-term follow-up phase.

Incontinence can be defined as the involuntary passing or inability to control discharge of faecal material, liquids, or gases through the anus. It occurs when one or various mechanisms that intervene in continence are affected to such a degree that they are unable to be compensated by other mechanisms.<sup>25</sup> Although across the general population the prevalence has been underestimated, incontinence can occur in up to 10% of adults. In females, due to obstetric lesions, it can be up to 8 times more common.<sup>26</sup> Liquid bowel movements require a lot of effort from the continence mechanisms and they can trigger latent problems in the associated neuromuscular mechanisms. In our group, 5 patients experienced gas incontinence, all of which had previous anal or obstetrical surgery which were causal factors (previous surgery, traumatic birth, reduction in the consistency of bowel movements). The endoanal ultrasound showed internal sphincter defect in 3 cases.

As previously described, 2 of our patients had incontinence (15-20 bowel movements a day) despite the sphincter complex being intact (ultrasound and anal manometry). Re-intervention was necessary for these patients so as to elongate the common tract, undoing the bypass to correct the malabsorptive mechanisms which also led to frequent readmissions due to malnutrition. They regained 40% of the fat lost.

In conclusion, looking at our results, we can see that the classic Scopinaro technique had a significantly higher percentage of anal disorder than with the modified technique, mainly as a cause of the higher number of bowel movements and their consistency. This therefore led to this group of patients requiring more consultations and interventions in detriment to their quality of life. As well as the other comorbidities associated with the classic biliopancreatic bypass, such as hypoproteinemia and vitamin and oligoelemental deficit, anal disorder is another factor which requires us to consider replacing the classic technique for the morbidly obese with the modified technique; according to our results fat loss and improvement in comorbidities is maintained with the modified bypass.<sup>27</sup> Other groups have also published similar results regarding the modification of measures for minimising the adverse effects of this surgery.<sup>28,29</sup>

It is of utmost importance to be conservative in the treatment of anal disorders for this group of patients. Firstly digestive alterations should always be corrected together

with the previous nutritional status. It must also not be forgotten that the anatomy of the anal canal should be preserved as much as possible so as to avoid incontinence, as in these patients at least one of the continence mechanisms is already altered.

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