



## Original article

# V-Y Advancement Flaps for Extensive Perianal Defect Repair<sup>☆</sup>



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## A B S T R A C T

**Objectives:** Some perianal pathologies require aggressive surgery that will need techniques to allow to re-establish the integrity of the perianal region. The purpose is to analyze short and long term results after perineal reconstruction with V-Y flaps.

**Methods:** A retrospective review of prospectively collected database was conducted at Virgen de la Arrixaca's Hospital in Murcia (España) between January 2000 and December 2013. The study includes all patients who underwent a perineal reconstruction with V-Y flaps. Demographic and surgical data and short-/long-term morbidity was recorded.

**Results:** 10 patients were included, 6 males and 4 females. The average age was  $58.1 \pm 17.4$  years. Surgical indication included both malignant and benign pathologies. Operating time was  $143.5 \pm 41.3$  min. R0 resection was performed in all cases although histopathological analysis showed involvement of the deeper margin in 3 cases. Length of hospital stay was  $7.8 \pm 7.6$  days. Regarding complications: 6 patients had partial dehiscence of the flap. None of the patients lost the flap completely. The most frequent late complication was anal stenosis (n=4). Follow up showed total continence in 7 patients. Two patients had variable fecal and/or flatus incontinence. A colostomy was made in one case due to severe incontinence.

**Conclusions:** V-Y flaps are an effective and feasible technique to cover large perianal defects after aggressive surgeries. However, this technique is not free of postoperative morbidity.

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## El colgajo V-Y como método de reparación de defectos perianales extensos

## R E S U M E N

**Introducción:** Algunas enfermedades perianales precisan cirugías agresivas que crean la necesidad de recurrir a técnicas reparadoras para reconstruir la integridad de esta región.

## Palabras clave:

Colgajo miocutáneo

Colgajo quirúrgico

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Neoplasias perianales  
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El objetivo de este estudio es analizar los resultados a corto y largo plazo tras reconstrucción perianal con colgajos V-Y.

**Método:** Se ha revisado retrospectivamente nuestra base de datos institucional prospectiva (2000-2013), y se ha incluido en el presente análisis a todos los pacientes a los que se ha realizado una reconstrucción perianal con colgajo V-Y, tras escisión amplia perianal por enfermedad benigna o maligna. Se recogieron datos demográficos, quirúrgicos y la morbilidad a corto y largo plazo.

**Resultados:** Se analizó a un total de 10 pacientes, 6 varones y 4 mujeres, con edad media de  $58,1 \pm 17,4$  años. El tiempo quirúrgico fue  $143,5 \pm 41,3$  min y la estancia hospitalaria media tras la cirugía  $7,8 \pm 7,7$  días. En 8 pacientes aparecieron complicaciones postoperatorias: dehiscencia parcial del colgajo ( $n = 6$ ) y estenosis anal tardía ( $n = 4$ ). En ningún caso se produjo la pérdida del colgajo. Siete pacientes presentaron buenos resultados en cuanto a la continencia anal, 2 pacientes incontinencia variable y en un caso se realizó una colostomía terminal por incontinencia grave.

**Conclusión:** Los colgajos V-Y son una técnica factible y efectiva para cubrir grandes defectos tras cirugías perianales agresivas; sin embargo, no están exentos de morbilidad postoperatoria.

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## Introduction

There are many diseases, such as Paget disease, Bowen's disease, epidermoid carcinoma or severe hidradenitis, whose presence in the perianal region requires aggressive surgical treatment and the excision of large areas of tissue. Afterwards, reconstruction techniques are needed to restore the integrity of the area.

Current guidelines provide no clear directives,<sup>1-3</sup> so different methods have been used, including primary closure in small-size defects allowing for tension-free suture, secondary intention wound closure, skin grafts,<sup>4</sup> and even S-plasties<sup>5</sup> or house advancement flaps<sup>6</sup> for larger-sized defects. These techniques, however, are limited by the size of the defect and by the involvement and resection of the anal canal to a greater or smaller extent.

For large, extensive resections, myocutaneous flaps have been used, involving the gluteus,<sup>7,8</sup> anterior rectus abdominis<sup>9</sup> or gracilis muscles and requiring careful management of the flap and its vascularization. On certain occasions, they can entail a loss in muscle function at the site of the flap origin.

The ideal reconstruction technique should provide good coverage of the defect and guarantee proper blood supply to the graft to avoid its loss, while allowing for tension-free suture. Furthermore, the reconstruction should provide the patient with adequate functionality, without compromising the function of other muscle groups; proper continence should be ensured, and esthetic results are also a priority. Therefore, V-Y flaps have been proposed as a repair method for perineal defects of a size where simple skin grafts cannot be used and for which myocutaneous flaps would be excessive.<sup>10,11</sup> V-Y flaps were initially developed to treat anal ectropion. This name is due to the configuration of the incisions, in such a manner that the base of the "V" is directed toward the anus.<sup>12</sup>

Because the information in the literature about this technique is limited, the objective of this study is to analyze

the short-term and long-term results of perianal reconstruction using V-Y flaps.

## Methods

### Study Design

Ours is a retrospective study that has reviewed the prospective database (January 2000-December 2013) of patients treated surgically at the Hospital Universitario Virgen de la Arrixaca in Murcia (Spain). The present analysis includes those patients who underwent perineal reconstruction with V-Y flaps. Approval was obtained from the Ethics Committee of our institution, and Declaration of Helsinki guidelines were complied with in order to respect the confidentiality of the data.

Early-onset postoperative complications (defined as those that had occurred within the first 30 days after surgery) were analyzed, as were late-onset postoperative complications (after the first 30 days). Other parameters that were assessed included the need for reoperation, perioperative mortality and functional results in terms of anal continence.

### Surgical Technique

#### Preoperative Preparation

During the first consultation, all patients underwent mapping of the lesions with core-needle biopsies in the 4 quadrants in order to outline the lesion and be able to plan the surgical strategy beforehand.

Two days before the surgical intervention, antegrade colonic preparation was done, and washout enemas were administered the day before the operation. During surgery, antibiotic prophylaxis was used, which was generally amoxicillin/clavulanic acid, except in cases of allergy, and thromboembolic prophylaxis was administered during the postoperative period.

### Technique

Surgery was conducted under general anesthesia. The flaps were designed on the patient (Fig. 1), keeping in mind that the excision of the perianal lesion should be done with wide and deep resection margins. The incision was extended to 5 mm proximally to the dentate line of the anal canal. Flaps should also include subcutaneous fat.

Two skin tabs should be left at the base of each flap to allow them to be fitted into the anal canal with no tension, thereby reducing the possibility of anal stenosis in the postoperative period (Fig. 2). The tabs were glided into the anal canal and sutured around the mucosa utilizing interrupted Vicryl 3/0 sutures. The rest of the flap was attached with interrupted stitches of PDS 3/0 in the perianal area and continuous sutures in the lateral margins (Fig. 3).

After the procedure, chemical colostomy was performed: the patient was treated with an astringent liquid diet with total parenteral nutrition (in association with loperamide or codeine to cause constipation) during the first week post-op. Between the 3rd and 5th post-op days, loperamide was discontinued.

### Variables

The results of each patient have been studied together with demographic information and previous comorbidities. The



**Fig. 1 – Flap design.**



**Fig. 2 – Resection of the lesion and dissection of both flaps.**



**Fig. 3 – Result of the surgery.**

following baseline variables were collected: age, sex, surgical indication, previous surgery and relevant previous disease, such as the presence of immunosuppression, the presence or absence of distant disease and the need for neoadjuvant treatment. Surgical variables collected included: curative intent, involvement or not of surgical margins, operative position, surgical time (measured in minutes), resection type, hospital stay after surgery (measured in days), early- and late-onset postoperative complications, disease-free survival (measured in months), recurrence and continence (evaluated as total continence, variable continence or severe incontinence).

### Statistical Analysis

The continuous variables (age, surgical time, hospital stay) were expressed as mean values, standard deviation and range. The discrete variables were expressed as number of patients.

### Results

A total of 10 patients were analyzed (6 men and 4 women), with a mean age of  $58.1 \pm 17.4$  years [24–80].

The main patient characteristics are summarized in Table 1. Out of the 3 patients with epidermoid carcinoma, 2 received previous chemoradiotherapy, without adequate response, and the remaining patient only received chemotherapy because of previous radiotherapy due to a prostatic neoplasm. In addition, 2 of the patients presented with immunosuppression (one case of HIV and another case with T-cell lymphoma). Four patients had been treated with previous perineal surgeries: Two-female patients had previously presented Paget disease with vulvar involvement (vulvectomy was performed in one case), one patient with condylomas underwent multiple previous perineal interventions and one patient with hidradenitis had been previously operated on for uterine prolapse and associated cystocele.

Mean surgical time was  $143.5 \pm 41.3$  min [105–240]. In all cases, excision was conducted with curative intent, although the pathology studies of the surgical specimens showed

**Table 1 – Characteristics of the Patient Series.**

Patient	Age	Sex	Previous comorbidities	Surgical indication	Previous surgery	Operative position	Surgical time	Hospital stay	Early-onset complications	Late-onset complications	Continence	Recurrence
1	38	Male	HIV	Epidermoid carcinoma	No	Prone	105	2	Partial peripheral dehiscence	No	Total	No
2	52	Male		Bowen's disease	No	Lithotomy	130	1	Partial perineal dehiscence	No	Variable incontinence	No
3	77	Female	Epidermoid vulvar cancer + cutaneous T cell lymphoma	Epidermoid carcinoma	No	Prone	120	10	No	Anal stenosis	Total	No
4	80	Male	Prostate adenocarcinoma treated with radiotherapy	Epidermoid carcinoma	No	Lithotomy	185	7	Partial peripheral dehiscence	No	Total	No
5	73	Male	Hepatitis C virus	Basal-cell carcinoma	No	Lithotomy	120	1	No	No	Total	No
6	57	Female		Paget disease	Yes	Prone	240	14	No	Anal stenosis	Total	Yes
7	54	Female		Severe perineal hidradenitis	Yes	Prone	105	4	Partial perineal dehiscence	No	Total	No
8	62	Male		Paget disease	No	Lithotomy	140	2	No	No	Total	Yes
9	64	Female		Paget disease	Yes	Prone	140	25	Partial perineal dehiscence	Anal stenosis	Severe incontinence	Yes
10	24	Male		Condylomas	Yes	Lithotomy	150	12	Partial perineal dehiscence	Anal stenosis	Variable incontinence	Yes

involvement of the deep margin in 3 cases: Two with Paget disease and one with epidermoid carcinoma.

Suction drains were not used in any of the patients, nor were any protective stomas created. Tolerance to liquid diet was initiated in all patients on the first day post-op. Mean hospital stay after surgery was  $7.8 \pm 7.7$  days [1–25].

In terms of early-onset postoperative complications, 6 patients presented partial flap dehiscence, in 4 cases due to involvement of the perianal suture and in 2 cases in the area of the peripheral suture; however, none of the patients required reoperation or experienced flap loss. As for late-onset postoperative complications, 6 patients presented no type of complication, and the rest (n=4) presented anal stenosis that was resolved in all cases with dilatations. Two of these patients had had dehiscence of the perianal suture during early post-op.

Disease-free time was  $12.5 \pm 18.4$  meses [2–40]. Relapse occurred in 4 of the 10 cases: 3 due to Paget disease (in 2 cases the surgical margin had been affected) and one due to condyloma acuminata. In one case of Paget disease, the malignization of the disease to invasive carcinoma after recurrence required abdominoperineal amputation.

During follow-up, total continence was observed for gas and feces in 7 patients. However, 2 patients presented urgency incontinence that was variable for gases or feces, and in one it a colostomy was performed due to severe passive incontinence.

## Discussion

The selection of the best reconstruction technique after excision with wide resection margins to treat perianal disease is a challenge due to the size of the residual defects.

Although there are numerous reconstructive techniques, the choice of the most appropriate procedure is affected by many factors, such as the size of the defect, depth of the excision, need for resection of the anal canal mucosa, suture tension during reconstruction, and flap vascularization.

The present study proposes that V-Y flaps may be a good option for the treatment of perianal defects that are too large for primary intention wound closure or skin grafts, but not large enough to use myocutaneous flaps.<sup>13</sup>

In the present series, prior to surgery we mechanically prepared the colon following the recommendations of most guidelines for anorectal reconstruction surgery.<sup>3</sup> Furthermore in all cases we have used antibiotic prophylaxis (generally with amoxicillin-clavulanic acid, except in patients with allergies) and thromboembolic prophylaxis,<sup>14</sup> which are actions that are widely accepted by most authors.

In this series, the operative positions used have varied depending on the surgeon, lesion characteristics and patient morphology. For very posterior or very extensive lesions, we preferred the prone position, while the lithotomy position was used in predominantly anterior or smaller lesions. In terms of technique, meticulous sutures are necessary, especially in the perianal suture, as this is the most problematic region of the flap due to the higher risk for complications, such as dehiscence caused by tension, deficient vascularization and the passage of feces.

Although some authors recommend it,<sup>3</sup> there is no evidence for the use of aspiration drains. In our series, these drains were not inserted in any of the patients, and not one case presented with wound infection that caused loss of the flap, in spite of not having created a protective stoma in any of the patients. There is not a clear indication for construction of a protective ileostomy in order to reduce postoperative complications; nonetheless, some studies<sup>15–17</sup> recommend the technique because it seems to reduce postoperative pain and flap complications while improving fecal continence after surgery, although the morbidity and mortality associated with stomas and their closure must be considered. In our series, “chemical colostomy” was used in all cases, which temporarily impeded the emission of feces and avoided wound contamination on the first days of the post-op period.<sup>15</sup> However, a prospective randomized study<sup>18</sup> comparing 2 patient groups treated with surgical perianal reconstruction, one with chemical colostomy and the other without, observed no differences between the 2 groups in terms of wound infection or flap dehiscence. Another prospective study by Joos et al.<sup>15</sup> concluded that, with high-absorption enteral nutrition, the results obtained are similar to the use of antidiarrheal agents, but without their disadvantages, like nausea or fecalomas

Furthermore, when the anoderm needs to be resected, it is essential to correctly define the shape of the flap to avoid posterior anal stenosis, which was the most frequent late-onset postoperative complication in our series as well as in other studies.<sup>19</sup>

Although the present analysis is retrospective and limited in terms of sample size, in the literature there are no large series of patients treated with this procedure due to the infrequency of its use. Our study indicates that V-Y flaps may be a good option for the treatment of perianal defects that are too large for primary intention wound closure or the use of skin grafts, although not large enough for myocutaneous flaps. Nonetheless, this technique is not without postoperative morbidity.

## Conflict of Interest

The authors have no conflict of interest to declare.

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