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Original Research Article **Hepato-Gastroenterology**

Predictive Factors for the Success of the Filac Technique

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Abstract

The FiLaC™ (Fistula Laser Closure) technique has emerged as a valuable sphincter-preserving option for the treatment of cryptogenic anal fistulas, combining efficacy with functional safety. This retrospective study was conducted at the Hepato-Gastroenterology and Proctology Department of Ibn Sina University Hospital, Rabat, between January 2023 and January 2025. Twenty-five patients with cryptogenic anal fistulas underwent treatment using the FiLaC™ procedure, following initial drainage with a seton. Fistulas secondary to Crohn's disease, tuberculosis, or malignancy were excluded. Cure was defined as complete closure of the fistulous tract and both orifices without recurrence during 24 months of follow-up. The mean age was 45.3 years, with a slight male predominance. Transsphincteric fistulas were the most frequent (44%), and the overall success rate reached 84%, without any case of postoperative incontinence. Univariate analysis showed that a short fistulous tract and a small internal opening were associated with better outcomes ($p = 0.036$ and $p = 0.042$, respectively). In multivariate analysis, only the short fistula tract remained a significant independent predictor of success ($p = 0.04$; OR = 5.12). Recurrent cases were successfully managed with a second FiLaC™ session. The technique was well tolerated and reproducible, with mean energy delivery of 699 Joules and an average fiber withdrawal time of 61.6 seconds. These results confirm that FiLaC™ is a minimally invasive and reliable technique for the management of cryptogenic anal fistulas, offering a high healing rate and optimal preservation of continence. The short length of the fistulous tract appears to be the most decisive predictive factor of long-term success.

Keywords: FiLaC™, anal fistula, laser therapy, sphincter preservation, predictive factors, fistula tract length.

INTRODUCTION

Cryptogenic anal fistula is the most common form of ano-perineal suppuration, accounting for up to 71% of cases. It results from infection of the anal glands of Hermann and Desfosses, evolving into an intersphincteric abscess that can become chronic in the form of a fistulous tract if initial drainage is incomplete. Its incidence is estimated at between 1.2 and 2.8 per 10,000 inhabitants per year in Europe, preferentially affecting young men. In the presence of fistulas at high risk of incontinence, sphincter-sparing techniques, such as FiLaC™ (Fistula Laser Closure), are emerging as an interesting therapeutic alternative.

MATERIALS AND METHODS

A retrospective, descriptive and analytical study was conducted in the Hepato-Gastro- Enterology and Proctology Department of the Ibn Sina University Hospital in Rabat over a two-year period (January 2023 to January 2025). All patients with anal fistula of cryptogenic origin treated with the FiLaC™ technique were included. Specific fistulas (Crohn's, tuberculosis, cancer) were excluded. Cure was defined as complete closure of the fistulous path and internal and external orifices, without recurrence after 24 months. Statistical analysis was performed using Jamovi software, with binary logistic regression to study factors predictive of success. A p value < 0.05 was considered statistically significant.

RESULTS

Twenty-five patients were included, with a mean age of 45.3 years (extremes: 25 to 67 years; standard deviation: 13.4 years). Male predominance was observed (n=14, 56%), with an M/F sex ratio of 1.27. All patients underwent initial drainage with a seton prior to laser treatment. Five patients were smokers (20%), two had balanced type 2 diabetes (8%), and 18 patients (72%) had no particular pathological history.

According to Parks' classification:

- Type II (transsphincteric): 44% (n=11)
- Type I (intersphincter): 24% (n=6)
- Type III (suprasphincteric): 20% (n=5)
- Type IV (extrasphincterian): 12% (n=3)

Anatomically, a majority of patients (84%, n=21) had short-course fistulas, compared with 16% (n=4) with long-course fistulas. The internal orifice was small in 64% (n=16), while it was large in 36% (n=9).

The technical parameters of the FiLaC™ procedure were measured: the mean laser energy delivered was 699 Joules (range: 227 to 1973 J), with a mean fiber withdrawal time of 61.6 seconds (standard deviation: 11.3 s).

The overall success rate (absence of recurrence at 24 months) was 84% (n=21). The four failures involved long or complex fistulas; however, these patients successfully underwent a second FiLaC™ session. No cases of anal incontinence were observed.

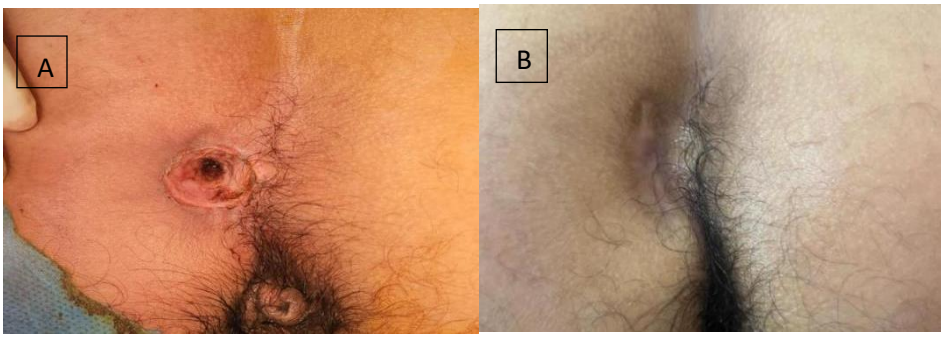

Figure 1: Clinical appearance of an anal fistula before treatment with FiLaC™, with biopsy of the external fistulous opening (A) and at 6 months after treatment (B), illustrating complete healing of the tract

Statistical analysis identified the following factors as potentially associated with therapeutic success, with univariate and then multivariate analysis:

Univariate analysis				**Multivariate analysis**		
Variable	**OR**	**Confidence interval**	**P value**	**OR**	**Confidence interval**	**P value**
Orifice interne fin	4.1	[0.842-8.451]	0.042	1.07	[0.321- 0.978]	0.07
Trajet fistuleux court	20	[1.2 -330]	0.036	5.12	[0.9 -24]	0.04
Temps de retrait	1.011	[0.994-1.004]	0.19	-	-	-
Energie délivrée	1	[0.999 -1.029]	0.24	-	-	-

Univariate analysis revealed a statistically significant association between treatment success and the presence of a short fistulous path (p = 0.036) and a small-calibre internal orifice (p = 0.042). However, in multivariate analysis, only the short fistula path remained significant (p = 0.04; OR = 5.12), confirming its role as the main independent predictive factor. Other variables such as delivered energy or fiber withdrawal time were not significantly associated with treatment success.

DISCUSSION

The FiLaC™ technique, introduced by Wilhelm in 2011 [1], is based on photocoagulation of the fistulous path by a 1470 nm radial laser fiber, enabling progressive closure of the path without sphincter dissection. This therapeutic modality is part of a sphincter-sparing approach, particularly interesting for complex fistulas or patients at high risk of incontinence. In our series, the 84% cure rate, with no reported incontinence, confirms both the efficacy and functional safety of this approach.

These results are in line with those reported in the literature. Giamundo *et al.,* obtained a success rate of 85% in 117 patients, mostly with transsphincteric and suprasphincteric fistulas [3]. Similarly, Solt and Rustagi observed a 78% success rate in patients with complex fistulas [4]. Han *et al.,* demonstrated a decrease in the healing rate from 81% at 6 months to 68% at one year, underlining the importance of prolonged follow-up to assess the durability of results [5]. Our series, with a standardized 24-month follow-up, reinforces the validity of the data obtained.

One of the advantages of the FiLaC™ technique also lies in the possibility of reintervention. In our study, all four patients who had recurred after a first procedure successfully benefited from a second session. This option has already been documented in Wilhelm's original series [1] and in the meta-analysis by Emile *et al.,* who confirm that a repeat procedure does not induce an increased risk of incontinence [7].

In terms of predictive factors, our study concurs with several studies that identify fistula path length as a key determinant. Indeed, a short fistula path was associated with a better healing rate, with a significant p-value in multivariate analysis (p = 0.04; OR = 5.12). Han *et al.,* also highlighted this factor, with an OR of 2.18 (p

< 0.01) [5]. Emile's meta-analysis confirms this association, particularly for low transsphincteric fistulas [7]. The role of the thin internal orifice, significant in univariate analysis, has also been highlighted by Wilhelm and Giamundo, who attribute this to better local vascularization and more homogeneous diffusion of energy [1,3].

Parks' classification remains an important element in stratifying results. Low intersphincteric and transsphincteric fistulas are more favorable to success, in contrast to suprasphincteric or horseshoe forms, as shown by data from Stijns and Van Onkelen [6, 9]. In our series, the majority of fistulas were Parks type II and III, which may partly explain the high success rate.

Finally, compliance with technical parameters is a key factor. Our mean delivered energy of 699 J and mean withdrawal time of 61.6 seconds are in line with recommended standards (between 100 and 150 J/cm according to Wilhelm) [2]. Ozturk *et al.,* have shown that failure to comply with these parameters can compromise treatment efficacy [10]. Rigorous training of operators and standardization of technical protocols are therefore essential to optimize results.

In summary, our study provides local confirmation of the efficacy of the FiLaC™ technique, with results consistent with the international literature. It also highlights the importance of patient selection, technical parameters and the possibility of repeating the procedure in the event of initial failure.

CONCLUSION

The FiLaC™ technique represents an effective and safe minimally invasive solution for the treatment of cryptogenic anal fistulas, with a high success rate and optimal continence preservation. A short fistula path is the most decisive predictive factor. Adapting the indication to these anatomical parameters will optimize results. Larger-scale multicenter studies are needed to confirm these data.

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