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A New, Conservative Treatment for Perianal Fistula that May Halve the Need for Surgical Intervention: Case Series

Francisco Javier Pérez Lara, PhD[1], Jose Manuel Hernández González, MD[2], Tatiana Prieto-Puga Arjona, MD[2], Francisco Javier Moya Donoso, MD[2], and Juan Doblas Fernández, MD[2]

Abstract

Purpose. In the last two decades, many sphincter preservation techniques have been proposed for the treatment of anal fistula. Since 2011, our surgical team has treated fistulas by sealing them with platelet-rich fibrin (PRF). This is performed actually as an outpatient process, without anaesthesia. Methods. Patients were treated with PRF sealant, during the period June 2012–March 2017. The fibrin preparation is applied in the fistulous tract, with no need for any type of anaesthesia, and so the patient can go home immediately afterwards, without further observation. Results. After an average follow-up of 26.49 months, the perianal fistula had healed completely in 52.86% of the patients (n = 37), who each received an average of 1.92 sealant operations. In another 10 cases, the sealing was initially successful, but a relapse occurred during the follow-up period. Conclusion. The outpatient treatment of perianal fistula with PRF is totally harmless, is very low cost and achieves very acceptable results. In our opinion, therefore, this could be considered an appropriate initial treatment for perianal fistula, with surgical treatment being reserved if this approach is unsuccessful, thereby avoiding many complications and producing significant economic savings for the health system.

Keywords

fistula in ano, perianal fistula, medical intervention, intra-tract drug injections, platelets

Introduction

Perianal fistula, or fistula in ano, is a common disorder that is estimated to affect 12.3 per 100,000 men and 8.6 per 100 000 women.[1] A broad range of treatments for this condition have been described, from simple fistulotomy to mucosal advancement flap, as well as sealant methods using various products. However, this very diversity of approaches reflects the fact that none are highly effective and the results obtained present considerable variability.[2] Accordingly, no method has yet become consolidated as a standard technique for this condition.

The problem is that aggressive techniques are more effective but are associated with a higher risk of injury to the sphincter, while more conservative ones have fewer undesirable effects on the sphincter but at the cost of being less effective. In view of these considerations, the current treatment approach is normally to be as conservative as possible, applying minimally invasive surgical techniques.

However, no suggestion has been made that a medical procedure might be employed, as an alternative to surgical treatment (to our knowledge, no studies have been published reporting medium/long-term medical treatment for this condition, with a significant number of patients).

In this study, we present the results obtained for a group of patients treated by the application of platelet-rich fibrin (PRF) in the outpatient department, without surgical intervention and without any type of anaesthesia.

Material and Method

This study was conducted of 72 patients treated with PRF sealant for perianal fistula, during the period from June

[1]Chief of Surgery Service, Hospital de Antequera, University of Malaga, Málaga, Spain
[2]Digestive Surgeon, Service of Surgery,Hospital de Antequera, University of Malaga, Málaga, Spain

Corresponding Author:
Francisco Javier Pérez Lara, PhD, Hospital de Antequera, Secretaría de Cirugía (3° planta), Avenida Poeta Muñoz Rojas s/n, Málaga, 29200, Antequera, Spain.
Email: javinewyork@hotmail.com

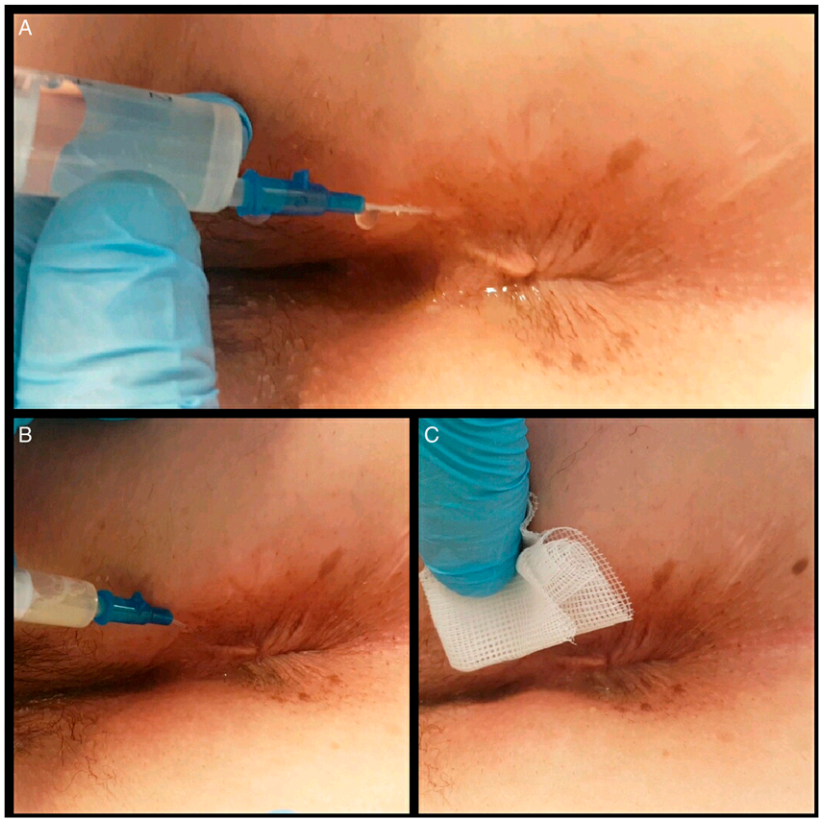

Figure 1. Sealing in outpatient consultation: (A) flushing with hydrogen peroxide via external orifice; (B) sealing with platelets via external orifice and (C) application of antimicrobial dressing.

2012 to March 2017 (approved by the research and bioethics committee (6-2013)). In our hospital, this procedure is performed in the outpatient department. The patients analysed had all been diagnosed (by magnetic resonance imaging) with single-tract transsphincteric or suprasphincteric anal fistula. The study population also included patients presenting intersphincteric fistula with sphincter dysfunction (diagnosed by patient history, anal examination, endoanal ultrasound and manometry).

The exclusion criteria applied were the presence of Crohn's disease, acute inflammatory processes or complex anal fistula with multiple tracts and cavities, as well as prior, unsuccessful treatment for anal fistula with biological sealant. All patients were asked to attend the outpatient department for treatment (fasting was not required), and up to eight patients were treated in each session.

In the first step of the procedure, patients were admitted to the hospital at least 1 h prior to the removal of 120 mL of blood, to which citrate was added. A nurse extracted the blood sample required, and it was then processed for 23 min to obtain the autologous fibrin sealant (Vivostat® PRF solution, Vivostat AS, Denmark) using a system that is fully automated, microprocessor controlled and composed of three distinct components: a processor unit, an applicator unit and a disposable single-patient-use kit.

The PRF obtained was then divided into 4 portions. One was applied immediately, in the outpatient treatment, and the remainder were stored in a freezer for possible future application.

The patient was asked to lie on the treatment couch, in the foetal position. The PRF preparation was injected into the fistulous tract. Finally, an antibiotic dressing was placed over the external orifice and the patient was discharged directly (Figure 1). No observation period was needed as the patient had not received any type of anaesthesia.

All patients were reviewed in subsequent external consultations at 3, 6, 9, 12 and 24 months. At the end of this period, the results were assessed, in terms of the following variables: age, sex, anaesthetic risk, type of fistula, duration of follow-up and degree of treatment success.

Results

A total of 70 patients were included in the study, of whom 51 (72.86%) were men and 19 (27.14%), women. Their

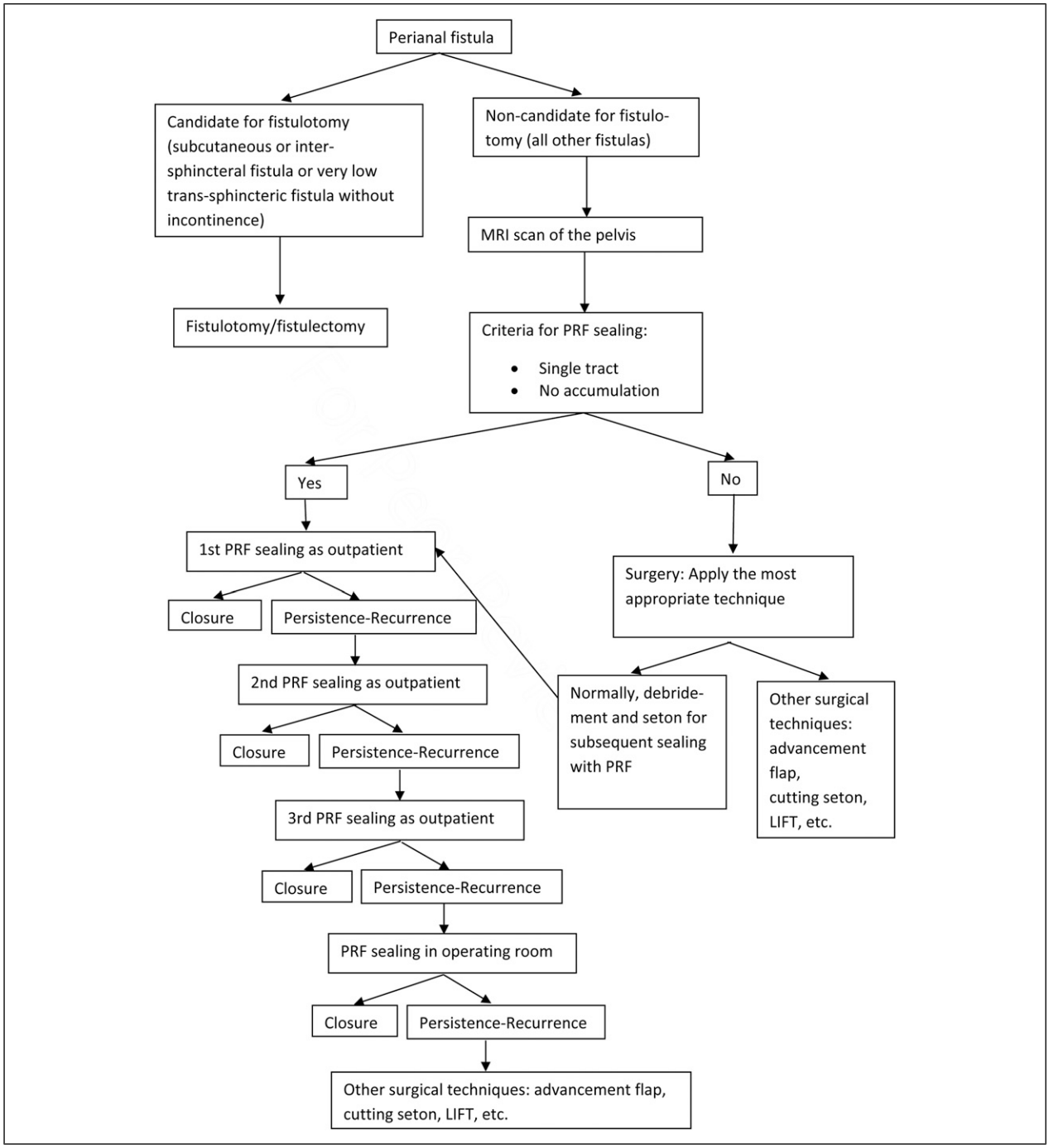

Figure 2. Action protocol based on the approach currently taken in our hospital.

average age was 48.08 years, and the average anaesthetic risk score was 1.39 (ASA 1–71.43%, ASA 2–20% and ASA 3–8.57%).

The majority of the fistulas (n = 47; 67.14%) were transsphincteric (10 high, 29 mid-level and 8 low). The remainder were either intersphincteric (n = 19; 27.14%), suprasphincteric (n = 3; 4.29%) or extrasphinteric (n = 1; 1.43%).

After an average follow-up of 26.49 months, 52.86% (n = 37) of the patients had achieved a complete clinical cure, after receiving an average of 1.92 sealant operations. Another ten patients were cured initially but relapsed during the follow-up period. The 37 patients who achieved a complete cure received one to four applications of PRF sealant. For eight patients (21.62%), a single application was sufficient; 25 patients (67.57%) needed two

applications; three patients (8.11%) needed three applications and one patient (2.7%) needed four.

The average time elapsed until a complete clinical cure was achieved was 12 weeks (range: 1–31). Among the 37 patients who obtained a complete clinical cure, in 13 cases (35.14%), the process was resolved during the first month of treatment. Only one patient presented mild infection that was solved with oral antibiotic treatment.

Discussion

Perianal fistula is a common anorectal disease, with an annual incidence of 8–10 cases per 100,000 population[3]. Most fistulas have a cryptoglandular aetiology and are believed to be caused by infection in the intersphincteric space, although this hypothesis has not been definitively established.

Conventional treatment for the condition is surgical. Numerous techniques have been described, which suggest that none are ideal. The success rates achieved vary widely, according to recent systematic reviews,[2,4-11] mainly due to the lack of uniformity and comparability between different studies and techniques.

For the treatment of low perianal fistula, closure rates of 98% have been reported for fistulotomy (lay open).[12] High fistulas are more difficult to treat; thus, recurrence rates are higher and there is greater potential for damage to the anal sphincter, which may provoke anal incontinence and the consequent deterioration in the patient's quality of life.[13]

Therefore, when deciding on the most appropriate treatment, the expected success rate must be weighed against the risk of sphincter injury, which can have an important long-term detrimental effect on the patient's quality of life. In this respect, Ellis et al[14] concluded that the majority of patients preferred sphincter preservation techniques even at the risk of a worse outcome. In other words, they attached greater importance to reducing the risk of incontinence than to achieving a higher rate of cure.

Several lines of research have been undertaken in recent years concerning conservative surgical treatment for fistulas that affect a large volume of fibres within the sphincter apparatus. Substances considered include fibrin glue sealant, anal collagen plug, Permacol™ collagen paste, fistula tract laser closure (FiLaC™) and video-assisted anal fistula treatment. Other approaches have also been proposed, such as the use of mesenchymal stem cells, and studies have investigated the mesenchymal regenerative capacities of adipose-derived stem cells (ASCs).[15-17]

In 2009, our hospital started using PRF (with tissue-growth accelerant properties) to treat vascular ulcers of the lower limbs. Very good results were obtained, and therefore, in 2011, we considered the possibility of using this substance as a sealant for perianal fistula (in the view that the fundamental need was to enhance the rate of wound healing in the fistulous tract). Accordingly, a multicentre study was undertaken, the results of which were published in 2015.[18]

In accordance with the study protocol, once the PRF sample had been obtained, it was divided into aliquots; one was applied in the operating room, and the remainder were stored in a freezer, for future use if needed. Thus, if the fistula orifice failed to close during follow-up, successive outpatient applications could readily be performed, without anaesthesia or surgery.

The application of PRF sealant as an outpatient procedure was surprisingly successful. In consequence, consideration was given to reversing the order of events, that is, first preparing as many aliquots as possible from a single blood extraction (4 or 5) and performing an initial application in an outpatient consultation. If the result was not satisfactory, the process would be repeated as many times as necessary, using all the tubes except one that was reserved to treat the patient in the operating room with the corresponding surgical procedure, as a last resort (logically, the debridement of the fistula track improves the healing results; however, this requires anaesthesia and a surgical intervention, we cannot do it in the outpatient department and we only do it in this last step if it is necessary in the operating room).

This approach gave us several opportunities to close the fistula, thus avoiding/reducing the need to include the patient on the waiting list for the corresponding surgical procedure, with the ensuing risk and discomfort for the patient and added expense for the hospital.

We place an antibiotic dressing in the external orifice mainly to prevent the release of the platelet content applied in the fistula track during the first 24 hours, strictly speaking we could have applied a non-antibiotic dressing (we have no evidence that antibiotic dressing improves results) although we think that the antibiotic dressing can help to reduce postoperative pain by reducing the small local infectious reaction.

Setting aside the cost of the platelets (which is the same in the outpatient procedure and in the operating room), the cost per patient treated for perianal fistula in the operating room is €1212.12, while for outpatient treatment, it is €20, taking into account that in each of the latter sessions, eight patients can be treated and that in each operating room session, three patients are treated. Taking into account the success rates achieved with each procedure, we estimate that savings of €7112.72 would be obtained per outpatient session. About five such sessions are conducted each year, and therefore, the annual saving for the public health system would be €35,563.60.

In view of the above calculations, our results with non-surgical treatment can be considered very good, if we compare them with currently employed surgical procedures with sealants. García-Olmo et al[19] in a phase II

clinical trial of 35 participants reported a cure rate of 71% at one year. In contrast, Herreros et al conducted a phase III randomised controlled clinical trial of 200 participants and reported a cure rate of 57.1% using expanded ASC alone and a cure rate of 52.4% using expanded ASC associated with fibrin glue. In our case, a cure rate of 52% was obtained, with a medical procedure that avoids the morbidity and mortality of surgical methods and which, of course, is much more comfortable for the patient.

Following the experience acquired over the last nine years in the treatment of perianal fistula with PRF, and with the results obtained in the present study, we propose an action protocol based on the approach currently taken in our hospital (Figure 2). According to this protocol, the initial sealing of the perianal fistula is performed in outpatient consultation; if this is ineffective, we proceed to a second and even a third attempt. Finally, if the fistula nevertheless persists, the surgical curettage procedure is employed, using the set of cylindrical curettes plus sealing[20,21] (which has proven to be more effective than traditional curettage). By this means, with four possibilities of achieving closure, very satisfactory healing rates can be obtained.

Conclusions

The results obtained in our study indicate that referral to the surgical waiting list can be avoided for more than half of the patients presenting with perianal fistula. The process described avoids the need for anaesthesia (general or spinal), with its corresponding risks, and for surgical intervention (with the risk of sphincter injury and subsequent anal incontinence). The proposed method, therefore, represents a significant improvement in patient safety.

Authors contributions

Francisco Javier Pérez Lara made a substantial contribution to the concept and design, drafted the article or revised it critically for important intellectual content and approved the version to be published. Jose Manuel Hernández González drafted the article or revised it critically for important intellectual content and approved the version to be published. Tatiana Prieto-Puga drafted the article or revised it critically for important intellectual content and approved the version to be published. Francisco Javier Moya Donoso drafted the article or revised it critically for important intellectual content and approved the version to be published. Juan Doblas Fernandez drafted the article or revised it critically for important intellectual content and approved the version to be published. In conclusion, the non-surgical treatment of perianal fistula with PRF can be considered a first-line option, with surgical treatment only being provided if this initial approach is unsuccessful.

Study concept and design: Francisco Javier Pérez Lara and Jose Manuel Hernández González

Acquisition of data: Francisco Javier Pérez Lara and Jose Manuel Hernández González

Analysis and interpretation:Francisco Javier Pérez Lara and Jose Manuel Hernández González

Study supervisión: Francisco Javier Pérez Lara, Jose Manuel Hernández González, Tatiana Prieto-Puga, Francisco Javier Moya Donoso, and Juan Doblas Fernández

Declaration of Conflicting Interests

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ORCID iD

Francisco Javier Perez Lara https://orcid.org/0000-0002-2942-5040

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