Long-term outcome following mucosal advancement flap for high perianal fistulas and fistulotomy for low perianal fistulas:

Recurrent perianal fistulas: Failure of treatment or recurrent patient disease?
Abstract

Background In this study we determined the long-term outcome of perianal fistulas treated with mucosal advancement flap or fistulotomy.

Methods One hundred and three patients with perianal fistulas were treated by mucosal advancement flap (MF) for high fistulas or fistulotomy (FT) for low fistulas and were retrospectively assessed by case-note review and examined at the outpatient clinic. The localization and time of recurrence of the fistula were recorded.

Results Forty-one patients (median follow-up of 72 months (range 48-99)) were treated by a MF and 62 patients (median follow-up of 75 months (range 48-99)) were treated by FT. After 12, 48 and 72 months the fistula had recurred in 9 (22%), 26 (63%) and 26 (63%) patients of the MF-group and in 4 (7%), 16 (26%) and 24 (39%) patients of the FT-group respectively. Eighteen (69%) of the recurrences in the MF-group and 10 (33%) of the FT-group occurred within 24 months after surgery (p=0.01). Four (15%) of the recurrences in the MF-group and 13 (54%) of the recurrences in the FT-group were present in a different localization (p=0.007).

Conclusion The success rate of both fistulotomy and mucosal advancement flap techniques decreases with time. Recurrence appears to be caused by failure of treatment and by recurrent patient disease.

Introduction

The management of perianal fistulas remains a major surgical challenge. Especially complex recurrent fistulas and those with multiple tracts above the middle third of the anal sphincter are difficult to treat. Most of the perianal fistulas are treated by fistulotomy, permitting healing by secondary intention. Most simple intersphincteric fistulas can be cured in this manner with minimal functional disturbance. Complex fistulas are defined as trans-, inter-, extra- and supra-sphincteric fistulas with tracts traversing the middle third or upper part of the anal sphincter. For many years high transsphincteric fistulas were treated by a fistulotomy. The disadvantage of this technique is the incidence of continence disorders such as soiling, incontinence for gas or liquid stool. Therefore sphincter-conserving techniques such as core-out fistulotomy, fibrin glue, cutting or permanent seton placement and advancement flaps have been developed [1-5].

Several reports demonstrate rates of recurrence between 8% and 40% and fecal soiling is still a common complication [6-9][10-20]. However, in most series the follow-up is shorter than 24 months and the results of treatment of low fistulas are hardly reported. Furthermore, the definition of fistula healing, recurrence, and treatment failure is usually not clearly stated. These aspects make a correct comparison between studies unreliable. It is still unclear whether a successfully treated fistula is cured or ‘only closed’. Is a fistula, without symptoms and no drainage of the previous external fistula opening after definitive treatment at short time follow up, a guarantee for a cured one? Is it possible to cure the patient or does he suffer from recurrent patient disease at long time follow up, with or without Crohn’s disease?

In this study the long-term outcome of a consecutive cohort of patients with low fistulas treated with fistulotomy (FT) and high fistulas treated with a mucosal advancement flap (MF) is retrospectively assessed. Special attention was paid to the length of time after surgery in relation to the rate of recurrence and the localization of the recurrence during a period of at least 4 years after surgery.

Patients and methods

Between January 1995 and January 1999 all consecutive patients with transsphincteric, suprasphincteric and extrasphincteric fistula tracts originating from the middle third or upper part of the anal sphincter were treated by a mucosal advancement flap (MF) and...
all consecutive patients with a fistula tract originating from the lower third of the anal sphincter were treated by a lay-open fistulotomy (FT).

All patients underwent physical examination, structured interview and laboratory tests. Preoperatively, the patients were questioned for complaints of incontinence and soiling. In 2003 the patients were assessed by case-note review and an additional visit to the outpatient clinic.

The fistula was considered to have healed when the symptoms had completely resolved and when there was no drainage of the previous external fistula opening with and without finger compression. Special attention was paid to the anatomy of the recurrent fistulas and the time of recurrence. The time of recurrence was defined as the time at which the patients recorded recurrent symptoms and not the time of diagnosis at the outpatient clinic. If there was any doubt regarding the presence of a recurrent fistula tract a MRI was made. A “recurrent” fistula, or absence of wound healing, and persistent symptoms within 3 months after treatment was defined as a failure of treatment. The localization of a recurrent fistula was compared to the localization of the primary fistula. The localization was defined as the anatomy of the fistula tract including the external and internal opening. A different external opening and the same internal opening was interpreted as the same localization. Patient characteristics, symptoms and signs, medical history, fistula type and location in the radial and coronal plane were recorded.

### Statistical analysis

Comparison was made between the rates of recurrence at 12 months, 24 months and 48 months after surgery. Categorical frequencies were analyzed using Fisher’s exact test. Significance was assigned at the 5 per cent level. Kaplan-Meier survival curves were constructed to analyze the recurrence-free time after FT and MF compared with the log rank test.

### Results

Between January 1995 and January 1999, 50 patients were treated by MF for a high perianal fistula and 93 patients were treated by FT for a low fistula at the academic hospital of Maastricht. Patient characteristics are listed in Table 1. Forty patients were lost to follow up. Nine of them were treated by MF. Three patients died from unrelated causes, 21 patients could not be contacted by telephone or letter, and only 16 patients were not able or willing to visit the outpatient clinic for different reasons (Figure 1). Hundred and three patients were included. Thirty-one patients were treated by definitive surgery in other hospitals before treatment in our hospital. In 50 (49%) patients the fistula had recurred in 72 months after surgery. Ten (10%) patients developed minor soiling after up to three surgical procedures, while 17 patients (17%) had soiling before treatment.

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**Table 1. Patient characteristics**

<table>
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<th>1 previous attempts</th>
<th>2 previous attempts</th>
<th>&gt;2 previous attempts</th>
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<tbody>
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<td>N=13</td>
<td>N=12</td>
<td>N=7</td>
<td>N=9</td>
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<tr>
<td><strong>FT</strong> N=62</td>
<td>N=44</td>
<td>N=9</td>
<td>N=5</td>
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<table>
<thead>
<tr>
<th></th>
<th>Sex</th>
<th>Age (years)</th>
<th>Median Follow up (months)</th>
<th>Crohn’s disease</th>
<th>Soiling (before treatment)</th>
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<tbody>
<tr>
<td><strong>MF</strong> N=41</td>
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<td>37 (range 23-72)</td>
<td>72 (range 48-99)</td>
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<td>N=14</td>
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<td>Female N=15</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>FT</strong> N=62</td>
<td>Male N=44</td>
<td>40 (range 24-70)</td>
<td>75 (range 48-99)</td>
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<tr>
<td>Female N=18</td>
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**Figure 1. Patients treated by MF and FT between 1995 and 1999.**
MF-group

Forty-one patients (26 men and 15 women, median age 37 years (range 23-72)) with a median follow-up of 72 months (rang 48-99) were treated by MF for a high fistula. Twenty-two patients were still followed and 19 patients came for a renewed visit to the outpatient clinic. Twelve patients had Crohn’s disease. Patient characteristics are listed in Table 1. Complete healing occurred in 36 patients (88%) in this group, and thus an initial failure rate of 12%. Twelve, 24 and 48 months after surgery fistula recurrence was recorded in 9 (22%), 18 (44%) and 26 (63%) patients respectively (Table 2). In eight (19%) patients the recurrent fistula presented with an acute abscess that required drainage. Eighteen patients had minor soiling postoperatively of which 14 already had soiling before treatment. None of the patients was incontinent.

In 22 patients the recurrence was found peroperatively and by physical examination in the same plane and radial location. In 4 (15%) patients the recurrent fistula was found peroperatively in another location. Eighteen (69%) of the recurrences occurred within 24 months after surgery (Table 2). Twelve and 24 months after surgery the fistula had recurred in 3 (25%) and 4 (33%) patients with Crohn’s disease. Two (50%) recurrences in patients with Crohn’s disease were found in another location.

Twenty-one patients underwent renewed definitive surgical treatment (Figure 2). Fifteen patients underwent a new MF. After a median follow up of 18 months (range 10-40) seven patients developed a recurrence and one developing soiling. Five patients, all of which had more than 2 previous attempts, did not want to undergo a new operation.

FT-group

Sixty-two patients (44 men and 18 women, median age 40 years (range 24-70)) and a median follow-up of 75 months (range 48-99) were treated by FT. Eighteen patients were still followed and 44 patients came for a renewed visit to the outpatient clinic. Complete healing was achieved in 61 patients (98%) of the FT group, and thus an initial failure rate of 2%. Twelve, 24, 48 and 72 months after surgery the fistula recurred in 4 (7%), 10 (16%), 16 (26%) and 24 (39%) patients respectively (Table 2). In 13 (54%) patients the fistula recurred in another location (Table 3). Ten (33%) of the recurrences occurred within 24 months after surgery (Table 2). In nine (14%) patients the recurrent fistula was preceded by an acute abscess that required drainage procedures. Six patients had minor soiling postoperatively of which three had already soiling before treatment. None of the patients was incontinent.

<table>
<thead>
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<th>Table 2. Patients outcome</th>
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<tr>
<td><strong>MF</strong> N=41</td>
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<tr>
<td><strong>FT</strong> N=62</td>
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</table>

Figure 2. Treatment of patients with recurrent fistulas of the MF-group.
Table 3. Factors associated with the location of recurrent fistula (n=50)

<table>
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<th></th>
<th>Total</th>
<th>Same location</th>
<th>Different location</th>
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<td>Mucosal Flap</td>
<td>26</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>Fistulotomy</td>
<td>24</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P=0.007*</td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>7</td>
<td>12</td>
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<td></td>
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<td>P=0.767</td>
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<tr>
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<td>Primary attempt</td>
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<td>11</td>
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<td></td>
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<tr>
<td>Crohn’s disease</td>
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<td>4</td>
</tr>
<tr>
<td>Cryptoglandular disease</td>
<td>41</td>
<td>28</td>
<td>13</td>
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<tr>
<td></td>
<td></td>
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<td>P=0.419</td>
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</tbody>
</table>

Twelve, 24 and 48 months after surgery the fistula had recurred in 3 (33%), 4 (44%) and 5 (60%) patients with Crohn’s disease. Two (40%) recurrences in patients with Crohn’s disease were found in another localization.

Sixteen patients underwent a renewed fistulotomy, 3 of them developed a recurrence after a median follow up of 24 months (range 12-38).

Eight patients, all of them had more than one previous attempt, did not want to undergo a new operation (Figure 3).

The Kaplan-Meier survival curve shows a better outcome for the FT-group (P <0.001 log rank test) (Figure 4).
In 9 of 16 (56%) patients of the MF group with at least 2 previous attempts the fistula recurred and in 17 of 25 (68%) patients of the MF group with no or one previous attempt the fistula recurred (p=0.51). In 7 of 9 (78%) patients of the FT group with at least 2 previous attempts the fistula recurred and in 17 of 53 (32%) patients of the FT group with no or one previous attempt the fistula recurred (p=0.02 Fisher exact).

Four (15%) of the recurrences in the MF group and 13 (54%) of the FT presented in a different plane and radial location (p=0.007). The localization of the recurrence was independent of gender, previous surgical attempts or Crohn’s disease (Table 3). Eighteen (69%) of the recurrences in the MF group and 10 (33%) of the FT group occurred within 24 months after surgery (p=0.01). Three of 4 (75%) recurrent fistulas in the MF group, found in another location, occurred within 16 months. Nine of 13 (69%) recurrent fistulas in the FT group, found in another location, occurred after 36 months. All four recurrent fistulas, found in another location, in patients with Crohn’s disease occurred within 18 months.

**Discussion**

Perianal fistulas are associated with considerable discomfort and morbidity. It is unclear which factors affect the outcome of the surgical treatment of perianal fistulas. Low perianal fistulas are more likely to heal with less morbidity than high fistulas. Some authors describe less favorable results in patients with recurrent fistulas after surgical treatment [14, 20]. Buchanan et al. showed that the success rate of temporary seton placement decreases with time[21]. In the present study we show a with time decreasing success rate of definitive surgery in the form of mucosal advancement flap and fistulotomy. Although the number of patients with Crohn’s disease is small, it appears that Crohn’s disease has negatively influences in patients with low fistulas. It is generally accepted that Crohn’s disease has a high recurrence rate. In the present study 21 patients suffered from Crohn’s disease. Nine (42%) of the patients had recurrent fistulas whereas 41 (50%) patients without Crohn’s disease had recurrences. This study shows that Crohn’s disease is not the only cause of reoccurrence anal fistulous disease.

Almost all studies describe the results of the treatment of high or complex perianal fistulas. Mckee et al. described the results of a retrospective study of 19 patients with high fistulas and Crohn’s disease treated by different techniques and 34 patients with low fistulas and Crohn’s disease treated by fistulotomy. A recurrence rate of respectively 57% and 50% was found after ten years follow-up[22]. Garcia-Aguilar et al. found a recurrence rate of 7% in 299 patients treated by fistulotomy in a mailed questionnaire (60% response) after a mean follow up of 29 months[20]. In our opinion the high recurrence of high fistulas should be explained by the fact that a proportion of these fistulas appear to have clinically healed, whereas in reality the fistula tract only has become “silent”. This “silent” fistula tract forms the basis of the recurrence and explains the high recurrence rate. Healing of the internal and external openings of the fistula without complaints of the patient is not a guarantee for cure. Another reason for recurrence consists of side tracts which are overlooked and not drained properly. Fistula tracts are difficult to detect especially in patients with high fistulas without preoperative MRI [23-28]. At present we perform a MRI scan preoperatively and postoperatively because it helps in predicting recurrent tracts[29]. On the other hand, nine (69%) of 13 recurrent fistulas were found in another location in the FT-group after 36 months follow-up. They were all found to originate from a different internal opening. These fistulas are likely to be new primary fistulas, suggesting that the chronic recurrent character of perianal fistulas is not only the result of treatment failure, but of the patient’s disease. There is no difference in outcome in the patients after at least 2 previous attempts and in patients with no or one previous attempt in the MF group (p=0.51), but there is in patients of the FT group (p=0.02). This finding confirms that fistula recurrence is more likely a matter of patient disease in the FT group (low fistulas) and failure of treatment in the MF group (high fistulas).

The superior short time results of treatment of high fistulas, achieved due to the implementation of visualization by modern MRI scanning techniques, is not a guarantee for a better outcome after long term follow up. A complete and long term follow-up is mandatory to determine true recurrence rates. In most studies the follow up is shorter than 24 months, which would have a recurrence rate of 27% in our study instead of 49% reported after long term follow up in 103 patients.

Generally, it is unknown how many patients withdraw from follow-up because they lost faith in surgical treatment after several attempts to cure the fistula. The issue of quality of life is not yet addressed in patients with chronic perianal fistulous disease undergoing various symptomatic treatment strategies. In 17 (17%) of the patients the recurrent fistula presented with an acute abscess after definitive surgery. In the present study 12 (24%) patients with a recurrent fistula did not opt for a new surgical intervention. The risk of incontinence and soiling due to the surgical treatment of high fistulas amounts to approximately 10-45% [14, 16, 20, 30-32]. Fourteen (34%) patients of the MF-group had soiling before treatment. Seven (26%) of the other 27 patients developed minor soiling in the present study and six (86%) of them had previous attempts in the past. Eventually 21 (51%) patients of the MF-group had minor soiling complaints (Table 4).

This study shows that the long term success rate of fistulotomy for simple perianal fistulas and mucosal advancement flap technique for complex perianal fistulas decreases with time. The initial high success rate or “healing rate” can therefore be misleading. Soiling complaints increase with time after repeated surgical attempts to close the fistula.
The majority of recurrences in patients treated with a mucosal advancement flap (high fistulas) appeared to depart from the same internal opening, and should therefore be considered to be treatment failures. In contrast, at least half of the recurrences after fistulotomy (low fistulas) appeared in another location after a long time and is probably a new “primary” fistula. It is therefore unlikely that definitive treatment is always possible and successful at long-term follow up.

References


