

A Single Center Study of 80 Cases of Fistula-in-ano

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Abstract

Background: Anal fistulae, especially the complex and the high ones, are a challenge to treat even for an experienced surgeon. Hence, there is a need to preoperatively evaluate anal fistula to reduce the rate of recurrence.

Objective: This study was embarked on to evaluate the natural course of anal fistula and its management. Goodsall's rule, which predicts the course of fistulous tracts, was also validated in this study.

Materials and Methods: A total of 80 patients, who were diagnosed to have fistula-in-ano clinically, were included in this study. All patients underwent conventional or magnetic resonance (MR) fistulogram. The fistulous tracts were preoperatively assessed and compared with the fistulograms. The tracts were sent for histopathological examination and their cause identified.

Results: In our study, 90% were <60 years of age with a very high male preponderance (82.5%). A perianal abscess is the major cause of development of anal fistulae with tuberculosis causing 7.5% of the fistulae in our study. Goodsall's rule was found to be accurate in only about 66% of anterior fistulae and 29% in posterior fistulae.

Conclusion: With Goodsall's rule being inaccurate in predicting the course of fistula, we propose that every case of anal fistula should be evaluated with conventional or MR fistulogram.

Key words: Anal fistula, Fistulogram, Goodsall's rule, Tuberculosis

INTRODUCTION

A fistula-in-ano is a granulation tissue lined tract, which connects an opening on the perianal skin (external) to another opening inside the anal canal or the lower rectum (internal). Internal openings are single in number while external openings can be single or multiple. Fistulas have been described since the last 200 years, being described by Hippocrates as early as 430 BC, with the application of seton being his recommended treatment.¹ The late 19th and early 20th centuries saw substantial research and the treatment options being developed in this subject by the likes of Milligan–Morgan, and Goodsall.^{2,3} Sir James Parks introduced his classification system in 1976, which is still in use.⁴ David Henry Goodsall in 1900 described

a rule named after him, which predicts the position of the external opening of the fistula-in-ano in relation to its internal opening.⁵ Many new techniques such as the mucosal advancement flap, the Gore Bio-A fistula plug, and the ligation of intersphincteric fistulous tract procedure have seen recent acceptance.^{6,7}

Fistula-in-ano can be broadly classified into simple and complex fistula. Simple fistulae can be broadly classified into subcutaneous and submuscular (intersphincteric and low transsphincteric).

Complex fistulae include those which are high transsphincteric, suprasphincteric, extrasphincteric, multiple tracts, and recurrent.

Goodsall's rule states that if the perianal skin opening is posterior to the transverse anal line, the fistulous tract will open into the anal canal in the midline posteriorly, sometimes taking a curvilinear course. A perianal skin opening anterior to the transverse anal line is usually associated with a radial fistulous tract. An exception to the rule are anterior fistulas lying more than 2.5 cm from the

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anus, which may have a curved track (similar to posterior fistulas) that opens into the posterior midline of the anal canal.⁵

Data regarding the positive predictive value have been inconsistent with different studies showing a wide variance in results.

Objectives

1. To study presentation, age, and sex distribution of fistula-in-ano
2. To identify predisposing factors for the development of fistula-in-ano
3. To study the accuracy of Goodsall's rule in cases of fistula-in-ano with external opening within 2.5 cm from the anal verge
4. To propose a suitable workup protocol for patients suffering from fistula-in-ano.

MATERIALS AND METHODS

All the patients suffering from fistula-in-ano admitted to Sri Ramachandra Hospital, Chennai, India, between January 2015 and January 2016. Patients were from either sex and belonged to all age groups.

A detailed history and a thorough examination were done for all the patients. All patients underwent digital rectal examination and fistulogram (conventional/magnetic resonance imaging [MRI]). If history suggested the presence of a predisposing factor, relevant investigations were done.

RESULTS

According to our study, it is quite evident that fistula-in-ano is a disease of the young and the middle-aged rather than the elderly. 90% of our study group was below the age of 60 (Table 1). There is a definite male preponderance to developing fistula-in-ano with 82.5% of our patients being male (Table 2). The predominant history was that of a previous/recurrent perianal abscess (77.5%) that had either ruptured spontaneously or had been surgically drained (Table 4). One of the patients had a history of perineal injury due to a road traffic accident, six were tuberculous (either on treatment or proven by operative biopsy), three were also suffering from a concomitant fissure, and one patient had a history of colonic carcinoma (Table 5).

A majority of our cases presented with simple rather than complex fistula (85% vs. 15%) with no age relation to the simplicity or complexity of the fistula (Table 3). When dealing with simple fistulas, it was found that Goodsall's

rule was accurate in only 66% of 68 cases with an anterior external opening and accurate in only 29% of the cases with posterior openings (Tables 6-9). Conversely, it was also found that in complex fistulae, straight tracts were more common than curved tracts in anterior opening fistulae, which goes against the exception of the rule (Table 10).

DISCUSSION

Fistula-in-ano while easy to diagnose, require a minimum of a conventional fistulogram to map out the type and course of the tracts. As the study revealed such a vast discrepancy in the findings related to Goodsall's rule, the authors recommend that all cases of fistula-in-ano be thoroughly

Table 1: Age distribution of patients

Age in years	Number of patients (%)
21-40	36 (45)
41-60	36 (45)
61-80	8 (10)

Table 2: Sex distribution of patients

Age in years	Male	Female
21-40	30	6
41-60	29	7
61-80	7	1
Total (%)	66 (82.5)	14 (17.5)

Table 3: Age-wise classification of types of Fistula

Age in years	Simple fistula	Complex fistula
21-40	32/36	4/36
41-60	29/36	7/36
61-80	7/8	1/8
Total (%)	68/80 (85)	12/80 (15)

Table 4: Relationship to past anal abscess

H/o past anal abscess	Male (66)	Female (14)	Total number of patients (80) (%)
Yes	54	8	62 (77.5)
No	12	6	18 (22.5)

Table 5: Predisposing factors leading to Fistula in ano

Predisposing factor	Number (80)
Trauma	1
Tuberculosis	6
Crohn's disease	0
Fissure-in-ano	3
Malignancy	1
Perianal sepsis	62
No previous significant history	7

Table 6: Position of external opening

Position	Number (80)
Anterior opening	24 (20 male/4 female)
Posterior opening	56 (46 male/10 female)

Table 7: Position and distance of external opening

Distance from anal verge	Anterior opening (%)	Posterior opening (%)
<3 cm from anal verge	22/24 (92)	52/56 (93)
>3 cm from anal verge	2/24 (8)	4/56 (7)

Table 8: Type of complex Fistula

Type of complex fistula	Number (12)
High transsphincteric	7/12
Suprasphincteric	0/12
Extrasphincteric	0/12
Multiple openings	2/12
Recurrent	3/12

Table 9: Intraoperative findings of Simple Fistula

Intraoperative findings of simple fistula (68)	Anterior opening (%)	Posterior opening (%)	Total (%)
Straight tract	13 (66)	37 (71)	50 (70)
Curved tract	5 (33)	13 (29)	18 (30)
Total	18	50	68 (100)

Table 10: Intraoperative findings of complex Fistula

Intraoperative findings of complex fistula (12)	Anterior opening	Posterior opening	Total
Straight tract	6	3	9
Curved tract	0	3	3
Total	6	6	12

investigated preoperatively with either a conventional or a MR fistulogram. These findings were consistent with the published papers regarding the same.

Cirocco and Reilly in 1992 (216 cases) showed in their study that Goodsall's rule was proved to be accurate in 90% cases of posterior openings and as low as 49% in regard to anterior openings.⁸ Barwood *et al.* in 1997 (107 cases) showed in their study that Goodsall's rule was proved to be accurate in 91% cases of posterior openings and as low as 69% in regard to anterior openings.⁹ Gunawardhana and Deen in 2001 (35 cases) showed in their study that overall only 59% of the cases of fistula-in-ano followed the Goodsall's rule.¹⁰ Hiranayakas *et al.* in 2005 (21 cases) showed in their study of efficacy of endoanal ultrasound, that overall only 58.82% of the cases of fistula-in-ano followed the Goodsall's rule.¹¹ Mallick and Kamil (71 cases)

showed in their study that Goodsall's rule was proved to be accurate in 53% cases of posterior openings and 54% in regard to anterior openings.¹²

In our study, we found that Goodsall's rule was accurate in 66% of cases with anterior opening and 29% of cases with the posterior opening. As regards predisposing factors, previous perianal sepsis was the overwhelming factor in patients developing fistulae - 77.5%.

As the study proves that the Goodsall's rule is not completely accurate in establishing the tract of the fistulae, the authors recommend that all cases without exception should undergo either a conventional fistulogram, which has an accuracy of 16-48%,¹³ or MR fistulogram, which has a high accuracy of 80-90%.^{14,15}

CONCLUSION

This study proves beyond doubt that in fistula-in-ano with external openings <2.5 cm from the anal verge, the Goodsall's rule is only accurate in approximately two-thirds of the cases of those presenting with anterior external openings, while in posterior external openings, it is accurate in less than one-third of the cases.

It also proves that perianal sepsis is the leading factor for the development of future fistula-in-ano.

The study also proves that a suitable imaging study should be done to map out the course of the fistulous tract preoperatively to avoid difficulty during surgery, due to the large deviation from the accepted Goodsall's rule.

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