Anal Complications of Anal Fistula Opeations

By

Dr: Alaa A. Redwan *M.D., Ph.D.*

Prof. Of G.I.T. Surgery and Laparo-Endoscopy

Sohag University Hospital

Sohag University, Sohag, Egypt


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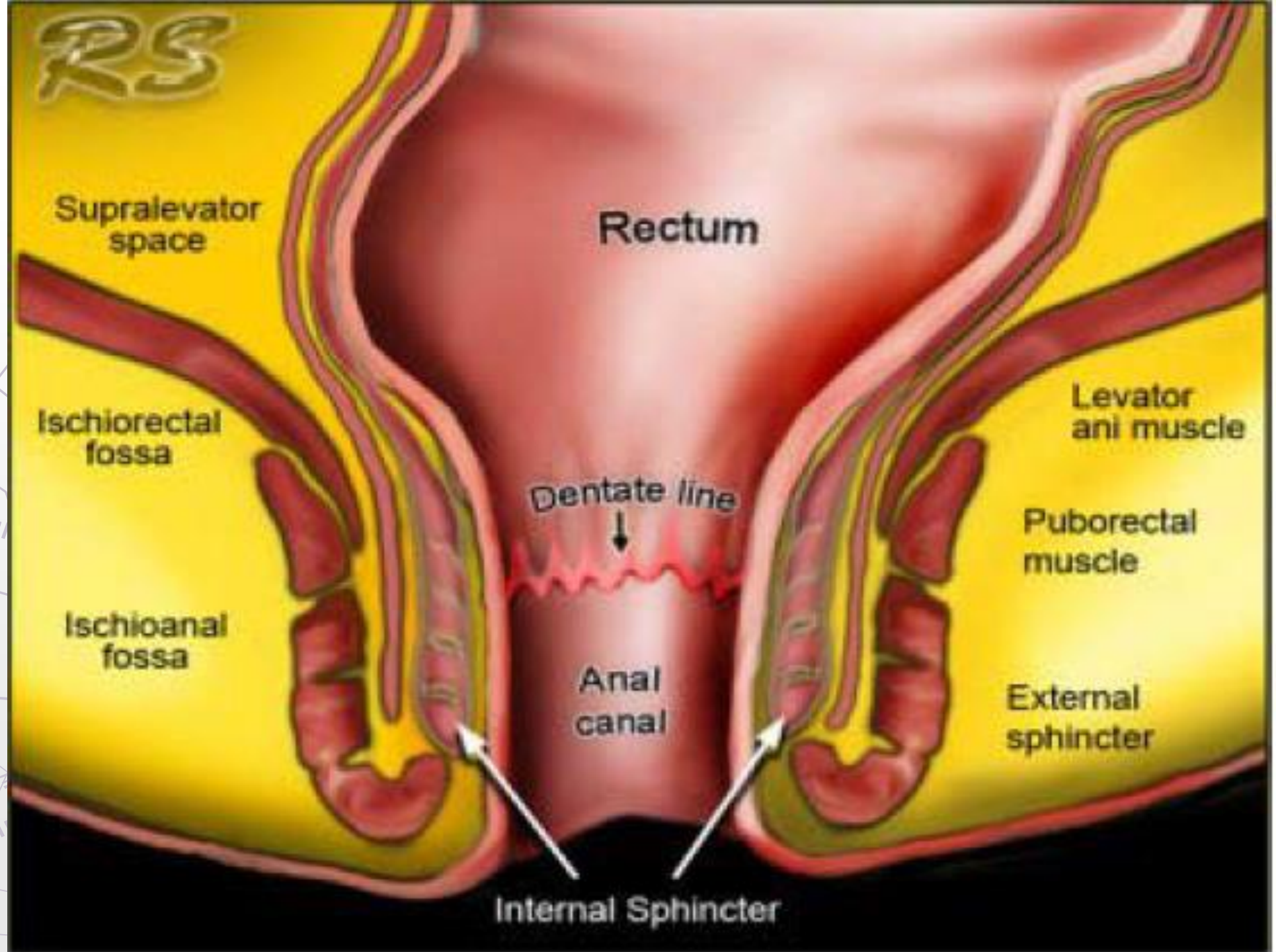

RS
Supralevator space
Rectum
Ischiorectal fossa
Levator ani muscle
Dentate line
Puborectal muscle
Ischioanal fossa
Anal canal
External sphincter
Internal Sphincter

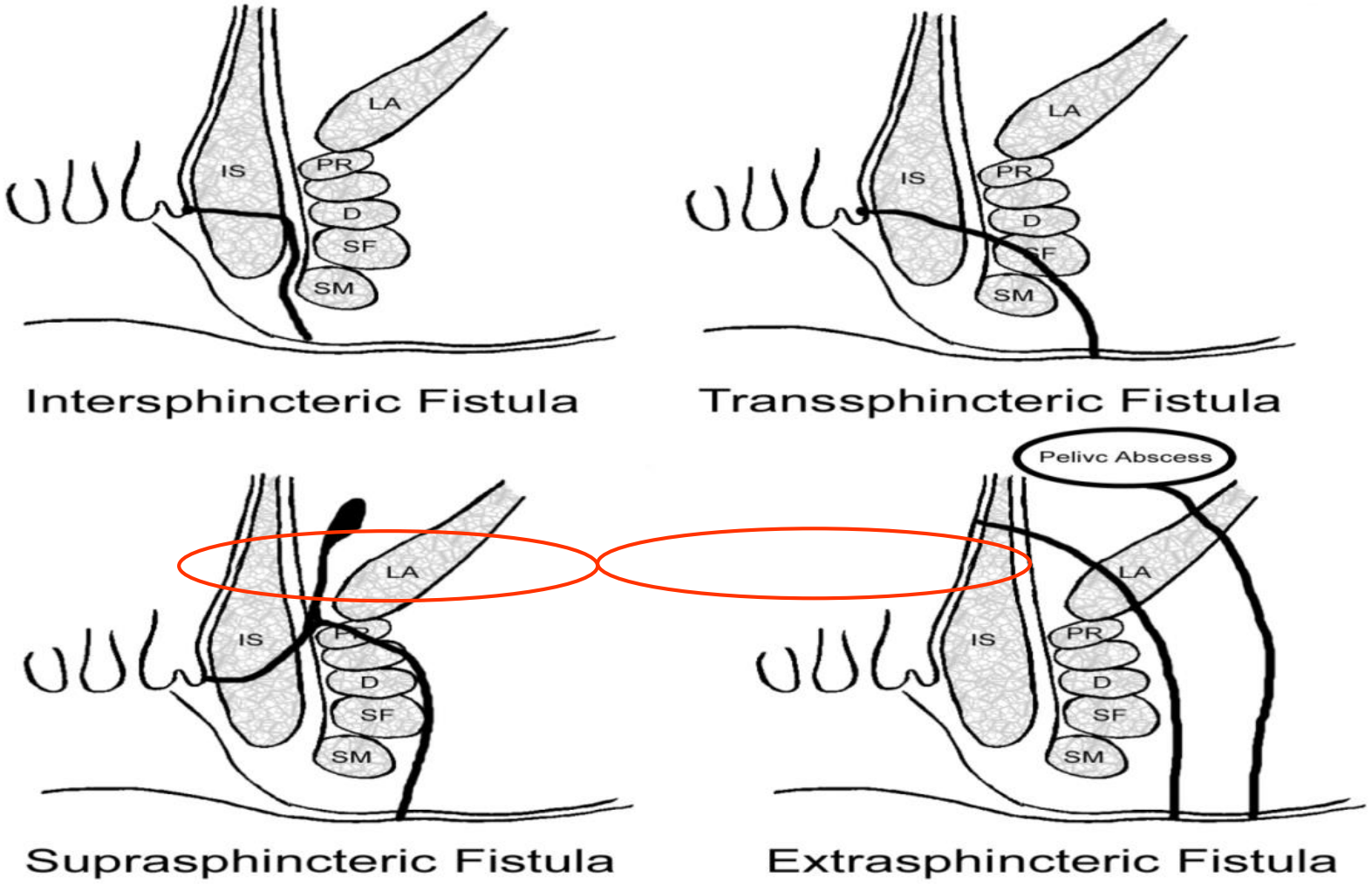
Etiology

- **Cryptoglandular theory**
- Trauma
- Foreign body
- Iatrogenic
- Malignancy
- Crohn's disease
- Tuberculosis
- HIV

J.G.Williams et al. Colorectal Disease 2007

Classification

- **Park's classification (1976)**



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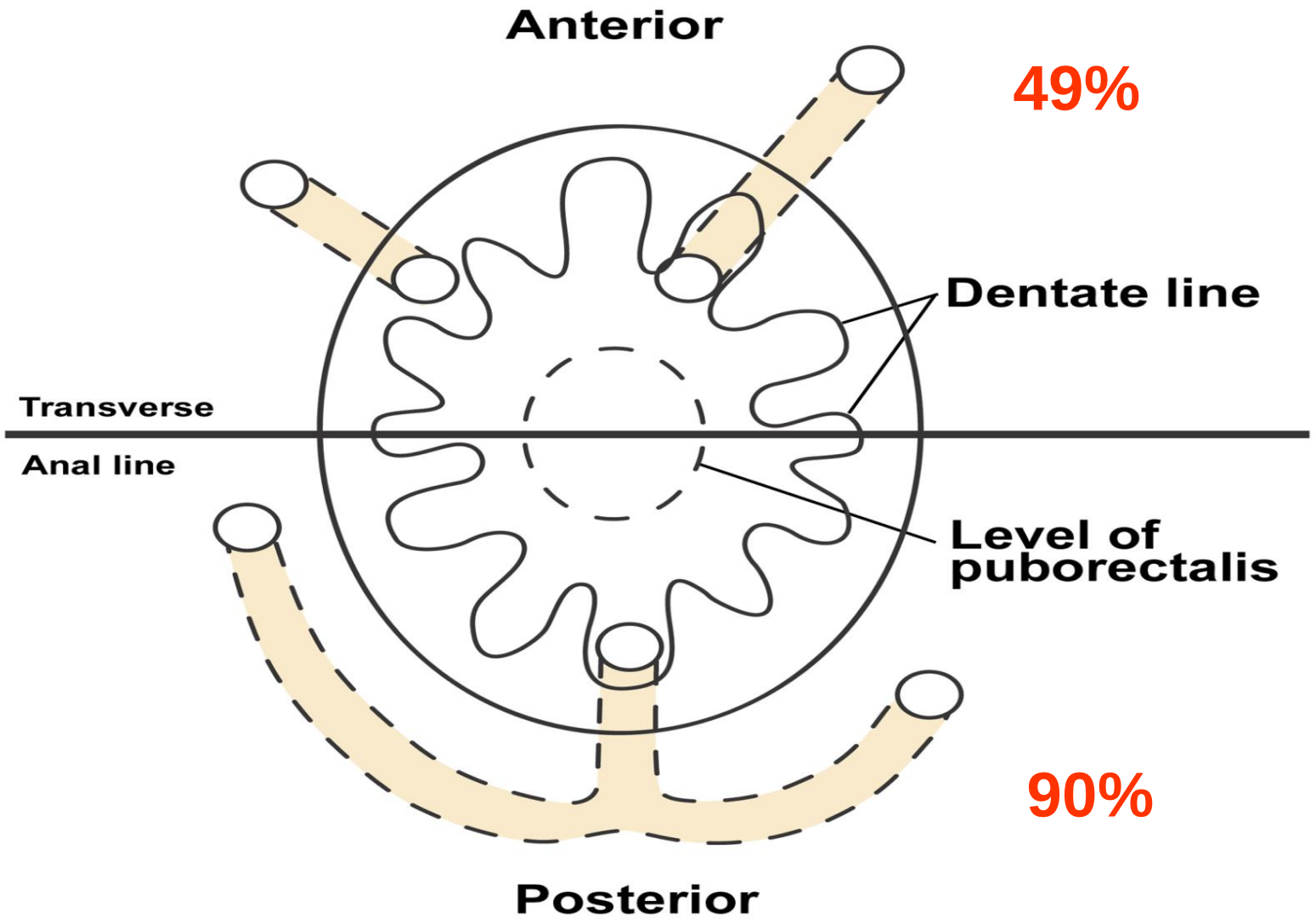
Goodsall's rule



J.G.Williams et al. Colorectal Disease 2007

Principles of Treatment

- Treat anal sepsis
- Establish relationship of fistula tract with external and internal sphincters to maintain continence
- Provide high closure rate of fistula

A range of treatment options are available, but none is universally successful or without risk. The key principles for the management are described by the acronym ***SNAP***, which stands for **S**epsis, **N**utrition, **A**natomy, and **P**rocedure. Eradication of sepsis is the first step. A fistula will not heal while infection is present. As with wound healing, anal fistulas heal poorly in malnourished patients. Fistula openings and the underlying track anatomy must be always clearly identified, as failure to recognize secondary tracks may lead to treatment failure.

Simpson et al; Management of anal fistula. BMJ 2012

Selection of the appropriate procedure is the key of successful management. Anal fistulas will not heal without intervention, and failure to treat may lead to progression of the disease process. If left untreated, anal fistulas are at risk of recurrent formation of a perianal abscess interspersed with partial healing of the fistula track. This can become a chronic septic focus with the establishment of a complex fistula network. The consequences for the patient may include pain, bleeding, incontinence, cellulitis, and systemic sepsis.

Simpson et al; Management of anal fistula. BMJ 2012

the overall complication rate was **2.5%**, which included bleeding, urinary retention, infection, continence problems and recurrence.

(Hazim et al; Coloproctology J. 2015)

Efficacy **Continence**

The more you do to avoid recurrence, the more you get incontinence
The more you do to avoid incontinence, the more you get recurrence

Prof. Ahmad Abdelaziz (Ain Shams University)

The ttt remains a challenge as it is essential to achieve a cure while minimizing postop. complications. The most important factors determine outcome are recurrence and anal incontinence. Incontinence can significantly affect the quality of life of the patients with overall rates vary up to **40%** depending on the type of fistula and the operative treatment used, moreover, majority of patients had minor incontinence. Studies have shown that simple fistulae also carry a risk of incontinence though not as high as following surgery for complex fistulae. Furthermore, studies have also shown that quality of life and patient satisfaction may be low because of anal incontinence despite a complete cure.

Jayarajah *et al. BMC Res Notes (2017)*

The recurrence rate reported in the literature ranged from **0-30%**. This wide range is a result of the heterogeneous population selected for fistulotomy in the different studies, which makes it difficult to compare the different outcomes. The question arises as to what extent the relatively young population will develop continence problems in the future. In the literature, many different criteria are used to report incontinence and predict its risk, and as a consequence the continence outcome varies a lot between different publications

van Koperen, Surgical treatment of perianal fistula. 2010

the risk include the fistula type, the underlying disease state, and the operation utilized. The type of fistula refers to the extent of muscle involvement by the tract as it extends from the internal to the external opening. Parks' classification is the most commonly used includes submucosal fistulas (no muscle involvement), intersphincteric fistulas (between the internal and external sphincters), as well as transsphincteric, extrasphincteric and suprasphincteric fistulas (indicating a variable extent of involvement of the external sphincter). Continence risk increases with increasing involvement of the external sphincter in the process

Thorson; Fecal Incontinence After Perianal Surgery, 2005

The underlying disease state can markedly affect the success or failure of fistula surgery. Variables include Crohn's and other granulomatous diseases, immune suppression, radiation history and fistulas of anal gland origin. Most anal fistulas arise according to the theory of cryptoglandular origin. In its simplest form, this states that infection originates in one of the anal glands with subsequent extension to any one of the various anorectal spaces as an abscess in the acute state with subsequent evolution to a fistula in the chronic state of anal suppurative disease.

Thorson; Fecal Incontinence After Perianal Surgery, 2005

The basic premise of fistula treatment involves two steps. First the inciting gland must be destroyed and secondly, the tract must be eliminated through unroofing (with wound healing by secondary intention), excision or filling. Protection of the external sphincter can be enhanced by maneuvers meant to avoid division altogether (fibrin glue and advancement flaps) or by the use of setons in an attempt to minimize long-term sequelae of muscle division

Thorson; Fecal Incontinence After Perianal Surgery, 2005

Thus it would appear that the *overall* risk to continence is between 10% and 20%, with most issues being of minor degree, in respect to the type of fistula and operative technique. The more significant risks lie in fistulas that are high and complex. These risks are probably related to the amount of muscle that is divided at the time of operation. There are alternatives that decrease the amount of muscle that needs to be divided. These appear to lower the risk of incontinence in these procedures.

Thorson; Fecal Incontinence After Perianal Surgery, 2005

Certain groups of patients can be identified as at high risk for incontinence, as females have shorter anal canals than males. So, a given length of sphincter division tends to represent a greater proportion of the sphincter and thus increased risk, care should be taken to keep the length of the sphincterotomy shorter. Females also are at risk for incontinence related to anterior fistulas due to the relative decreased sphincter in the rectovaginal septum.

Thorson; Fecal Incontinence After Perianal Surgery, 2005

Patients with a history of pelvic radiation present with increased risks of incontinence, also a history of previous anorectal surgery frequently harbor occult sphincter injuries that may impact continence following additional anorectal surgery. Thus represent a high-risk group. High trans-sphincteric and supra-sphincteric fistulas increase risk of incontinence following operation, as do posterior fistulas and those with extensions. Several reports suggest that advancing age has a negative impact on continence following fistula surgery.

Thorson; Fecal Incontinence After Perianal Surgery, 2005

Smoking is well known to influence wound healing in various patient groups. It was assessed as a possible risk factor and discrepancies exist as to whether smoking has an effect on the outcome of surgical treatment for anorectal fistula. A reduced blood flow was noted as a possible contributing factor. However, the later study, no significant relation could be found between smoking and fistula recurrence as well. No clear risk factors for the development of a recurrent perianal fistula were found in the fistulotomy nor in the rectal advancement group. Overall, continence disturbances were infrequent and similar in both groups. However, a reasonable amount of patients in both groups reported soiling

Van Koperen, Surgical treatment of perianal fistula. 2010

There are techniques in surgery that raises possibility for complications after anal fistula surgery; those are an advancement flap procedure (6-8%) and seton techniques (17%). Reappearance of anal fistula after fistulotomy is about 21% and 36% after advancement flap procedure. The overall recurrence rate is acceptable, but high fistulae continue to be difficult to treat. Identification is also essential for obtaining good results. It is important to identify the patients with preoperative incontinence as they are at a greater risk of deterioration after surgery.

(Jordán et al; Colorectal Dis. 2010)

Fistulotomy produces a satisfactory outcome in terms of eradicating sepsis and preserving function in the vast majority of patients with intersphincteric fistula with intact sphincters. However, sphincter-preserving treatment may be advocated for patients with low preoperative voluntary contraction pressure or those who have undergone multiple drainage surgeries. Preoperative anal manometry is useful in determining the proper surgical procedure.

(Toyonaga et al; Int J. Colorectal Dis. 2007)

PAPER

Predictors of Outcome for Anal Fistula Surgery

Maher A. Abbas, MD; Christopher H. Jackson, BS; Philip I. Haigh, MD, MSc

Objectives: To review our experience with patients treated for anal fistula secondary to cryptoglandular disease and to determine factors that influence postoperative outcome.

Design: Retrospective review.

Setting: A regional tertiary referral center.

Patients: Adult patients with anal fistula secondary to cryptoglandular disease.

Interventions: Fistulotomy, advancement flap, and fistula plugging.

Main Outcome Measures: Rates of operative failure (persistent fistula), incontinence, and septic complications. We evaluated age, sex, previous operation, fistula type, number of fistula tracts, horseshoe fistula, and intervention type to determine their independent influence on outcomes.

Results: One hundred seventy-nine patients (79.3% male) underwent fistula operation from October 1, 2003, through December 31, 2008. Median age was 45 years. Fistulotomy was undertaken in 82.7% of patients, advancement flap in 10.6%, and plugging in 6.7%. The rates of operative failure, postoperative incontinence, and septic complications were 15.6%, 15.6%, and 7.3%, respectively. Plugging carried the highest failure rate (83.3%) compared with fistulotomy (10.1%) (odds ratio [OR], 44.3 [95% confidence interval (CI), 8.9-221.0; $P<.001$]) and was the only independent predictor for failure after adjusting for all variables. Being older than 45 years was associated with a higher postoperative incontinence rate compared with the younger group (adjusted OR, 2.8 [95% CI, 1.0-7.7; $P=.04$]). High transsphincteric and suprasphincteric fistulas were predictors of incontinence compared with subcutaneous fistulas (adjusted OR, 22.9 [95% CI, 2.2-242.0; $P=.009$] and 61.5 [4.5-844.0; $P=.002$], respectively). The only predictor of septic complications was plugging compared with fistulotomy (adjusted OR, 15.1 [95% CI, 2.3-97.7; $P=.004$]).

Conclusions: Fistulotomy is the preferred operation for anal fistula. Plugging is associated with the highest operative failure and septic complication rates. Incontinence was influenced more by fistula type and age rather than procedure.

Arch Surg. 2011;146(9):1011-1016

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Maher A. Abbas et al; Arch. Surg. 2011

CURRENT STATUS

Long-term Follow-up After Surgery for Simple and Complex Cryptoglandular Fistulas: Fecal Incontinence and Impact on Quality of Life

A. P. Visscher, M.D.[1] • D. Schuur[1] • R. Roos[1] • G. J. H. Van der Mijnsbrugge, M.D.[3]
W. J. H. J. Meijerink, M.D., Ph.D.[2] • R. J. F. Felt-Bersma, M.D., Ph.D.[1]

1 Department of Gastroenterology and Hepatology, Vrije Universiteit Medical Centre Amsterdam, The Netherlands
2 Department of Surgery, VU University Medical Center, Amsterdam, The Netherlands
3 Proctos Kliniek, Bilthoven, The Netherlands

BACKGROUND: Surgical management of cryptoglandular fistulas is a challenge because the consequences of anal surgery potentially include fecal incontinence and impaired quality of life.

OBJECTIVE: To assess factors associated with fecal incontinence after surgery for simple and complex cryptoglandular fistulas and to determine the impact of incontinence on quality of life.

DESIGN: The design is retrospective and cross-sectional.

SETTINGS: This study was conducted at an academic tertiary center and at a private center specializing in proctologic surgery.

PATIENTS: All patients who underwent preoperative endoanal ultrasound for cryptoglandular fistula between 2002 and 2012.

MAIN OUTCOME MEASURES: A questionnaire was sent out in October 2013 to evaluate incontinence (Wexner-score) and its impact on quality of life (FIQL). Variables tested for association were patient demographics, fistula type, number of incised abscesses (0, 1, >1), number of fistulotomies (0, 1, >1) and number of sphincter-sparing procedures (0, 1, >1).

RESULTS: Of the 141 patients participating, 116 (82%; 76 men, 40 women) returned all the questionnaires. Median follow-up from the first perianal fistula surgery was 7.8 years (range, 2.1–18.1 years). Thirty-nine patients (34%) experienced incontinence. Surgical fistulotomy, multiple abscess drainages and a high transsphincteric or suprasphincteric fistula tract were associated with incontinence. As compared to simple fistula (Wexner score, 1.2 [SD, 2.1]), incontinence was worse after surgery for complex fistula (Wexner score, 4.7 [SD, 6.2], $p = 0.001$), as were quality of life elements, including lifestyle ($p = 0.030$), depression ($p = 0.077$) and embarrassment ($p < 0.001$).

LIMITATIONS: Mainly retrospective design without a standardized treatment protocol.

CONCLUSION: Surgical fistulotomy is the strongest risk factor for fecal incontinence. The severity of incontinence increases with the complexity of the fistula, negatively influencing quality of life. Special attention should be paid to these patients so as to mitigate symptoms later in life. A shift to sphincter-sparing procedures appears warranted.

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Visscher et al; Dis Colon Rectum 2015

Median follow-up was 7.8 years (range, 2.1–18.1 years). 34% of patients complained of FI. Fistula characteristics, the number of abscesses incised, the number of FTs received and the number of sphincter-sparing procedures were associated with the presence of FI during follow-up. Patients with a subcutaneous fistula tract had a lower risk of FI than those with a supra-sphincteric fistula. When >1 sphincter-sparing procedure had been performed, the risk for FI was greater than if no sphincter-sparing procedures were performed. However after adjusting for the other variables in the multivariate analysis, sphincter-sparing procedures were no longer associated with FI. Patients who underwent >1 FT were at greater risk for FI than those who did not undergo FT. In addition, having a single FT in which >1 abscess was incised and drained or having a high trans-sphincteric or suprasphincteric fistula tract was also associated with FI.

Visscher et al; Dis Colon Rectum 2015

Quality of life: All patients with FI (fecal incontinence) stated that it negatively affected their QOL in some degree. Patients with both FI and fistula-related perianal complaints all stated that FI impaired their QOL. Lifestyle and everyday behavior were negatively affected in 18% and 22% respectively. Feelings of depression were reported by 23% of patients, and embarrassment by 25%. All subcategories of the FIQL were scored lower by patients with FI ($p < 0.001$). Mean FIQL subscales for lifestyle ($p = 0.030$), depression ($p = 0.077$) and embarrassment ($p < 0.001$) were all scored lower by patients operated on for complex fistula than by those treated for simple fistula.

Visscher et al; Dis Colon Rectum 2015

Jayarajah et al. BMC Res Notes (2017) 10:572
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BMC Research Notes

RESEARCH ARTICLE Open Access

Anal incontinence and quality of life following operative treatment of simple cryptoglandular fistula-in-ano: a prospective study

Umesh Jayarajah, Dakshitha Praneeth Wickramasinghe and Dharmabandhu Nandadeva Samarasekera*

Abstract

Background: Anal incontinence is a known complication following operative treatment of fistula-in-ano which can significantly impact the quality of life. This study was aimed to objectively assess the impact of operative treatment of simple fistula-in-ano on quality of life related to anal incontinence. Therefore, a prospective study was conducted in 34 patients who underwent surgery for fistula-in-ano over a period of 24 months. Quality of life and incontinence were assessed using fecal incontinence quality of life (FIQL) scale and Cleveland clinic incontinence score (CCIS) preoperatively and after a minimum of 12 months follow up (mean-27 months, range 12–40 months). The difference in FIQL and CCIS was analysed using Wilcoxon Rank test and Mann–Whitney U test.

Results: The median age of the participants was 42.5 years (range 22–63, males = 30). The majority had a trans-sphincteric tract (n = 22, 65%). Superficial tracts and inter-sphincteric tracts were found in 8 (24%) and 4 patients (12%). The overall preoperative and postoperative rates of incontinence were 18 and 38% respectively, but the severity was low. The mean overall FIQL was 16.0 (SD ± 0.4) preoperatively and 16.1 (SD ± 0.4) postoperatively. Considerable difference was seen in the scale measuring "depression/self-perception" ($p = 0.012$). Only 1 patient (3%) had reduction in scale "lifestyle" which measures the impact of incontinence on day-to-day activities.

Conclusions: Analysis of a cohort of simple cryptoglandular fistula-in-ano with low pre-operative incontinence showed no worsening in the FIQL following successful treatment despite minor worsening of incontinence. Since greater improvement was noted in scale measuring depression/self-perception, psychological interventions may be helpful before surgery to improve quality of life.

Keywords: Fistula-in-ano, Quality of life, Anal incontinence

Conclusions: Analysis of a cohort of simple cryptoglandular fistula-in-ano with low pre-operative incontinence showed no worsening in the FIQL following successful treatment despite minor worsening of incontinence. Since greater improvement was noted in scale measuring depression/self-perception, psychological interventions may be helpful before surgery to improve quality of life.

Jayarajah *et al. BMC Res Notes (2017)*

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Although the primary objective of operative intervention is to heal the fistula, equally important is the morbidity of the procedure. Fistulotomy remains one of the most commonly performed operations for anal fistula with a reported success rate ranging from 87% to 94%. Fistulotomy entails the division of a various degree of anal sphincter muscle, putting the patient at risk for postoperative incontinence, adversely affecting the patient's quality of life. Post-operative incontinence has been noted in 6% to 40% of patients who undergo fistulotomy.

Maher A. Abbas et al; Arch. Surg. 2011

This finding has prompted surgeons to identify the subgroups of patients who are at an increased risk of developing post fistulotomy incontinence and to offer such patients sphincter-preserving operations. Patients who are predisposed to incontinence include patients with baseline incontinence, those with a history of anal operations, women with anterior-based fistulas, and patients with horseshoe fistulas or high tracts involving a significant amount of sphincter muscle

Maher A. Abbas et al; Arch. Surg. 2011

Postoperative fecal incontinence developed in 15.6% of patients who did not have prior baseline incontinence. Being older than 45 years and having high transsphincteric and suprasphincteric fistulas were independent predictors of postoperative fecal incontinence. These findings can be explained physiologically as loss of muscle tone due to aging or loss of muscle mass due to surgical intervention, both which would affect continence level. Horseshoe fistula was associated with a higher risk of postoperative incontinence in univariate analysis. Two studies on horseshoe anal fistula reported postoperative incontinence rates of 21% to 29%.

Maher A. Abbas et al; Arch. Surg. 2011

There are multiple techniques available for the repair of complex anal fistulas. The best technique is not known, and the available evidence suffers from a lack of high-quality data, with very few large randomized studies. The technique of choice will depend on appropriate delineation of the anatomy, surgeon preference, and familiarity with the different techniques. In general, failure is common, and one should be prepared to perform multiple procedures if required.

Bubbers, and Cologne; Management of Complex Anal Fistulas.Clin Colon Rectal Surg 2016

Efficacy Continence

The more you do to avoid recurrence, the more you get incontinence
The more you do to avoid incontinence, the more you get recurrence

Prof. Ahmad Abdelaziz (Ain Shams University)

Thank you

ProfAlaaRedwan@med.sohag.edu.eg