

FACTORS PREDISPOSING PERIANAL ABSCESS RECURRENCE IN PATIENT UNDERWENT INCISION AND DRAINAGE: A RETROSPECTIVE STUDY

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Abstract:-

Introduction:

The perianal abscess recurrence is a common complication after the incision and drainage (I&D) intervention. We aimed to study the effect of other perianal diseases on treatment outcomes and recurrence of the perianal abscess in patients who undergone incision and drainage.

Methods:

During a retrospective study, in a two-year period, patients with perianal abscess underwent incision and drainage (I&D) enrolled study. Patient's demographic features and abscess characteristics including location of the abscess, abscess superficial or deep position in pelvis, presence of the concomitant fistula and in hospital admission features such as length of hospital admission and postoperative pain severity recorded.

Results:

Perianal abscess recurrence was significantly higher in patients suffering Fischer lesion and fistula compared to patients without recurrence ($P= 0.032$ and $P< 0.001$). There was no significant correlation between abscess recurrence and postoperative complications, however, perianal fistula recurrence was significantly higher in patients who had previous history of the perianal fistula ($P= 0.001$). Patients with Fischer lesion had 25.35 times higher odds to exhibit abscess recurrence compared patients without Fischer. Previous history of the perianal fistula was associated with an increased likelihood of exhibiting perianal abscess recurrence up to 42.44 times higher odds.

Conclusion:

Patients with perianal abscess candidate to undergo incision and drainage suffering preoperative perianal fistula and Fischer lesion are at higher risk for development of the abscess recurrence.

Keywords:- Perianal abscess, incision and drainage, recurrence.

INTRODUCTION

Perianal abscess is defined as a localized collection of infected fluid within the soft tissue of the perianal region, and known as one of the most common anorectal diseases during third and fourth decades of the life (1). Infection of the cryptoglandular glands in anal region are culprit for majority of the idiopathic perianal abscesses, which then extends to intersphincteric plane (2-4). Incidence of perianal abscess, has been reported to range between 0.5% and 1.6% (57). The routine management of perianal abscess contains incision, drainage and curettage of the infection side with or without packing based on surgeon discretion. (8) However, fistula in ano accounts for the most prevalent complication in patients with perianal abscess that might develop in approximately 40% of the cases (9). In addition, since fistula formation is thought to be in strong correlation with perianal abscess recurrence after surgical treatment, it has been suggested to treat fistula during initial intervention to prevent the need for reoperation (10). On the other hand, smoking, severe infections (such as human immunodeficiency virus infection) and chronic conditions such as diabetes mellitus, hypertension, and inflammatory bowel diseases reported to be further risk factors for development of the abscess recurrence (7, 11, and 12). Although several studies have been carried out on evaluation of the factors influencing perianal abscess, still there are remarkable unknown features in etiology and characteristics of the abscess recurrence. Whereas, perianal abscess association with perianal complications such as hemorrhoid and Fischer lesion are not well understood. Thus, in current study, we aimed to study the effect of other perianal diseases on treatment outcomes and recurrence of the perianal abscess in patients who undergone incision and drainage.

Materials and Methods:

A retrospective study was carried out on patients underwent perianal abscess surgery during from March 2016 to June 2018, in general surgery ward of Loghman Medical Center, Tehran, Iran. The study protocol was approved by ethics committee of the Shahid Beheshti University of Medical Sciences. During this review, 101 consecutive patients underwent perianal abscess surgery using incision and drainage approach. Patients with history of inflammatory bowel diseases (IBD) and systemic autoimmune diseases, were excluded. Of 101 patients, four patients excluded due to lack of recorded data regarding hospital admission and follow-up and 97 patients enrolled the study and considered in data analysis. All patients gave their written informed consent to participate in the study. Demographic data including age, gender and history of chronic diseases such as diabetes mellitus and cardiovascular diseases. Data regarding the previous history of the perianal and defecation complication recorded including history of constipation, hemorrhoid, Fischer, abscess, fistula and history of previous perianal surgery. Recent perianal abscess characteristics including location of the abscess, abscess superficial or deep position in pelvis, presence of the concomitant fistula and in hospital admission features such as length of hospital admission and postoperative pain severity collected for each patient. Rate of the perianal abscess recurrence during follow-up period determined as the primary endpoint of the study. Treatment related complications prevalence including demand for reoperation, incontinence to gas, incontinence to liquid, incontinence to solids and surgery site pain two week after operation, were considered as secondary endpoints. During operation, patients' position determined considering the location of the abscess to ensure maximal exposure either in the prone or supine position. All patients underwent incision and drainage (I&D) surgery through general anesthesia subsequently and operations were performed by a single surgeon. The surgery was performed by making a cruciate or elliptical incision over the abscess and incision widened using forceps to allow complete drainage of the cavity containing, without any catheter drainage and packing avoided to leave the lesion open. Pus culture and antibiotic prescription administered based upon the surgeon discretion. Patients followed up to two weeks after drainage until the complete wound healing. Postoperative pain intensity evaluated after the intervention, and two-week later using Visual Analogue Scale (VAS) of 0-10, that 0 showed no pain and 10 indicated the worst pain.

Statistical Analysis

All data were analyzed using SPSS version 25. Software (SPSS Inc., Chicago, IL). In order to express quantitative values, we used mean \pm SD. Variables analysis performed using student t-test and χ^2 test for paired data and logistic regression analysis and results with $p < 0.05$ were considered as statistically significant. Demographic features (including age, gender), diabetes mellitus, cardiovascular disease, constipation, hemorrhoid, previous abscess, Fischer, fistula and history of previous perianal surgery were considered to be risk factors for the development of the perianal abscess recurrence. A binomial logistic regression was performed to ascertain the effects of variables mentioned earlier on the likelihood that participants have perianal abscess recurrence.

Results:

In current study, 97 patients undergone I&D treatment for perianal abscess, enrolled. Of 97 patients, 25 (25.8%) were female and 72 (74.2%) were male with mean age of 39.12 ± 11.18 years old. Eleven patients (11.3%) were suffering diabetes mellitus and four patients (4.2%) had history of cardiovascular diseases. Regarding perianal and defecation complications, 53 (54.6%) patients had history of constipation, previous surgery reported in 36 (37.1%) patients, hemorrhoid detected in 16 (16.5%) patients and anorectal fistula in 13 (13.4%) patients, as well as Fischer in 6 (6.2%) patients. Concomitant perianal fistula observed in 8 (8.2%) patients. Perianal abscess subdivided to eight subgroups considering the abscess location during physical examination (including upper right, upper left, lower right, lower left, twelve o'clock, three o'clock, six o'clock and nine o'clock) that are summarized in table 1. In terms of perianal abscesses anatomic location, the lesions were classified according to perianal, ischioanal and intersphincteric abscesses that detected in 89 (92.7%) patients, three (3.1%) patients, and four (4.2%) patients, respectively. All patients underwent I&D treatment and mean hospital admission length was 1.54 ± 1.55 ranging between one to 14 days. Mean follow up duration of the patients calculated to be 13.50 ± 7.32 months, with minimum of the 2 months and maximum of the 27 months. Mean rates of the

postoperative pain at first day after surgery and two-week later was 7.71 ± 2.38 and 2.50 ± 2.50 , respectively. During follow-up period, perianal abscess recurrence detected in 24 patients that revealed the recurrence rate of the 24.7% in present population. The minimum and maximum time interval for abscess recurrence was 3 weeks and 12 months, respectively, with mean interval of the 1.09 ± 2.60 months. The recurrence interval of perianal abscess was 14.6 days calculated by dividing the maximum time interval of the one year over occurrence rate of the 24 in one-year period. Patients demographic data are summarized in table 1 with due attention to the abscess recurrence. Of 24 patients with perianal abscess recurrence, 17 (70.8%) patients were male. While evaluating gender, age, diabetes mellitus and CVD correlation with recurrence of the perianal abscess recurrences in patients I&D, no statistically significant correlation observed. Additionally, there was no significant correlation defined between perianal abscess recurrence with constipation and hemorrhoid. However, 4 patients (16.6%) with abscess recurrence had positive history for Fischer lesion and 7 (29.2%) patients had perianal fistula during examination. Perianal abscess recurrence was significantly higher in patients suffering Fischer lesion and fistula compared to patients without recurrence ($P= 0.032$ and $P< 0.001$, respectively), while the history of the previous perianal surgery that had no significant correlation with abscess recurrence ($P= 0.104$). Nonetheless, considering perianal abscess location through physical examination and anatomic location of the abscess in the pelvis correlation with perianal abscess recurrence, not only there were no significant difference between abscess recurrence rate regarding abscess position based on anal canal ($P= 0.32$), but also, abscess recurrence was not in association with anatomical location of the abscess ($P= 0.21$). Mean rate of postoperative pain at the first after I&D according to the VAS was 8.50 ± 1.88 and 7.45 ± 2.48 respectively in patients with and without abscess recurrence ($P= 0.209$). However, comparing the mean rate of postoperative pain at two weeks after surgery between patients with and without abscess recurrence (3.58 ± 3.20 vs. 2.15 ± 2.14) revealed significantly higher pain in patients who developed abscess recurrence during follow up ($P= 0.004$). Hospital admission rate in patients who suffered abscess recurrence and who did not was 1.91 ± 1.31 days and 1.42 ± 1.61 days, sequentially ($P= 0.18$). Concerning postoperative complication, 24 patients who developed abscess recurrence suffered complications and underwent secondary operation. Furthermore, fistula recurrence reported in four (16.6%) patients and gas incontinence in only one (4.1%) patients. There was no significant correlation between abscess recurrence and postoperative complications, however, perianal fistula recurrence was significantly higher in patients who had previous history of the perianal fistula ($P= 0.001$) (Table 2). The logistic regression model was statistically significant, $\chi^2(4) = 25.694$, $p < .007$. The model explained 37.5% (Nagelkerke R²) of the variance in heart disease and correctly classified 76.7% of cases. Of the eleven predictor variables only two were statistically significant: Fischer and fistula (as shown in Table 3). Patients with Fischer lesion had 25.35 times higher odds to exhibit abscess recurrence compared patients without Fischer. Previous history of the perianal fistula was associated with an increased likelihood of exhibiting perianal abscess recurrence up to 42.44 times higher odds.

Discussion:

Perianal abscess is considered as a common benign anorectal disease that is treated by incision and drainage (I&D) of the infected soft tissues as the gold standard treatment (13). Despite recent development in the diagnosis and treatments approaches of the disease, perianal abscess recurrence and development still remains a serious and prevalent complication after primary I&D treatment (14, 15). Although several studies have been carried out to evaluate prevalence, etiology and risk factors predisposing perianal abscess and its recurrence, majority of the researches have been performed concerning the surgical techniques and their outcomes (16, 17). In addition, in the literature many studies have focused on concomitant anorectal and perianal fistulas correlation with perianal abscess and its treatments. However, perianal abscess recurrence is believed to cause inevitable burdens on health systems and increase the workload of the surgeons, as well as the surgery wards (18-20). According to previous studies, main predisposing factors of the perianal abscess recurrence includes human immunodeficiency virus (HIV) infection and inflammatory bowel diseases (IBD) especially Crohn's disease (7, 21). In current study, we aimed to determine the overall recurrence rate and factors influencing the recurrence of the perianal abscesses subsequent to I&D approach. To our knowledge, it is the first study in our region evaluating the recurrence rate of the perianal abscess in patients who underwent incision and drainage. In a recent study, authors discussed the prevalence, risk factors and outcomes of the surgical treatment in patients with acute perianal abscess (11). Although they suggested that adequate primary intervention might lead to reduction in rate of the perianal abscess recurrence and hospital readmission, they did not consider the factors predisposing the recurrence incidence and preventive factors. Nonetheless, overall literature review showed that there are very few studies considered the abscess recurrence after I&D, as the main endpoint of the study. Our results showed that overall incidence of the perianal abscess recurrence in patients treated by I&D approach was 24.7%, with the recurrence interval of the 14 days that means majority of the recurrences occur during first two weeks after the initial intervention. However, considering previous studies, although the rate of the abscess recurrence reported to be over 30% in children in a single study, in the recent studies, the recurrence rate in adults have reported to range between 10-30%, based on the application of the fistula track treatment (2225). Comparing to literature, the recurrence rate of the abscess in our study lied in upper limit of the incidence range compared to some recent studies which might be due to lack of fistulectomy or fistulotomy approaches during surgical intervention in I&D treatment (9). Incision and drainage without fistulectomy or fistulotomy might be culprit for increased rate of the perianal abscess recurrence in our study, since abscess recurrence developed in more than half of the patients who had history of anorectal fistula. On the other hand, these approaches are believed to increase prevalence of the postoperative complications including fecal incontinence, but in our study only one patients suffered gas incontinence and fecal incontinence reported in none of the patients, which can be due to lack of fistula treatment (24, 25). However, approximately two-third of the patients who receive I&D for perianal abscess develop chronic fistulas, but in our study only 50% of the patients who had anorectal fistula prior to I&D developed chronic fistula during follow-up period (10). Additionally, it is for the very first

time that we have considered the postoperative pain severity correlation with abscess recurrence, we found that immediate postoperative pain severity has no statistically significant difference between patients who had later development of the abscess recurrence and who did not suffer recurrence, however, two weeks later, surgery site pain was significantly more severe in patients who had abscess recurrence. It can be hypothesized that since recurrence interval of the perianal abscess was 14 days, initiation of the reinfection process leads to higher pain severity in these patients two weeks after intervention. In the literature, diabetes mellitus, hypertension and Crohn's diseases have been considered as risk factors for development of the perianal fistula, however, our results showed no significant correlation between DM and perianal abscess recurrence (11, 26, 27). Whereas, in a survey, Adamo et al. discussed the risk factors for readmission after initial intervention in patients who underwent perianal abscess treatment and showed that although age and gender was not in association with higher rate of the readmission in these patients, history of Crohn's disease had significant impact on the risk for the readmission (7). In our study, we excluded patients with history of the IBD and preoperative physical examination of the perianal region and bowel habits were taken into consideration for evaluation of the risk factors for recurrence. Similar to Adamo et al. study, we did not observe significant influence of the patients' age and gender on perianal abscess recurrence, but history of the Fischer lesion and perianal fistula were in strong correlation with abscess recurrence. In a well-designed systematic review and meta-analysis, results showed that persistent fistula is in significant correlation with the increased rate of the perianal abscess recurrence, whereas, fistula repair and treatment reduces the rate of the recurrence, which is in correspondence with our results that demonstrated increased recurrence rate subsequent to preoperative fistula existence (10). Furthermore, few studies have evaluated the incidence of the short term postoperative incontinence in patients who underwent perianal abscess treatment. However, similar to our findings, they revealed that I&D treatment without application of the fistula track treatment or treatment of the anatomically lower fistula leads to no clinical manifestation of the fecal incontinence (24, 25). Our study had some limitations, as follows: first, since it was a retrospective study, the follow-up duration of the patients had significant diversity that prohibited us from concluding long term outcomes of the I&D and perianal abscess recurrence. Second, several studies considered IBDs as an important risk factor for the recurrence of the perianal abscess, thus we aimed to exclude these patients in order to eliminate the major influence of these diseases on recurrence of the abscess and evaluate the other factors that might have influence. Third, despite new techniques of the fistula track treatment, I&D without fistula treatment is considered as the gold standard treatment of the perianal abscess which might have increased the recurrence rate in this study. Finally, still there is need for some comprehensive studies to discuss our findings and achieve an evident conclusion to benefit from in practice.

Conclusion:

Patients with perianal abscess candidate to undergo incision and drainage suffering preoperative perianal fistula and Fissure lesion are at higher risk for development of the abscess recurrence. In addition, surgery site pain two weeks after intervention is more severe in patients who are susceptible to suffer recurrence of the perianal abscess

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Tables:

Demographic characteristics of the patients and perianal abscess features with regard to the abscess recurrence.

		Abscess recurrence		Pv
		No (n=73)	Yes (n=24)	
Age		38.68±11.51	40.5±10.18	0.50
Gender	Female	18	7	0.42
	Male	55	17	
Diabetes mellitus		7	4	0.27
CVD		3	1	0.67
Constipation		40	13	0.57
Hemorrhoid		11	5	0.35
Fischer lesion		2	4	0.03
Fistula		6	7	0.01
Abscess position	Upper right	4	1	0.32
	Upper left	7	2	
	Lower right	11	3	
	Lowerleft	18	7	
	Three O'clock	22	6	
	Six O'clock	6	0	
	Nine O'clock	2	4	
Abscess location	Perianal	69	20	0.21
	Ischioanal	1	2	
	Intersphincteric	3	1	
Previous surgery		12	12	0.104

Postoperative complications of the patients after incision and drainage with regard to the abscess recurrence.

		Abscess recurrence		Pv
		No (n=73)	Yes (n=24)	
Reoperation		1	23	<0.001
Incontinence	Gas	1	0	0.75
	Liquid	0	0	-
	Solid	0	0	-
Fistula recurrence		2	2	0.25

Binomial logistic regression analysis.

Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	0.03	0.04	0.50	1.00	0.48	1.03	0.96	1.10
Gender	0.44	0.76	0.34	1.00	0.56	1.56	0.35	6.92
Diabetes	0.05	1.35	0.00	1.00	0.97	1.05	0.08	14.70
CVD	0.03	1.72	0.00	1.00	0.99	1.03	0.04	29.75
Constipation	-1.08	0.80	1.84	1.00	0.18	0.34	0.07	1.62
Hemorrhoid	1.05	0.86	1.50	1.00	0.22	2.85	0.53	15.19
Fischer	3.23	1.11	8.52	1.00	0.004	25.36	2.89	222.44
Admission length	-0.01	0.26	0.00	1.00	0.98	0.99	0.60	1.65
Fistula	3.75	1.68	4.98	1.00	0.03	42.44	1.58	1140.27