INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN BIOLOGY AND MEDICINE
ISSN: 2455-944X
www.darshanpublishers.com
DOI:10.22192/ijcrbm Volume 3, Issue 2 - 2018

Original Research Article

DOI: http://dx.doi.org/10.22192/ijcrbm.2018.03.02.009

Comparative study of Fistulectomy with primary repair versus Fistulectomy with radical mucosal advancement flap at a tertiary care centre in Northern India

Satpal Hans[1], Baldev Singh [2] , Anand Dutta[3], Sahil Mashal[3], Nirbhaibir Singh[3], Devika Krishnakumar[3], Gaurav Sharma[3], Parneet[3] , NS Neki[4]

[1]Professor , Department of Surgery, Govt. Medical College,(GMC) Amritsar.
[2]Associate Professor, Department of Surgery, GMC Amritsar.
[3]Junior resident, Department of Surgery, GMC Amritsar.
[4]Professor and Head, Dept. of Medicine, Govt. Medical College, Amritsar

Corresponding Author: **Dr. Anand Dutta**, Junior Resident, Dept. of Surgery, Govt. Medical College, Amritsar, India, 143001
E- mail: *drananddutta@gmail.com*

Abstract

Introduction: Fistula-in-ano is a commonly encountered malady and an intriguing problem of the ano-rectal area in the general population. Fistula is defined as an abnormal communication between two epithelial surfaces. Fistula-in-ano is an abnormal track which opens deeply in the anal canal or in the rectum and peripherally on the skin around the anus. Surgery is the only type by which the fistula-in-ano can be treated. Here,we are going to compare the two types of surgeries ,one fistulectomy with primary repair and another fistulectomy with radical mucosal advancement flap.

Materials and methods: Fifty patients included in this study (25 cases treated with fistulectomy with primary repair and 25 cases treated with fistulectomy with radical mucosal advancement flap) were admitted in surgical wards and emergency of Guru Nanak Dev hospital attached to the Medical College, Amritsar. Detailed general physical examination, systemic examination, local per-rectal and proctological examination of all patients were done and all cases having fistula-in-ano diagnosed clinically or with fistulogram.

Results: The results were based on age, sex, chief complaints, occupation, position of external or internal opening, postoperative complications, postoperative condition of the wound, discomfort score, pain perceived by the patient, average hospital stay in hospital and time taken for wound to heal.

Conclusion: Results with fistulectomy with radical mucosal advancement flap were better than fistulectomy with primary repair.

Keywords: Fistulectomy, Advancement Flap,

Introduction

Fistula is defined as an abnormal communication between two epithelial surfaces. Fistula-in-ano is an abnormal track which opens deeply in the anal canal or in the rectum and peripherally on the skin around the anus. Anal fistula usually results from It is a preventable disease provided the perianal – perirectal suppurations are treated timely and in a corrective manner. It is a cause of considerable agony to the patient. An anorectal abscess which bursts spontaneously or is opened inadequately.[1]

There is a strong relation between perianal abscess and fistula in ano. Acute perianal suppuration is frequently encountered in hospital and general practice.[2]

More than 95% of all perianal abscesses are caused by infections arising in the anal glands that communicate with the anal crypts (cryptoglandular hypothesis) and are the most common proctological disorder requiring immediate surgery in emergency room. The acute phase of the infection causes a perianal abscess while the chronic stage is recognized as an anal fistula[3].

The chronicity with its symptoms makes an otherwise healthy and active individual lose their earning capacity with lowered self-confidence. It has been said that many surgeon's reputation have been impugned because of the consequences of fistula operations than from any other operative procedure. Clearly, the surgeon who is fortunate enough to have the opportunity to treat the patient initially is the one most likely to affect a cure, to limit morbidity, and to minimize disability.

The proper understanding of anatomy of anal canal has an important bearing on the surgical treatment of fistula-in-ano and its pathogenesis is always closely related to the musculature, mucous lining and other structures of the anal canal. The surgical anal canal commences at the ano-rectal junction and terminates at the anal verge. It measures about 2 to 4cm in length, with its anterior wall being slightly shorter than posterior wall and is generally longer in men than in women. In the upper half of the anal canal, the mucous membrane presents with 6 to 10 folds called the anal columns of morgagni.[4] The lower ends of columns are joined together by small cresentric valve like folds of mucous membrane, the Anal Valves. The line along which the anal valves are situated is called pectinate or dentate line.[5] The succeeding part of the anal canal is known as transitional zone or pectin. White line of Hilton is another point described as a visible white line corresponding exactly to the linear interval between subcutaneous external and internal sphincter muscles. Below white line, the lower 8mm or so of the anal canal is lined by true skin.

The superior rectal artery arises from the terminal branch of the inferior mesenteric artery and supplies the upper rectum. The middle rectal artery arises from the internal iliac artery, supplies the lower rectum and upper anal canal. The inferior rectal artery arises from the internal pudendal artery, which is a branch of the internal iliac artery supplies the anal sphincters, anal canal and skin of anal margin. The venous drainage parallels the arterial supply. The superior rectal vein drains into the portal system via the inferior mesenteric vein. The middle rectal vein drains into the internal iliac vein. The inferior rectal vein drains into the internal pudendal vein and subsequently into the internal iliac vein. A submucosal plexus which is present deep to the columns of Morgagni forms the hemorrhoidal plexus and drains into all three veins. Both sympathetic and parasympathetic nerves innervate the anorectum.

A typical anal fistula consists of 3 parts namely external opening, internal opening and the main track. The position of the external opening in relation to anal verge is suggestive of the direction of the main track and internal opening. The internal opening of a fistula is more easily discovered by light palpation of the anal mucosa with finger in anal canal than by inspection with a proctoscope. The main track extends from the internal opening to the primary external opening, and may take a straight or curved or tortuous course.

Commonly used system divides fistula into two groups:

- Low-level fistula-in-ano: Internal opening opens into the anal canal below the anorectal ring.
- High-level fistula-in-ano: Internal opening opens into the anal canal above the anorectal ring.

Park and colleagues[6] are credited with the following classification method:

- Type 1: Intersphincteric
- Type 2 :Transsphincteric
- Type 3 : Suprasphincteric
- Type 4: Extrasphincteric .

Signs and symptoms of fistula-in-ano, in order of prevalence, include the Perianal discharge, Pain, Swelling, Bleeding, Diarrhoea and Skin excoriation.

No specific laboratory studies are required in the diagnosis of fistula-in-ano. Instead physical examination findings remain the mainstay of diagnosis. The examiner should observe the entire perineum, looking for an external opening that appears as an open sinus or an elevation of granulation tissue. Spontaneous discharge may be apparent via external opening. Digital rectal examination may reveal a fibrous tract or cord beneath the skin. Anoscopy is usually required to identify the internal opening. Fistulography, the radiologic delineation of a fistula tract with a water-soluble contrast agent, with the patient placed on the x-ray table, usually in the left lateral position, and a small-bore catheter is inserted into the external opening. Endoanal/endorectal ultrasonography and MRI are used for evaluating complex fistulas and recurrent fistulas.

There are many modality of treatment for fistula in ano. here we are going to compare the Fistulectomy with primary repair and Fistulectomy with radical mucosal advancement flap. Fistula-in-ano can be treated surgically under general, regional (spinal or caudal) as well as under local anaesthesia. All three types of anaesthesia have merits and demerits for surgical services and for patients as well. Most of the time in our set-up, surgery for fistula in ano was being done under spinal anaesthesia and Bupivacaine HCI was the anaesthetic.

Materials and Methods

Fifty patients included in this study (25 cases treated with fistulectomy with primary repair and 25 cases treated with fistulectomy with radical mucosal advancement flap) were admitted in surgical wards and emergency of Guru Nanak Dev hospital attached to the Medical College, Amritsar. Detailed history of all patients was taken. Apart from age, sex, occupation and duration of disease, some specific points like any previous operative history, any other specific primary cause of fistula or any treatment taken in form of local application or injections were recorded.

Detailed general physical examination, systemic examination, local per-rectal and proctological examination of all patients were done and all cases having fistula-in-ano diagnosed clinically or with fistulogram were taken and the following patients were not included in the study:-

a) Patients refuse for consent
b) High pelvic rectal fistula
c) Viral markers positive cases (HIV, HCV, HBsAg Positive cases)
d) Crohn's Disease, Ulcerative Colitis.

On the evening prior to the day of surgery, perineum and both thighs were shaved and washed with normal saline. On the same evening, patients were given PC enema and were kept nil per oral after midnight. On the morning of the day of operation, second PC enema was given. After taking the full informed consent, all the patients were operated under standard protocol. Each patient was taken under the effect of either general anaesthesia, spinal anaesthesia or local anaesthesia.

Out of 50 patients included in this study , the 25 cases treated with fistulectomy with primary repair and 25 cases treated with fistulectomy with radical mucosal advancement flap.

Results

This study was based on fifty cases of fistula in-ano, which was carried out in Guru Nanak Dev Hospital, Amritsar. The patients were divided randomly into two groups of 25 each. In these fifty cases, following observations were made. Out of 50 cases, 25 cases were treated with fistulectomy with primary repair and 25 cases were treated with fistulectomy with radical mucosal advancement flap. All the patients enrolled in study, completed the study. The compaison in various variables was not found significant. The Significant comparison is discussed below.

Table 1 Age distribution of the patients

Age group (years)	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
21-30	2	8.0	7	28.0	9	18
31-40	10	40.0	13	52.0	23	46
41-50	8	32.0	4	16.0	12	24
51-60	5	20.0	1	4.0	6	12
Total	25	100.0	25	100.0	50	100

P=0.067

Fistula in ano was found to be commonest in fourth and fifth decade of life. In our study it was observed that 35 cases (70%) were in the age group of 31-50 years. Oldest patient was 55 years of age and youngest patient was 22 years old.

Table 2 Sex incidence of the patients

Sex	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
Male	22	88.0	21	84.0	43	86
Female	3	12.0	4	16.0	7	14
Total	25	100.0	25	100.0	50	100

P=0.684

There was male preponderance in our series with 43 cases (86%) were male. It was observed that the incidence of fistula in ano in females was found to be less with the overall ratio of Male : Female 6.14:1.

Table 3 Different types of complaints in patients

Complaints	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
Discharge	21	84.0	20	80.0	41	82
Pain	14	56.0	16	64.0	30	60
Swelling	16	64.0	13	52.0	29	58
Pruritus	6	24.0	4	16.0	10	20
Bleeding	4	16.0	2	8.0	6	12
Associated problem (constipation etc.)	2	8.0	1	4.0	3	6

P=0.894

In our study it was observed that majority of the patients 41 (82%) presented with the chief complaints of discharge than pain 30 (60%), swelling 29 (58%), pruritus 10 (20%), bleeding 6 (12%) , etc.

Table 4 Number of external openings in the patients

No. of external openings	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
One	23	92.0	24	96.0	47	94.0
>one	2	8.0	1	4.0	3	6.0
Total	25	100.0	25	100.0	50	100.0

P=0.552

In our study majority 47 (94%) cases had single external opening and 3 (6%) cases had more than one external openings.

Table 5 Internal openings in the patients

Internal opening	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
Palpable only	12	48.0	8	32.0	20	40.0
Visible only	1	4.0	3	12.0	4	8.0
Neither visible or palpable	9	36.0	9	36.0	18	36.0
Both visible and palpable	3	12.0	5	20.0	8	16.0
Total	25	100.0	25	100.0	50	100.0

P=0.513

In our study it was observed that in 20 (40%) cases, the internal opening was palpable only, while in 18 (36%) cases internal opening was neither palpable nor visible. Whereas in 8 (16%) cases the internal opening was palpable as well as visible. In remaining 4 (8%) cases it was visible only by proctoscopy.

Table 6 Duration of disease in the patients of group I and group II

Duration of disease	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
0-5 months	8	32.0	10	40.0	18	36.0
6-11 months	13	52.0	13	52.0	26	52.0
12-18 months	3	12.0	1	4.0	4	8.0
>18 months	1	4.0	1	4.0	2	4.0
Total	25	100.0	25	100.0	50	100.0

P=0.748

In our study it was observed that 26 (52%) cases had symptoms varied from 6 to 11 months while 18 (36%) cases had symptoms since 5 months and in 4 (8%) cases it was of 12 to 18 months of duration and in 2 (4%) cases it was more than 18 months of duration

Table 7 Postoperative complications

Complications	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		Total	
	No.	%	No.	%	No.	%
Fever	4	16.0	1	4.0	5	10.0
Retention of urine	3	12.0	1	4.0	4	8.0
Constipation	2	8.0	1	4.0	3	6.0
Recurrence	2	8.0	0	0	2	4.0
Reactionary haemorrhage	1	4.0	0	0	1	2.0
Rectal incontinence	1	4.0	0	0	1	2.0
Discharge	1	4.0	0	0	1	2.0
Others (nausea, vomiting)	0	0	0	0	0	0.0
Anal stenosis	0	0	0	0	0	0.0

P=0.174

In our study it was observed that 5 (10%) cases complained of fever in postoperative period, 4 (8%) cases complained of retention of urine, 3 (6%) cases complained of constipation and 1 (2%) case complained of discharge.

One (2%) case complained of bleeding within 24hrs of operation (reactionary haemorrhage), one (2%) case complained of rectal incontinence and 2 (4%) cases came back with recurrence (the same complaint).

Table 8 Postoperative condition of wound of group I and II at different time intervals

Postoperative day	Group I (Fistulectomy with primary repair)				Group II (Fistulectomy with radical mucosal advancement flap)				Total			
	Healthy		Unhealthy		Healthy		Unhealthy		Healthy		Unhealthy	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1st	25	100.0	0	0	25	100.0	0	0	50	100.0	0	0
2nd	23	92.0	2	8.0	25	100.0	0	0	48	96.0	2	4.0
3rd	23	92.0	2	8.0	24	96.0	1	4.0	47	94.0	3	6.0
4th	23	92.0	2	8.0	24	96.0	1	4.0	47	94.0	3	6.0
5th	22	88.0	3	12.0	24	96.0	1	4.0	46	92.0	4	8.0
6th	22	88.0	3	12.0	23	92.0	2	8.0	45	90.0	5	10.0
7th	22	88.0	3	12.0	23	92.0	2	8.0	45	90.0	5	10.0

The assessment of wound condition was made clinically by considering any evidence of infection and type of discharge present.

In this table, it was observed that on first post-operative day, wound condition was normal in 100 per cent of cases in both the groups.

On second post-operative day, in group II the condition of the wound was again normal in 100% cases and whereas in group I, 23(92%) cases had clean wounds and in two (8%) cases had seropurulent discharge.

On third post-operative day, in group II, only 1 case (4%) had unhealthy wound whereas in group I, 2(8%) had unhealthy wound.

On fourth post-operative day, 24(96%) cases in group II had healthy wound, whereas, in group I, 23(92%) cases had healthy wound.

On fifth post-operative day, 24(96%) cases in group II had healthy wound whereas in group I, 22 (88%) cases had healthy wound.

On sixth post-operative day, two (8%) cases had unhealthy wound in group II and 3 (12%) cases in group I had unhealthy wound.

Whereas on seventh post-operative day, twenty- three (92%) cases in group II and twenty-two (88%) in group I cases had healthy wound.

Table 9 discomfort score of group I vs group II

Postoperative day	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		p-value
	No.	%	No.	%	>0.05/NS
1st	19	76.0	13	52.0	>0.05/NS
2nd	15	60.0	9	36.0	>0.05/NS
3rd	13	52.0	7	28.0	>0.05/NS
4th	11	44.0	5	20.0	>0.05/NS
5th	9	36.0	4	16.0	>0.05/NS
6th	9	36.0	3	12.0	<0.05/S
7th	8	32.0	2	8.0	<0.05/S

In our study it was observed that on sixth post-operative day, 3(12%) and 9(36%) cases from group II and group I respectively had discomfort.

Whereas on seventh post-operative day twenty three (92%) and seventeen (68%) cases from group II and group I respectively were relieved of the symptom of discomfort.

Statistical analysis showed that the relief in discomfort was found to be significant on sixth and seventh post-operative day ($p<0.05$).

Table 10 Average hospital stay of patients

Group	0-1 day	2-3 days	4-5 days	6-7 days	>7 days	Total
Group I (Fistulectomy with primary repair)	-	13	8	1	3	25
Group II (Fistulectomy with radical mucosal advancement flap)	-	19	5	1	0	25
Total	-	32	13	2	3	50

In this table, it was observed that in group II, mean hospital stay was 4.96±1.74 days whereas in group I it was 7.16 ± 3.02. Statistical analysis showed that difference was statistically highly significant ($p<0.05>$).

Table 11 Time taken for healing of wound of group I vs group II

Period	Group I (Fistulectomy with primary repair)		Group II (Fistulectomy with radical mucosal advancement flap)		p-value/ Significant or Nonsignificant
	No.	%	No.	%	
0-15 days	6	24.0	13	52.0	<0.05/S
16-30 days	7	28.0	7	28.0	-
31-60 days	12	48.0	5	20.0	-
	25	100.0	25	100.0	-

In this table, it was observed that within 15 days in group II (fistulectomy with radical mucosal advancement flap) thirteen (52%) cases showed complete healing whereas in group I six (24%) cases showed complete healing

It was also observed that the patient in group II started returning to normal daily routine activity earlier than the group I patients

Discussion

Fistula-in-ano is a commonly encountered anorectal disorder in our set up and it is a well acclaimed fact that surgically untreated fistula-in-ano never heals. . A total of 50 cases admitted in surgical department were studied prospectively. Out of that 25 cases were treated with fistulectomy with primary repair and 25 cases were treated with fistulectomy with radical mucosal advancement flap. The observations of the present study is being discussed in the forthcoming paragraphs.

The maximum age incidence in our study was found to be in age group 31-40 years followed by incidence in 5th and 3rd decade (table no. 1). Sainio reported that in a large study of 458 cases the mean age of incidence was 38.3 years.[7]

Vasilevsky and Gordon (1984) reported that maximum number of patients with fistula in ano presented in third or fourth decade of life.[8] Ramunjam also showed the maximum age incidence in 3rd and 4th decade. None of the patients included in this study were below 22 years which supported the fact that incidence is rare in infants, children and adolescents.[9]

Male: Female ratio in this study was 6.14 : 1 as mentioned in table no 2, thus proving that in a given population the incidence of anal fistula is higher in the male gender. This is also comparable to other studies. Eisenhammer (1985) reported male: female ratio varies from 1.8: 1 to 8:1, which is comparable with our study. [10]

The presenting symptom common in 41 (82%) patients was persistent discharge from the external opening of the fistula as mentioned in table 3. The next common symptoms were pain in 30 (60%) cases and perianal swelling in 29 (58%) cases. Das and Agrawal reported discharge from the external opening to be the commonest complaint (92%), which is comparable to our study.[11] In a clinical study of 199 patients with fistula in ano, Sainio made the observation that discharge from the external opening was the most common complaint among patients. [7] Vasilevsky and Gordon series also showed the most common symptom as perianal discharge in 64% cases than pain and swelling observed as next common symptoms. [8]

The external opening was identified in all 50 cases (table 4). The internal opening (table no 5) was palpated in 40% cases, visible in 8% of cases, neither visualized nor palpated in 36% of cases and it was both visible and palpated in 16% of cases. The internal opening was neither visible nor palpable. These patients underwent fistulogram study and those who showed low level anal fistula were included in the study. Fistulogram was not mandatory for all patients.

In our present study, the minimum duration of disease was 0-5 months as mentioned in table 6 and the maximum duration was more than 18 months showing the chronicity of the disease with an average of 6-8 months. Vasilevsky and Gordon series also support the fact that average duration of disease varies from 3-6 months. [8]

In our study as mentioned in table no. 7, we observed that postoperative complications in patients treated with fistulectomy with primary repair were retention of urine (12% of cases), fever (16% of cases), constipation (8% of cases), discharge (4% of cases) and in patients treated with fistulectomy with radical mucosal advancement flap were retention of urine, fever, hemorrhage (4% each) . The other postoperative complications reported with fistulectomy with primary repair were reactionary hemorrhage (4%), rectal incontinence (4%), recurrence (8%) and in patients operated with fistulectomy with radical mucosal advancement flap were found to be none. So, in our study the post operative complications found were negligible with fistulectomy with radical mucosal advancement flap than fistulectomy with primary repair.

The postoperative (7th day) condition of the wound as mentioned in table no 8 was found to be healthy in 88% of cases treated with fistulectomy with primary repair and was found healthy in 92% of the cases treated with fistulectomy with radical mucosal advancement flap. So condition of the wound was found to be better in patient operated with fistulectomy with radical mucosal advancement flap than fistulectomy with primary repair.

In our study we compared the discomfort score (table no 9) between fistulectomy with primary repair and fistulectomy with radical mucosal advancement flap. It was observed that 32% of patient showed some discomfort on 7th post operative day in fistulectomy with primary repair in comparison to only 8% with fistulectomy with radical mucosal advancement flap.

In our study it was observed that (table no 10) the maximum stay for 12% of cases treated with fistulectomy with primary repair was more than 7 days but in mucosal flap all cases were discharged upto 6th postoperative day. So the average hospital stay was found to be less with fistulectomy with radical mucosal advancement flap than fistulectomy with primary repair. This is in accordance with literature of Vasilevsky and Gordon series which showed 23% healing in less than 4 weeks and 60% healing in 4-8 weeks. [8]

It was also observed that the patient in group II started returning to normal daily routine activity earlier than the group I patients.

Conclusion

Our study has shown that those patients who underwent fistulectomy with radical mucosal advancement flap had shorter hospital stay, better post operative condition of wound and lesser discomfort as compared to those who underwent fistulectomy with primary repair. The post operative complications were also found to be less with fistulectomy with radical mucosal advancement flap than fistulectomy with primary repair. Although this study is done in a very small size sample , but it has shown very good results with fistulectomy with radical mucosal advancement flap. Although more studies are needed before this technique can be established as the main modality of treatment, the modality holds promise to replace the other modalities of treatment for fistula in ano.

Source of funding: Nil

Conflict of interest: None declared

References

1. Parks AG. Pathogenesis and treatment of fistula-in-ano. Br Med J. 2009;1:463-9.
2. Fielding MA, Berry AR. Management of perianal sepsis in a district general hospital.J R Coll Surg Edinb. 2012; 37:232-4.
3. Abcarian H. Anorectal infection: Abscess-fistula. Clinics in colon and rectal surgery. 2016; 24: 14.
4. Williams PL, Bannister LH. Ed., Gray's Anatomy, New York: Churchill Livingstone. 2015; 1780-2.
5. Milligan EC, Nauton M : Surgical Anatomy of the anal canal. 2013: 1149-50.
6. Chummy SS. Last's Anatomy – regional and applied. Churchill Livingstone; 2008; 10: 305-8.
7. Sainio P. Fistula in ano in a defined population. Incidence and epidemiological aspects. Ann Chir Gynaecol. 2004; 73(4): 219-24.
8. Vasilevsky CA, Gordon PH. The incidence of recurrent abscesses or fistula in ano following anorectal suppuration. Dis Colon Rectum. 2007; 27: 126-30.
9. Ramunjam M series Fistulas and fistulous abscesses in the anorectal region: personal experience in management. Dis Colon Rectum. 2007; 10(6): 421–34.

10. Eisenhammer P. Emergency fistulectomy of the acute anorectal cryptoglandular intermuscular abscess-fistula-in-ano. S A J Surg. 2005; 23: 1– 7.
11. Dash AC, Agarwal P. Comparative study of surgical techniques for fistula in ano. IJS. 2007; 60(4): 254-5.

Access this Article in Online	
	Website: www.darshanpublishers.com
Quick Response Code	Subject: Medical Sciences

How to cite this article:
Satpal Hans, Baldev Singh , Anand Dutta, Sahil Mashal, Nirbhaibir Singh, Devika Krishnakumar, Gaurav Sharma, Parneet , NS Neki. (2018). Comparative study of Fistulectomy with primary repair versus Fistulectomy with radical mucosal advancement flap at a tertiary care centre in Northern India. Int. J. Curr. Res. Biol. Med. 3(2): 53-62.
DOI: http://dx.doi.org/10.22192/ijcrbm.2018.03.02.009