

# “A CLINICAL STUDY ON PERIANAL ABSCESS”

*Dissertation submitted*

*To*

## THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI

*With partial fulfillment of the regulations for the award of the degree of*

**M.S (General Surgery)**

Branch-I



**Government Kilpauk Medical College**

**Chennai- April -2016**

# **DECLARATION BY THE CANDIDATE**

I hereby declare that this dissertation titled “**A CLINICAL STUDY ON PERIANAL ABSCESS**” is a bonafide and genuine research work carried out by me under the guidance of Prof.P.N.SHANMUGASUNDARAM MS., department of General Surgery, Kilpauk Medical College, Chennai-10.

This dissertation is submitted to **THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY CHENNAI** in partial fulfillment of the degree of M.S. General Surgery examination to be held in **April 2016**.

Date:

Place:

**Dr.RHUTU VENUGOPAL E V**

# CERTIFICATE

This is to certify that this dissertation is the bonafide work of

**Dr. RHUTU VENUGOPAL E V**

ON

**“A CLINICAL STUDY ON PERIANAL ABSCESS”**

*During her course in M.S. General Surgery from Jan 2015 to July 2015 at Government Kilpauk  
Medical College, Chennai-10.*

**Prof P.N.SHANMUGASUNDARAM. MS.**

Professor and Head of the Department,

Department of General Surgery,

Govt Kilpauk Medical College,

Chennai-10

**DR.NARYANA BABU MD.DCH**

DEAN

Govt. Kilpauk Medical College,

Chennai-10

# **CERTIFICATE BY THE GUIDE**

This is to certify that the dissertation titled “**A CLINICAL STUDY ON PERIANAL ABSCESS**” is a bonafide research work done by **Dr.Rhutu Venugopal E V** , post graduate in M.S. General Surgery, Kilpauk Medical College, Chennai-10 under my direct guidance and supervision in my satisfaction, in partial fulfillment of the requirements for the degree of **M.S. General Surgery**.

Date:

**Prof P.N.SHANMUGASUNDARAM. MS**

Place:

HOD & Professor of General Surgery,  
Kilpauk Medical College, Chennai-10

Turnitin Document Viewer - Mozilla Firefox  
https://turnitin.com/dv?o=572304171&u=1043107164&s=&student\_user=1&lang=en\_us

Firefox has prevented the outdated plugin "Adobe Flash" from running on turnitin.com. Continue Blocking Allow...

The Tamil Nadu Dr.M.G.R.Medical ... TNMGRMU EXAMINATIONS - DUE 30-O...

Originality GradeMark PeerMark

**A CLINICAL STUDY ON PERIANAL ABSCESS**  
BY: 2213111183, M.S. GENERAL SURGERY, DR. RHUTU VENUGOPAL E.V

turnitin 12% SIMILAR OUT OF 0


**"A CLINICAL STUDY ON PERIANAL ABSCESS"**  
18  
*Presentation submitted*

To

**THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI**

*With partial fulfillment of the regulations for the award of the degree of*

**M.S (General Surgery)**  
Branch - I



**Government Kilpauk Medical College**  
Chennai- April -2016

Match Overview

Rank	Source	Similarity
1	misc.medscape.com Internet source	3%
2	www.symedicine.org Internet source	2%
3	indiasurgeons.com Internet source	1%
4	Herand Abcarian. "Ano... Publication	<1%
5	Bikash Devaraj. "Rece... Publication	<1%
6	Submitted to Higher Ed... Student paper	<1%
7	en.inforapid.org Internet source	<1%
8	J. Blumetti. "Evolution ... Publication	<1%


PAGE: 1 OF 80

4:45 PM 9/23/2015

Browser tabs: Gmail, Turnitin

Address bar: [https://turnitin.com/s\\_class\\_portfolio.asp?r=25.4380173054077&svr=05&lang=en\\_us&aid=80345&cid=8539677](https://turnitin.com/s_class_portfolio.asp?r=25.4380173054077&svr=05&lang=en_us&aid=80345&cid=8539677)

Page Header: 221311163.m.s General Surgery Dr.RHUTU VENUGOPAL E V User Info Messages Student English Help Logout



Navigation: Class Portfolio Peer Review My Grades Discussion Calendar

NOW VIEWING: HOME > THE TAMIL NADU DR.M.G.R.MEDICAL UTY 2014-15 EXAMINATIONS

**Welcome to your new class homepage!** From the class homepage you can see all your assignments for your class, view additional assignment information, submit your work, and access feedback for your papers.

Hover on any item in the class homepage for more information.

Class Homepage

This is your class homepage. To submit to an assignment click on the "Submit" button to the right of the assignment name. If the Submit button is grayed out, no submissions can be made to the assignment. If resubmissions are allowed the submit button will read "Resubmit" after you make your first submission to the assignment. To view the paper you have submitted, click the "View" button. Once the assignment's post date has passed, you will also be able to view the feedback left on your paper by clicking the "View" button.

Assignment Inbox: The Tamil Nadu Dr.M.G.R.Medical Uty 2014-15 Examinations

Info	Dates	Similarity	
TNMGRMU EXAMINATIONS <span style="float: right;">(i)</span>	Start 01-Sep-2014 11:27AM Due 30-Oct-2015 11:59PM Post 30-Oct-2015 12:00AM	12% <span style="color: green;">■</span>	<a href="#">Resubmit</a> <a href="#">View</a> <a href="#">Download</a>

Windows Taskbar: 4:40 PM 9/23/2015

# ACKNOWLEDGEMENT

I would like to thank God for the things he has bestowed upon me .

I would like to thank my parents for making me who I am today and for supporting me in every deed of mine

I thank each and every person involved in making this manuscript from inception to publication.

I am most thankful to Prof .NARAYANA BABU MD.DCH, Dean, Kilpauk Medical College and Hospital for the opportunity to conduct this study in the Department of General Surgery, Government Kilpauk Medical College Hospital, Kilpauk Medical College, Chennai-10.

My deepest gratitude to my guide and mentor Prof.P.N.SHANMUGASUNDARAM. MS., Professor and Head of the Department,, Department of General Surgery, Kilpauk Medical College, who has inspired me immeasurably during my training as a post graduate student.

I also acknowledge the invaluable advice and counseling received from Dr.V.Vijayalakshmi MS, Dr.K.Sridevi MS, Dr.P.Mathusoothanan MS, and Dr.M.Senthil Kumar MS and Dr.P.Selladurai MS.

This study would have not been possible without the support of my fellow post graduates and interns who have been a source of help in need.

The most important part of any medical research is patients. I owe great deal of gratitude to each and every one of them.



# **ABSTRACT**

## **Study title:**

## **A CLINICAL STUDY ON PERIANAL ABSCESS**

## **Background:**

A perianal abscess is an acute phase manifestation of a collection of pus that arises from infection of cryptoglandular epithelium lining the anal canal or from a skin infection. Surgical drainage is the cornerstone of treatment for perianal abscesses. They represent approximately 60% of reported anorectal abscesses. Although perianal abscess is common in healthy individuals there are other risk factors that are strongly associated such as diabetes , crohn's disease, obesity, immunosuppression, anal fissure etc. Isolation of gut specific organisms from the pus from a perianal abscess would suggest that a fistula may be present and a careful review of the case is necessary. This study describes the incidence of perianal abscess in different sex and age groups, the complications and the risk factors associated.

## **Objectives:**

The aim of this study is to identify the most common risk factor causing perianal abscess, to identify the most common age group involved, to identify the most common organism grown in culture and the sensitive antibiotic group and to study the most common complications associated.

## **Methods and materials:**

100 patients who present with perianal abscess in GovtKilpauk Medical College for a period of 7 months from Jan 2015 to July 2015 are included in the study. Patients under the age group of 10 yrs, recurrent perianal abscess and other types of anorectal abscess are excluded from the study.

## **Results:**

In this study 63% were males and 37% were females and the mean age of male and female patients was  $42.3 \pm 11.8$  yrs (range 21-80) and  $37.6 \pm 7.4$  yrs (range 19-50) respectively. The most common presenting feature was pain which was present in all patients (100%) followed by swelling (78%), fever (23%) and discharge (6%). Majority of patients had abscesses in the lateral location with 34% of abscesses in the right lateral side and 31% of abscesses in the left lateral side, followed by 29% of abscesses in the posterior location and the least (6%) in the anterior relation of anal canal. Of the 100 specimens, all except 10 specimens yielded bacterial growth. Aerobic bacteria only were isolated in 80 patients (80%), anaerobic bacteria only in 4 patients (4%), mixed aerobic and anaerobic bacteria in 6 patients (6%). A total of 10 anaerobic and 86 aerobic isolates were recovered from 100 abscesses. The predominant isolates were *Escherichia coli* (n = 39), *Staphylococcus aureus* (n=16), *Proteus mirabilis* (n=12), *Enterococcus* spp. (n=11), *Bacteroids fragilis* (n=10), *Klebsiella* (n=9). An underlying condition was present in 34 patients out of 100 patients. A single condition was present in 24 patients, two comorbid conditions were present in 9, and three comorbidity were present in one. Diabetes mellitus (23%), hypertension (6%), and obesity (13%) were the most common conditions. One patient had AIDS and another one patient had HBsAg infection.

The patients were followed for a period of three months. 94% of patients developed no complications. Complications occurred in six patients. Of these five patients developed fistula in ano and one presented with recurrent abscess.

## **Conclusion:**

Perianal abscesses are more common in men than in women. Majority of the aerobic and anaerobic organisms cultured from the perianal abscesses are of GIT and skin flora origin. Isolation of gut specific organisms from the pus from a perianal abscess would suggest that a fistula may be present and a careful review of the case is necessary. Whereas if skin organisms are grown in culture further evaluation is unnecessary.

Incision and drainage is the main treatment for perianal abscess. An anal fistula indicates a chronic phase of an unhealed abscess. Because of this after drainage of perianal abscesses it is advised to do careful examination under anaesthesia seven to ten days later when the results of culture and sensitivity are available to look for an underlying fistula.

**KEY WORDS:**

Perianal abscess, fistula, anorectal abscess.

# TABLE OF CONTENTS

<b>S.NO</b>	<b>TITLE</b>	<b>PAGE NO</b>
<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>2</b>	<b>AIM OF THE STUDY</b>	<b>3</b>
<b>3</b>	<b>REVIEW OF LITERATURE</b>	<b>4</b>
<b>4</b>	<b>MATERIALS AND METHODS</b>	<b>53</b>
<b>5</b>	<b>OBSERVATION AND ANALYSIS</b>	<b>55</b>
<b>6</b>	<b>DISCUSSION</b>	<b>70</b>
<b>7</b>	<b>CONCLUSION</b>	<b>74</b>
<b>8</b>	<b>BIBLIOGRAPHY</b>	
<b>9</b>	<b>APPENDIX</b> <b>I)PROFORMA</b> <b>II)CONSENT FORM</b> <b>III)MASTER CHART</b>	

# ***INTRODUCTION***

---

## INTRODUCTION

A perianal abscess is an acute phase manifestation of a collection of pus that arises from infection of cryptoglandular epithelium lining the anal canal or from a skin infection. Perianal abscesses account for the most common variety of anorectal abscesses. They represent approximately 60% of reported anorectal abscesses. The prevalence of perianal abscesses in the general population is much higher than seen in clinical practice since most patients with symptoms referable to anorectum do not seek medical attention.

Perianal abscesses are more common in men than women. Although perianal abscess is common in healthy individuals there are other risk factors that are strongly associated such as diabetes, Crohn's disease, obesity, immunosuppression, anal fissure etc.

Perianal abscess can expand into nearby tissues (eg, supralevator space, ischioanal space) if undrained or may progress to a generalized systemic infection. In most of the patients surgical drainage under general or local anaesthesia is needed to alleviate pain and sepsis. Subsequently 15-47% of such patients suffer recurrent abscess and fistula in ano formation after the surgical drainage.

Isolation of gut specific organisms from the pus from a perianal abscess would suggest that a fistula may be present and a careful review of the case is necessary. Depending on the results of bacteriologic evaluations, it is seen that gastrointestinal tract (GIT) flora predominate in perianal abscess. The predominant anaerobic bacteria cultured are the Bacteroides spp., Peptostreptococcus and Clostridium spp.; whereas the most

often isolated aerobic and facultative bacteria are *Staphylococcus aureus*, *Enterobacteriaceae*, *Streptococcus* spp., and *Enterococcus* spp.

Surgical drainage is the cornerstone of treatment for perianal abscesses. It aims only at controlling infection of the adjacent structures. The anal sphincters may get damaged if the perianal abscesses are untreated or inadequately treated.

This study describes the incidence of perianal abscess in different sex and age groups, the complications and the risk factors associated.

## **AIM OF THE STUDY**

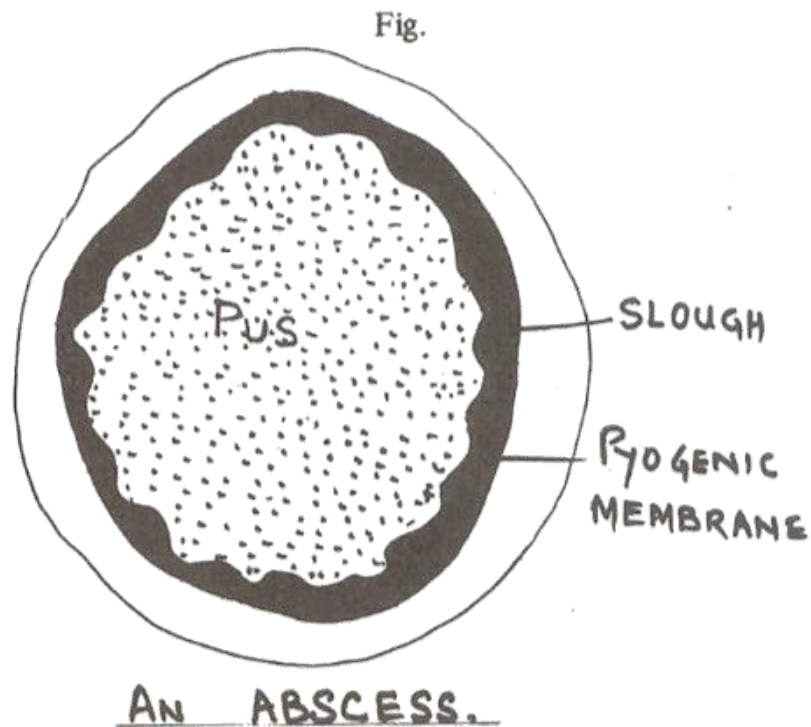
- 1) to identify the most common risk factor causing perianal abscess
- 2) to identify the most common age group involved
- 3) to identify the most common organism grown in culture and the sensitive antibiotic group
- 4) to study the most common complications associated



## REVIEW OF LITERATURE

A perianal abscess is a collection of pus outside the anal verge. They occur either from a skin infection or as a complication of an anal gland (cryptoglandular) infection.

An abscess consists of (a) a central cavity that contains the pus, that essentially consists of liquefied necrotic tissue along with dead polymorphs and bacteria (majority of the later are alive) and (b) a surrounding wall, the inner layer of which is also again necrotic (but not yet liquefied) called slough and the outer layer (the pyogenic membrane) is acutely inflamed tissue that is profusely infiltrated with polymorphs.



As the abscess gets expanded, more living tissue is converted to slough and the slough is converted in turn to pus. If the natural and acquired immunity of the host is normal, the pyogenic membrane is replaced rapidly by granulation tissue. This prevents the systemic invasion of bacteria. Incision and drainage of abscess should be done before they point and certainly before the abscess becomes fluctuant. Considerable destruction of the affected tissue and necrosis of the skin may occur if the abscess is allowed to progress.

Once the formation of an abscess has occurred, antibiotic cannot penetrate the avascular slough that lines the cavity. If I&D alone has been done for the perianal abscess with scraping of the slough the antibiotic as well as the body's defence mechanisms can gain access into the cavity and can eradicate the infection.

## **HISTORY**

In the pathogenesis of perianal abscess and fistula the credit for introducing the concept of anal gland infection is attributed to Chiari (1878) {1} and Herrmann and Defosses (1880). By means of conventional and special immunohistologic staining Klosterhalfen {2} and colleagues did examination on 62 autopsy specimens and postulated that anal intramuscular glands could be the anatomic correlate of anal fistulas. Between six to ten of these anal glands and ducts are located around the anal canal and they enter at the base of the crypts.

By meticulous histologic review Parks demonstrated that 50% of crypts are not entered by glands, that most of the ducts ended blindly, and that the most common direction of spread is downward and into the submucosa. The implication is that infection or plugging of the duct results in an abscess that can spread in several directions that may eventually lead to the development of an anal fistula. In theory, an intersphincteric fistula may develop when the duct traverses the internal anal sphincter, and a transsphincteric fistula might be a consequence of the duct's crossing the external sphincter.

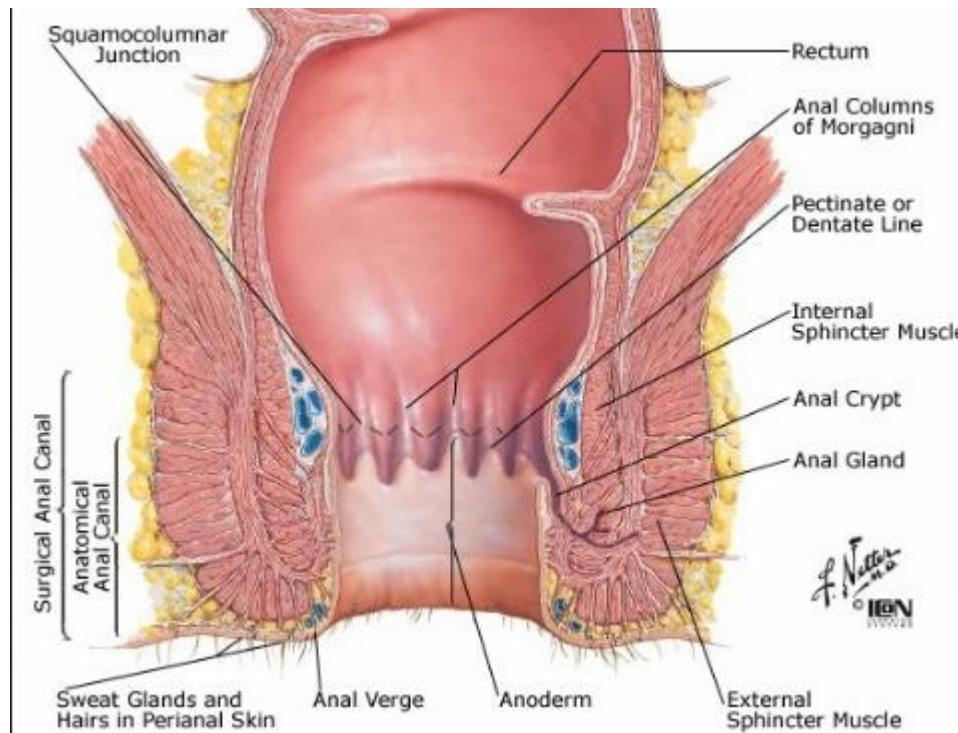
Shafer and colleagues performed surgery in fifty two infants with anal fistula and they noted a markedly irregular and thickened dentate line{3}. They attributed this condition to a defect in the dorsal portion of the cloacal membrane. The cloacal membrane fuses with the hindgut during 7<sup>th</sup> week of gestation. In essence, the contemporary theory implies that a congenital anomaly or predisposition may result in a fistula in ano. Further support for this theory of congenital origin, albeit by different mechanisms, was offered by several authors.

One theory suggests that androgen excess may lead to the formation of abnormal glands in utero. These abnormal glands may predispose to infection. Pople and Ralphs stated that the “inappropriate” presence of columnar epithelium and transitional epithelium along the length of the excised fistulous tracts of 4 infants further supports the evidence of a congenital abnormality that presents in the first few months of life.{4} They postulated that migratory cells from the urogenital sinus of primitive hindgut gets

locally displaced and entrapped. According to the authors, because fusion is less extensive in females, this explains, the higher incidence of fistula in males.

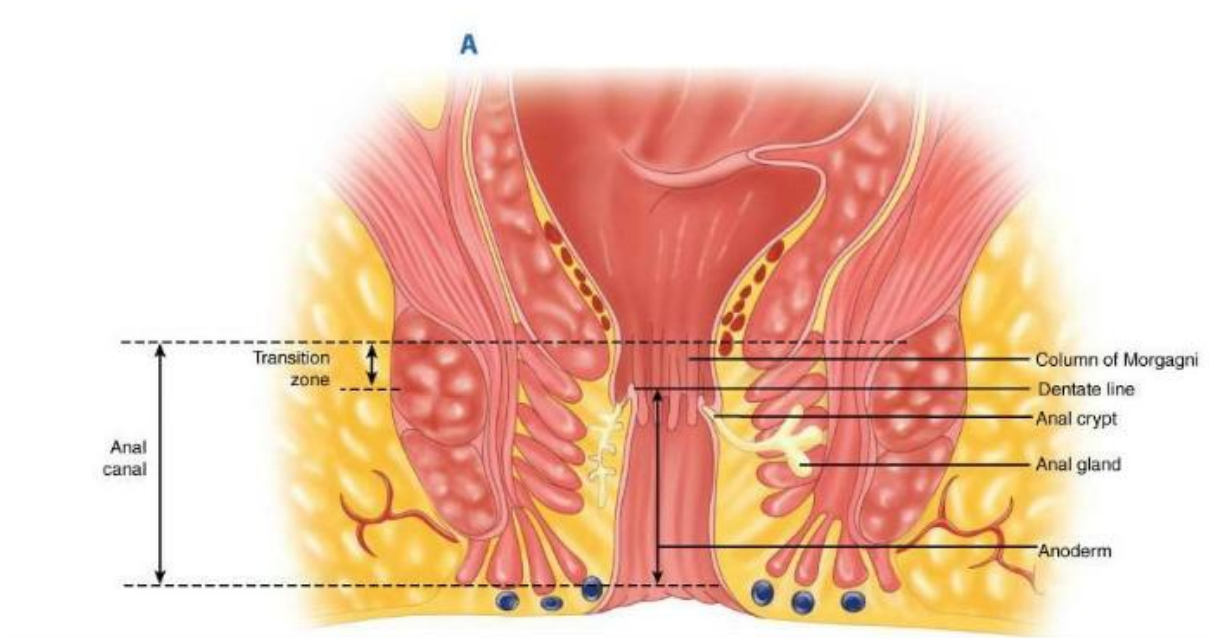
## **SURGICAL ANATOMY OF ANAL CANAL**

The anatomical anal canal is 2 cms in length and extends from the anal valve to the anal verge. The surgical anal canal which is 4 cms in length extends from anorectal ring to the anal verge.

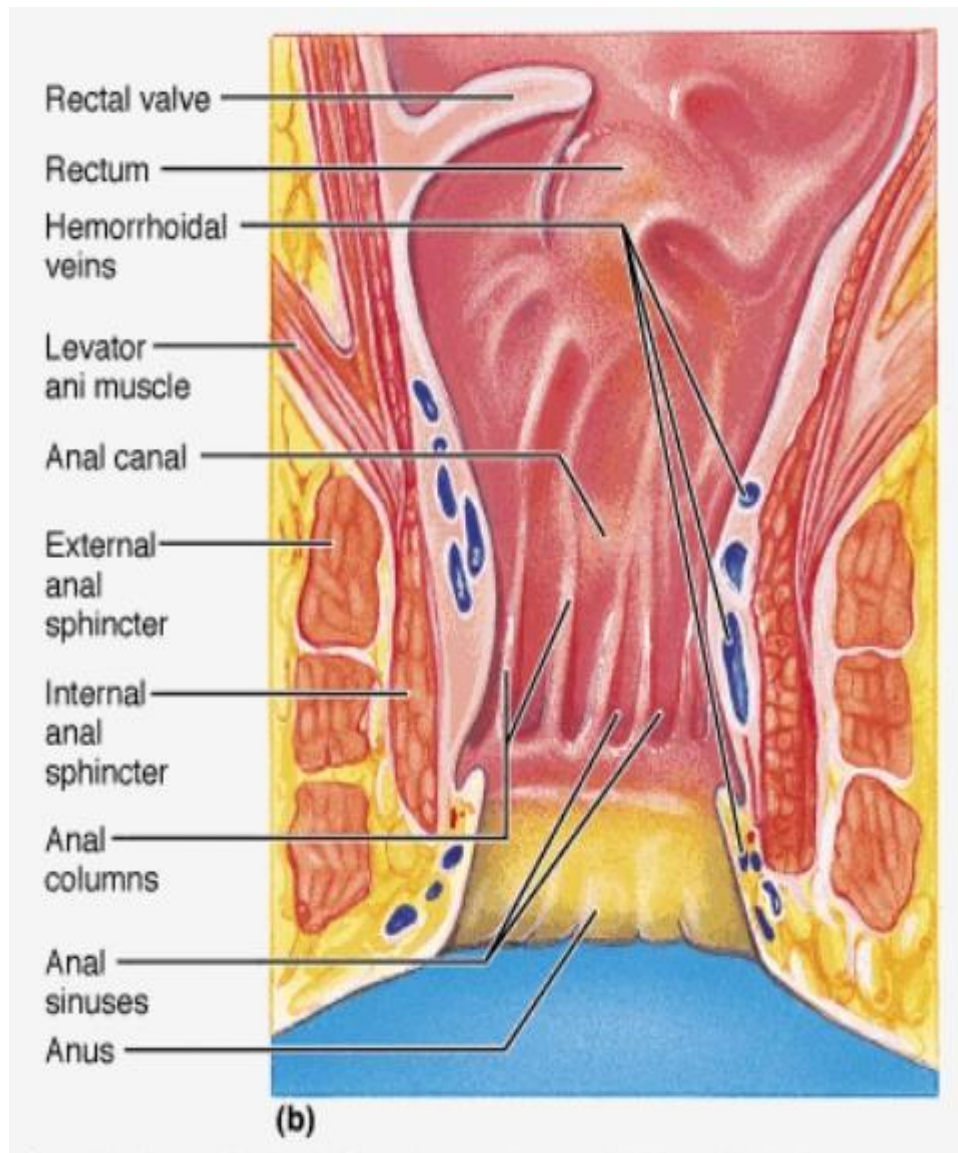


Posteriorly relation of the anal canal is coccyx with fibrous, fatty and muscular tissue intervening. Laterally is related to two ischiorectal fossas on either sides. In males anteriorly is related to the bulbous part of urethra and the posterior border of urogenital diaphragm. In females the anal canal is related to perineal body and distal part of posterior vaginal wall.

### **THE MUCOCUTANEOUS LINING OF THE ANAL CANAL:**



The junction of the upper mucosal and lower cutaneous part is marked by the lining of anal valves. This line is also called as dentate or pectinate line due to the serrated fringe produced by the anal valves. Anal sinus or crypt or sinus of Morgagni is a pit above each valve.



Foreign body may lodge in them or trauma may be inflicted by hard stools resulting in infection. The mucosa above the anal valve is lined by cuboidal epithelium. Below the pectinate line anal canal is lined by modified skin which is devoid of hairs, sweat and sebaceous glands and is closely adherent to the underlying tissue (that is why perianal abscesses are very painful in this region). Further inferiorly the lining becomes thicker and acquires the hair follicles, glands and represents histological features of normal skin.

Each anal gland has a direct opening into an anal crypt. About 50% of crypts have no anal gland communicating with them. Traced outwards from the cryptal opening anal gland has a short tubular portion in submucosa which branches into a racemose structure with wide ramifying ducts. Some glands are confined entirely to submucosa but in 2/3 of them one or more branches enter the internal anal sphincter. 50% of the branches cross the internal sphincter completely to reach the longitudinal layer. As a result of this anal glands are usually confined to submucosa, internal anal sphincter and longitudinal layer of inferior half of anal canal.

According to Parks the anal glands never proceed beyond the longitudinal intersphincteric muscles. The surgical importance of the anal glands lies in the fact that they form a route of infection from anal canal to the intersphincteric space and submucosa.

## **THE MUSCULATURE**

### **INTERNAL ANAL SPHINCTER:**

This is continuous with the circular muscle coat of rectum and inferiorly it ends 6 to 8 mm above the level of the anal orifice . A remarkable feature of the internal anal sphincter muscle is the manner in which its constituent muscle fibres are disposed. These are grouped into discrete elliptical bundles. In the upper part of the sphincter these lie obliquely with their transverse axis running internally and downwards which gives them an imbricated arrangement. These obliquity become less progressive as the internal anal sphincter is traced downwards. So that in the lower part of the muscle the bundle lies horizontally and some of the lower ones inclined upwards. The internal anal sphincter consists of plain (unstriped) muscle fibres.

### **EXTERNAL ANAL SPHINCTER:**

The external anal sphincter extend further downwards than the internal sphincter. The lowermost portion curves medially to occupy a position below the lower round edge of the internal sphincter and close to the skin of the anal orifice. The lowermost portion of it which lies below the internal sphincter is traversed by a fan shaped expansion of the longitudinal muscle fibre of the anal canal which splits it up into 8 to 12 discrete muscle bundles. The upper end of the external sphincter fuses with the puborectalis part of the levator ani muscle, Both muscles are made up of striped muscle fibres.



## **LONGITUDINAL MUSCLE FIBRES**

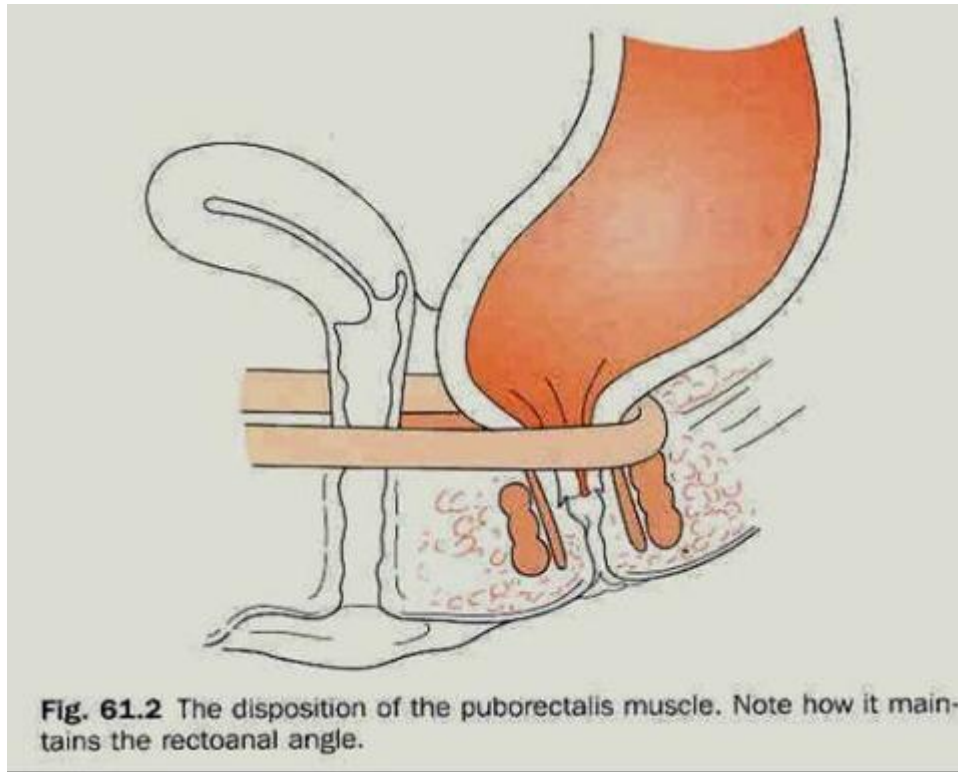
The longitudinal muscle fibres in the anal canal lie between the internal and external anal sphincters. The layer consists of nonstriated muscle fibres that is mixed with elastic tissue. Traced upwards it is found to be continuous with the longitudinal muscle layer of the rectal wall. Traced downwards it splits up opposite the lower border of the internal sphincter into a number of septa which diverge like a fan and passes radially through the lowermost part of external anal sphincter. Some of these fibres are ultimately attached to the external skin of the anal and perianal region.

## **LEVATOR ANI MUSCLES**

This is a broad muscle and the attachment of this muscle is to the inner surface of the side walls of the pelvis. This muscle joins with the muscle of the contralateral side to form a larger part of floor of the pelvic cavity. It consists of three parts -

1. The ilioococcygeus
2. The pubococcygeus.
3. The puborectalis

The puborectalis arises from the posterior aspect of symphysis pubis and runs posteriorly to join with its fellow member behind the rectum forming a U shaped loop that slings the rectum to the pelvis.



### **THE ANORECTAL RING :**

This functionally important ring of muscle surrounds the junction of the rectum and anal canal . This comprises of the upper border of the internal anal sphincter and external anal sphincters, which completely encircle the junction, and on the lateral and posterior aspects by the puborectalis sling . Because of this, the ring is stronger in the lateral and posterior aspects than in the anterior aspect . Identification of the anorectal ring is important in the treatment of perianal abscess and fistulas in ano. Its division results in rectal incontinence while its preservation despite the sacrifice of all the rest of the

sphincter musculature at least ensures no gross lack of control though minor degree of incontinence may result.

## **CLASSIFICATION:**

Anorectal abscesses are classified according to its anatomical site.

The classification according to anatomical site is

- 1)suprlevator abscess
- 2)low or 3) high intersphincteric abscess
- 4) submucosal abscess
- 5) perianal abscess
- 6) ischiorectal abscess.

Perianal abscess is the most common followed by ischiorectal abscess.

## **INCIDENCE**

In a study by Ramanujam et al involving 1023 patients followed up for a five and a half year period perianal abscesses were encountered in 42.7% of patients, ischiorectal abscess in 22.7% patients, followed by intersphincteric (21.4%) and suprlevator (7.33%)[\[5\]](#). More common in males than in females.the difference may be due to (1) anal hygiene (2) rough undergarments leading to greater friction on perianal skin.(3) increased sweating.

McElwain and colleagues reported a ratio of three men to one woman {6}, but other two series from Cook County Hospital in Chicago presented a 2:1 ratio. About two thirds of patients are in their third or fourth decade of age at the time of presentation. There seems to be reports on seasonal clustering of cases with the highest incidence in summer and spring.

Hill studied on 626 patients with perianal abscess and presented that male patients was almost twice the number of female patients {7}. The oldest was 79 yrs of age and the youngest reported was 2 months of age.

## **AETIOPATHOGENESIS**

In 20% of cases the portal of entry of the infective organism is via

- ∅ Dorsal anal fissure.
- ∅ Anal hematoma.
- ∅ Prolapsed thrombosed internal haemorrhoids.
- ∅ Following injection of an anaesthetic solution or alcohol in perianal or ischiorectal space in the treatment of perianal pain.
- ∅ Following infection of internal haemorrhoids is less frequent complication but may lead to abscess formation.
- ∅ Injury to anal or rectal mucosa by nozzle of enema syringe.
- ∅ As a complication of haemorrhoidectomy operation.

In most cases of perianal abscess there will be no preexisting lesion that leads to entry of microorganisms into the tissue space.

Some of the theories suggested are

(a)abrasion of perianal skin produced by hard stools / or objects such as bone in faeces / abrasion produced by friction of undergarments

(b)infection from crypt via an anal gland .this cryptoglandular theory is widely accepted.

(c)blood borne infection . diabetics and leukemic patients are more prone to develop perianal abscess in septicaemic conditions due to blood borne infection.

(d)additional aetiological factors are crohns disease, ulcerative colitis and tuberculosis. A pelvirectal abscess may arise due to appendicitis , diverticulitis, salpingitis.

### **SKIN ORIGIN: FURUNCLES , BOILS AND INFECTED APOCRINE GLANDS:**

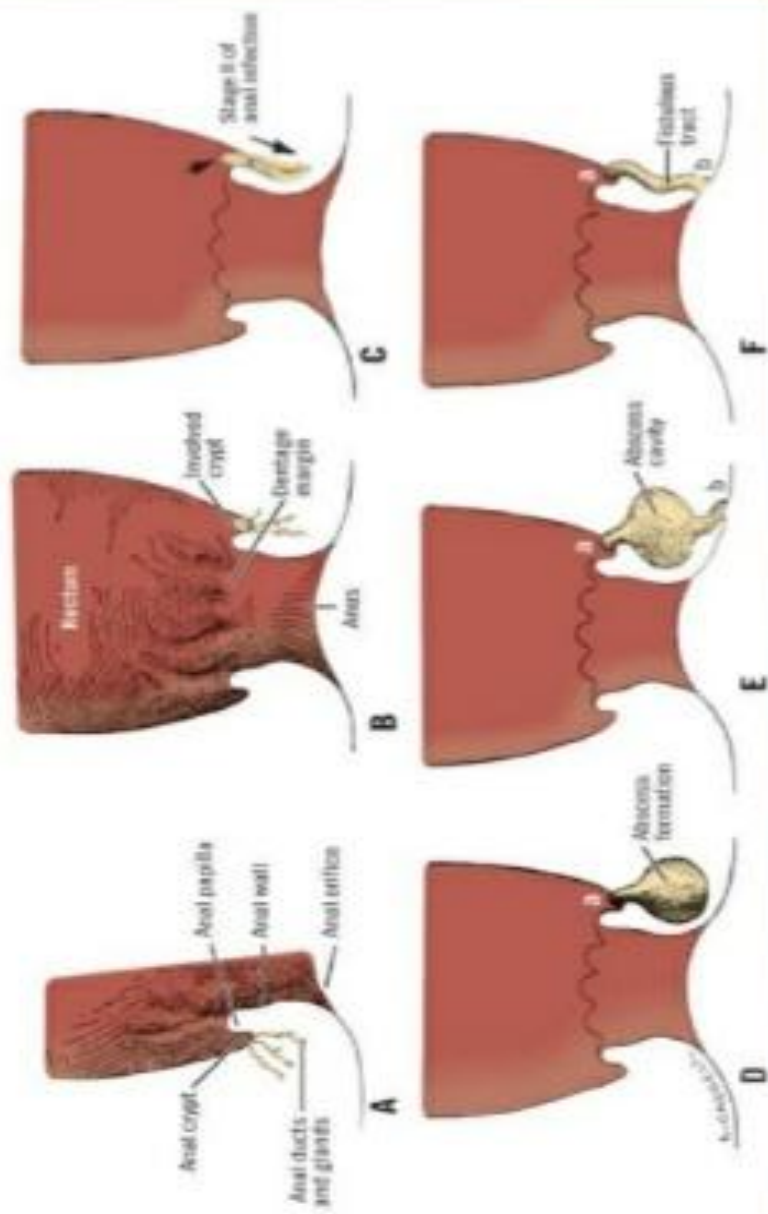
In one third of patients with perianal abscess there is no communication with the anal canal. According to Chrabot et al (1983){8} these perianal abscess are due to sepsis that arise from either hair follicles or apocrine glands. According to Eykyn and Grace (1986) {9} they are often staphylococcal in origin. Further examination under anaesthesia is unnecessary in these circumstances. The frequency with which skin microbes are recovered from patients with perianal abscess ranges from 15% to 25% (Ellis 1960; Wilson 1964; Buchan and Grace 1973;Page and Freeman 1977).

Eighty patients with perianal abscess were studied by Eykyn et al over three years. In no case sterile pus was obtained. Gut aerobes especially *Escherichia coli* were isolated in 92.5% of patients with fistula and in 29.6% of those without fistula. Gut specific bacteroids specifically *Bacteroides fragilis* were isolated from 88.7% of patients with fistula and 18.5% of those without. *Staphylococcus aureus* was isolated from 1.9% patients with fistula and 29.6% of those without [9].

#### **CRYPTOGLANDULAR THEORY:**

Anal glands lie between internal and external anal sphincters. They communicate with anal mucosa by ducts that arise from anal valves at the dentate line. The ducts communicate with an anal gland or other ducts in intersphincteric plane. Most of the anorectal infections arise from an infection of the anal gland. In majority of patients the infection extends downwards towards the perianal region. Lateral extension through the external anal sphincter is prevented by the conjoint longitudinal muscle. In minority of cases the infection advances cranially resulting in high intermuscular abscess or a supralelevator abscess. Sometimes infection may advance along the track of anal duct resulting in submucous abscess.

# Parks cryptoglandular theory - obstruction of anal glands leads to stasis and infection



The intersphincteric sepsis may:

- (1)spread cephalad forming a high intersphincteric abscess
- (2)spread caudally to result in a perianal abscess
- (3)spread towards the anal canal to form a submucous abscess
- (4)penetrate the external sphincter to result in ischiorectal abscess

Circumanal spread can also occur in patients with an intermuscular abscess and rarely in perianal abscess as well.

### **MICROBIOLOGY:**

Bacterial infection of the loose areolar tissue around the anal gland results in perianal abscess. Extensive tissue damage and necrosis is often present. From the pus enzymes that break protein molecules are released. This results in osmotically active substances that attract fluid into infective process. Osmosis from protein breakdown and chemotaxis leads to considerable tension within the abscess resulting in necrosis and small vessel thrombosis. Common organisms implicated in abscess formation are *Escherichia coli*, *Enterococcus* and *Bacteroides* species. Identification of skin flora principally *Staphylococcus aureus* at the time of drainage of perianal abscess makes further evaluation unnecessary. Whereas if a gut specific anaerobe is identified careful follow up is advised since there is increased risk of development of fistula in ano.



Histologically, granulation tissue and fibrosis surround the pus filled cavity. Often there will be local aggregates of histiocytes that form foreign body granulomas in the region of inflammatory reaction.

Three studies by Grace et al{10} ; Whitehead et al; Ekyn and Grace have suggested that isolation of skin organisms especially *Staphylococcus aureus* indicates that the abscesses are rarely associated with fistula formation.

In a study by Mehmet Ulug et al {11} about bacteriological evaluation in 81 patients with perianal abscess except seven specimens all the others (8.6%) yielded bacterial growth. Only aerobic bacteria were isolated in 43 patients (53%) and anaerobic bacteria alone were isolated in eight patients (9.9%). Mixed aerobic and anaerobic bacteria were grown in 23 patients (28.4%). A total of 31 anaerobic bacteria and 101 aerobic isolates were grown from 81 abscesses. The predominant anaerobic bacteria isolated were as follows: *Bacteriodes* spp. (n = 20) and *Peptostreptococcus* spp. (n = 6). The predominant aerobic bacteria isolated were *Escherichia coli* (n = 36); coagulase-negative *Staphylococci* (n = 16); *Enterococcus* spp. (n = 11), and *S. aureus* (n = 10). Of the 10 *Staph.aueus* isolates 30% were methicillin-resistant *S. aureus* (MRSA).

## **ORGANISMS:**

Staphylococcus aureus:

- Gram positive cocci
- Facultative anaerobe
- Appear as grape like clusters in microscope
- Frequently found in respiratory tract and skin
- Not pathogenic always but is a common cause of skin abscesses
- Appear as golden yellow colonies when grown on blood agar often with hemolysis
- Emergence of antibiotic resistant Staphylococcus aureus such as MRSA is a world wide problem.

Escherichia coli:

- Gram negative bacilli
- Facultative anaerobe
- Rod shaped bacterium
- Possess flagella and are mobile. It has peritrichous arrangement of flagella.
- Escherichia coli and other anaerobes constitute around 0.1 percent of gut flora.
- Harmless strains benefit their host by producing vitamin k 2 and prevents colonization with pathogenic bacteria

### Enterococci:

- Gram positive cocci
- Facultative anaerobe
- Often occur in pairs (diplococci)
- Difficult to differentiate from streptococci
- Enterococci faecalis and E.faecium are common commensals of intestine.
- Exhibit gamma hemolysis on sheep's blood agar.

### Coagulase negative staphylococcus aureus

- The management of these strains is challenging as majority are methicillin resistant strains.
- Staphylococcus epidermidis and Staphylococcus haemolyticus are the most significant species.
- These organisms are present in infections in preterm babies and infections due to presence of foreign body.
- Staphylococcus saprophyticus is considered to be associated with acute urethritis.

### Bacteroids fragilis:

- Obligatory anaerobe
- Gram negative, rod shaped bacteria.
- Is considered as a part of the commensal of the large intestine.

- *Bacteroides fragilis* is the predominant organism in this group.
- 41 percent to 78 percent of the isolates in the *Bacteroides* spp are of this species.
- They produce beta lactamase and are resistant to penicillins.
- The pathogenicity of these organisms is due to their ability to produce capsular polysaccharide. This is protective against phagocytosis and that stimulates the development of abscess.
- *Bacteroides fragilis* is sensitive to metronidazole, tigecycline, carbapenems and beta lactam / beta lactamase inhibitor combination.

#### Peptostreptococcus:

- Anaerobic, Gram-positive bacteria
- non-spore forming bacteria.
- They look as small spherical cells that occur either in short chains or in pairs.
- Are slow growing bacteria with development of increasing resistance to antibiotics.
- The most prominent species of this group is *Peptostreptococcus magnus*.
- These organisms are susceptible to beta lactam antibiotics.
- Second most commonly isolated anaerobes.
- About 25 percent of anaerobic organisms cultured are of this type.

- Usually it is cultured mixed in with other aerobic or anaerobic bacteria from infections at various parts of the body.

#### Klebsiella:

- Gram negative rod shaped bacteria
- Non motile, oxidase negative bacterium
- They have a polysaccharide based capsule.
- This organism is named after the German microbiologist Edwin Klebs.
- They are straight rods with blunted or pointed ends
- Are facultative anaerobes
- Their sole carbon sources are glucose and citrate and their sole nitrogen source is ammonia.
- The multidrug efflux pumps account for their resistance to various antibiotics.

#### Klebsiella pneumonia:

- It is similar to *Klebsiella oxytoca*.
- It is differentiated from *Klebsiella oxytoca* by being indole negative and its potency to grow on melezitose and 3-OHbutyrate medium.
- It is the most prominent organism of *Klebsiella* genus of Enterobacteriaceae
- Immunocompromised people are most commonly affected.

### Klebsiella oxytoca:

- They are methyl red negative , citrate positive and positive for urea and TSI gas production.
- They are cultured in sulfide indole motility medium.

### Streptococci:

- Gram positive cocci
- are oxidase negative and catalase negative
- are facultative anaerobes.
- Most of them are not pathogenic.
- They constitute a part of the commensal flora of the skin, GIT and upper respiratory tract.
- Based on hemolytic properties they are classified into alpha hemolytic, beta hemolytic and gamma hemolytic streptococci.
- Alpha hemolytic species oxidise iron within red blood cells giving a greenish color on blood agar.
- On blood agar beta hemolytic species produces a clear area surrounding the bacterial colonies.
- Gamma hemolytic species produce no hemolysis.

## LOCATION OF ABSCESS:

According to Thomson and Parks (1979) {12} the location of abscesses were 66% in posterior quadrant, 20% in anterior and 11% sited laterally. In a study by Ramanujam et al (1984) 53% of abscesses were located posteriorly, 35% laterally and only 12% anteriorly. In a review by Vasilevsky and Gordon a higher incidence of laterally located abscesses were noted and four horse shoe abscesses were also recorded.

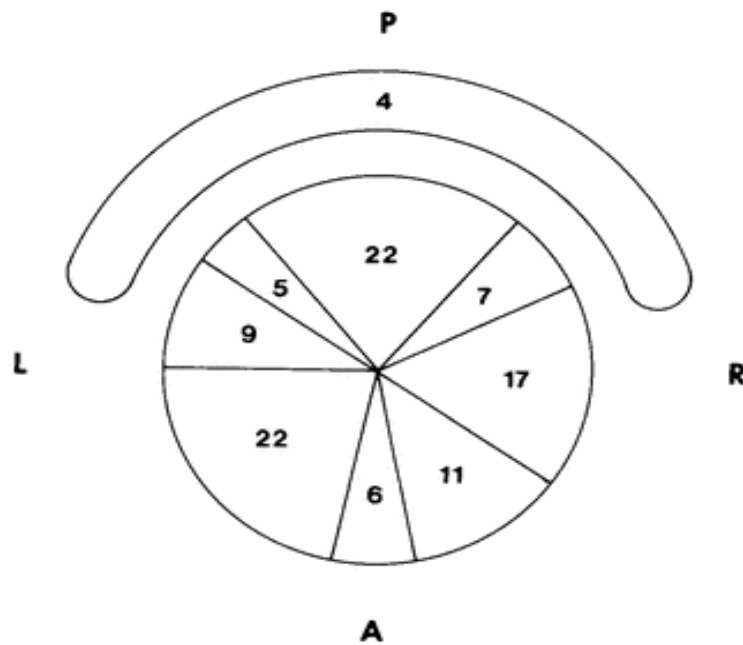


FIG. 2. Location of abscesses in anal hemisphere.

## PERIANAL ABSCESS:

The hallmarks of perianal abscess are pain swelling and localised tenderness. Pain is aggravated on sitting , defecation and coughing. The skin over the abscess will appear swollen and erythematous and there will be a well localised collection of around the skin of anal verge. The swelling is usually ovoid , fluctuant and tender. The perianal abscess is very rarely complicated by constitutional disturbance. Digital examination will be very painful but there will be no evidence of intrarectal swelling. Circumanal extension is uncommon in perianal abscess and most cavities are lateral or posterior.



**FIGURE 10-3.** Perianal abscess. Only a few of these lesions are associated with an underlying fistula. The *dashed lines* illustrate the possible course of a fistula tract if it is present.

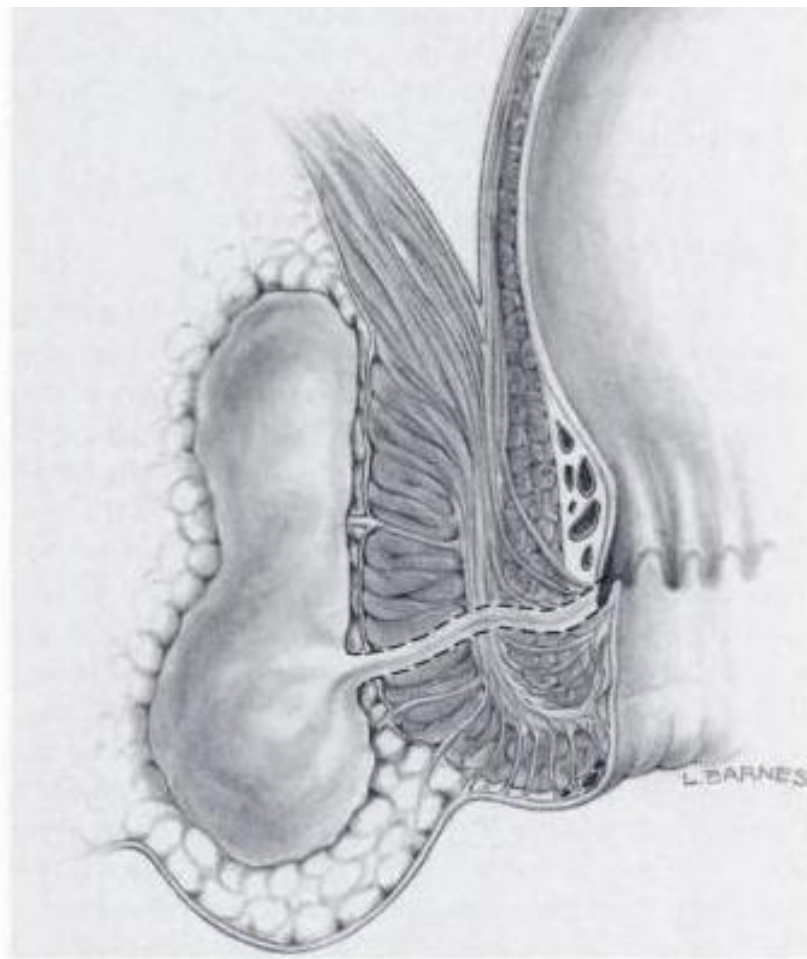


Sometimes it may burst spontaneously with disappearance of swelling and relief of pain. After drainage of abscess, probing for a fistula is likely to create a false passage. If probing is done, it must be performed by an experienced surgeon with a curved malleable probe or a soft catheter through the anal crypt. During inspection of anal canal under anaesthesia with Sims speculum, by giving gentle pressure over the abscess identification of an internal opening can be achieved. If an internal opening is found and is performed by an experienced surgeon, the tract should be laid open at the time of drainage. It is done by division of the internal sphincter below the dentate line, and the entire cavity is laid open. If surgeon is inexperienced and no internal opening found, the abscess is drained simply by incising the skin on the most prominent point of the abscess. Pus drained is sent for culture and sensitivity.

### **ISCHIORECTAL ABSCESS:**

Patient presents with fever more commonly and is associated with constitutional disturbance. There will be more diffuse swelling and it involves the entire perianal region. On examination a vague swelling will be present beside the rectum but bulging into anal canal is usually not present. Bilateral involvement and formation of horse shoe abscess occurs by posterior spread into ischiorectal fossa of contralateral side. Because of pus under tension in a relatively avascular ischiorectal space, there will be considerable tissue necrosis. Sometimes high ischiorectal fossa collection will show no clinical

signs. they are due to extension of a supralevator abscess and signs of pelvic abscess may also be present.

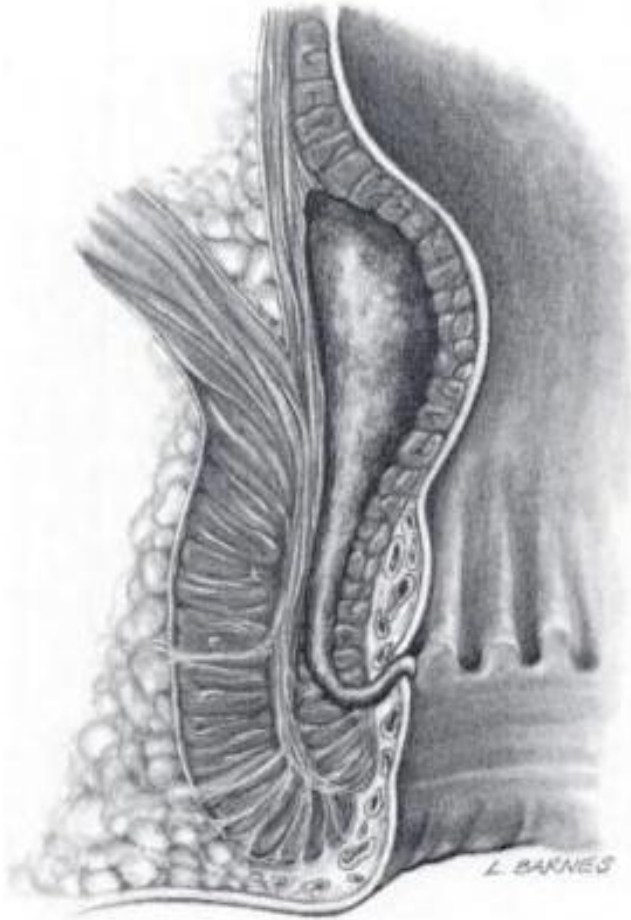


**FIGURE 10-4.** Ischioanal abscess. This type of presentation often is inapparent on physical examination. One must maintain a high index of suspicion. The *dashed lines* illustrate the possible course of a fistula tract if it is present.

Early drainage of pus is essential since there is a large potential space and there is high risk of progression to horseshoe abscess or synergistic necrotizing infection. A single drainage site is established if the abscess is unilateral. Curettage is avoided for fear of creation of a suprasphincteric extension or a high anal fistula. The index finger is gently inserted to rule out posterior extension across midline. If abscess is bilateral pus should be drained from both buttocks.

### **INTERSPHINCTERIC ABSCESS:**

Intersphincteric abscess is often associated with no evidence of sepsis. Patient presents with fever and perianal pain. There may be history of spontaneous discharge and drainage of foul smelling pus through the anus. Digital examination is very painful. Immediate preoperative MRI of anal canal if available can be diagnostic. There is often a diffuse swelling confined to one section of upper anal canal but if extensive intersphincteric collection is present it is poorly localised. In 50% patients an internal opening is present if examined under anaesthesia. Adequate dependant drainage is done an internal sphincterotomy is performed.this manoeuvre reduces the incidence of recurrent abscess . in male patients a gentle anal dilatation is advised since excessive sphincter activity prevents adequate drainage.



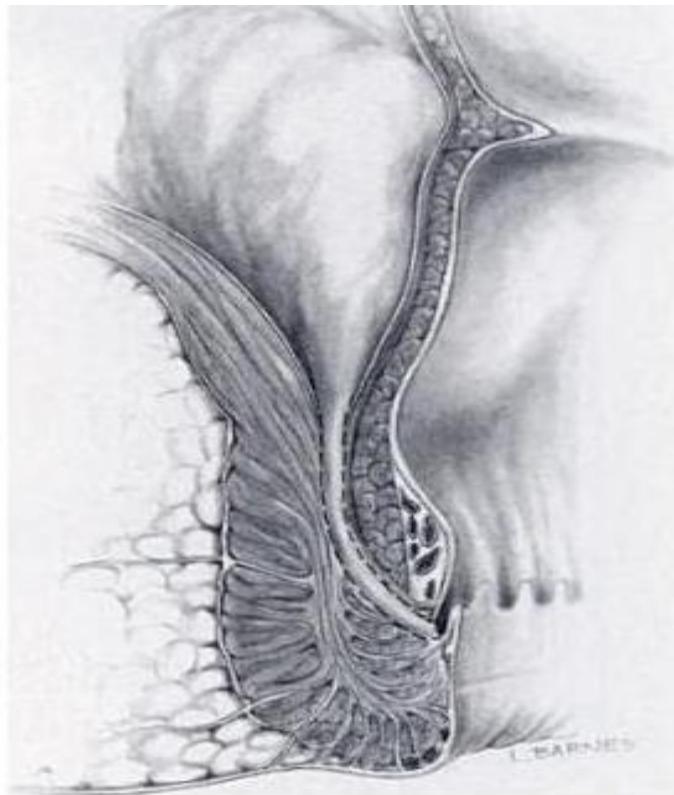
**FIGURE 10-8.** Intersphincteric abscess. The internal opening is at the level of the crypt with extension cephalad in the intermuscular plane.

### **SUBMUCOSAL ABSCESS:**

This occurrence of submucosal abscess alone is uncommon. It is commonly found to be associated with intermuscular abscess. A submucosal abscess is drained internally by excision of mucosa over the bulging abscess.

## SUPRALEVATOR ABSCESS:

Pelvic pathology such as salpingitis, appendicitis, Crohn's disease, diverticulitis, malignancy of large bowel or foreign body trauma produces a supralelevator abscess. It can also occur following an intersphincteric cryptoglandular infection. Often there is considerable delay in diagnosis as symptoms are minimal apart from urinary tract symptoms, perineal discomfort and fever. And also external signs of anorectal abscess are absent. Supralelevator abscess is dangerous as it expands extensively before diagnosis is made. Appropriate treatment is essential as improper drainage may lead to high anal fistula.



**FIGURE 10-12.** Supralelevator abscess. As implied and as illustrated, the abscess is located in the space above the levatores and adjacent to the rectum. The *dashed lines* illustrate the possible course of a fistula tract if it is present.

## **DEEP POSTANAL ABSCESS:**

A transsphincteric fistula may present as deep postanal abscess. Deep postanal space is inferior to levator ani muscle and deep to the external anal sphincter. The patient presents with severe perianal discomfort with pain radiating to sacrum and coccyx. Symptoms may mimic coccygodynia, proctalgia fugax or lumbosacral strain. Frequently the patient is febrile. If a patient presents with continuous posterior rectal pain and rectal tenderness of short interval, a deep postanal space abscess must be suspected.

Management consists of drainage of the deep postanal abscess which cannot be done adequately as an outpatient procedure only with a local anaesthetic. Inevitably, an internal opening is identified at the time of drainage in the posterior midline. Hanley described the best access to effect drainage to the deep postanal space. He suggested placing a probe in the posterior midline in the primary opening and an incision is made over the probe toward the tip of the coccyx. This incision divides the superficial and subcutaneous portions of the external anal sphincter and the internal sphincter in order to decompress the cavity. Packing should be kept in place for 24 to 48 hrs.

## **RISK FACTORS:**

### **SMOKING:**

In a study by Devaraj et al{14} recent smoking is considered a risk factor for perianal abscess. In this study using a 5 year cut off for recent smoking , the association

found was less pronounced but proved still significant and the association was found to be insignificant at ten years. The influence of smoking on development of perianal abscess reduces to baseline five to ten years after cessation of smoking. Smoking is considered as a risk factor for inflammatory and fistulizing cutaneous diseases. It seems that smoking can also be a risk factor for perianal abscess.

### **AIDS:**

In a study by Barrett et al (1998) {15} 260 patients with perianal disease and HIV infection. Perianal sepsis was present in 39% of patients. One of the initial presenting features of AIDS is perianal abscess causing marked tissue destruction. In AIDS patients failure to respond to conventional therapy and recurrent sepsis is a common feature.

### **DIABETES:**

Patients with perianal abscess have occult or established diabetes mellitus. Sometimes this may be the initial presenting feature of diabetes mellitus. A series of research on patients with perianal abscess have reported that 2- 20% are diabetics (Bevans et al {16}; Kovalcik et al; Prasad et al). Abcarian and Eftaiha (1983) postulated that 30% of patients with anorectal sepsis who were associated with synergistic necrotizing fasciitis were diabetic {17}. In a study by Ramanujam et al 4.7% of patients were diabetic either previously known or are newly diagnosed at presentation.

## **INFLAMMATORY BOWEL DISEASE:**

Crohn's disease is the most common coloproctological disease complicated by anorectal sepsis (Grace et al 1982; Winslett et al 1988{18}). Supralelevator abscesses are more common in crohn's disease but any anatomical site may be involved. The association between ulcerative colitis and perianal sepsis is less common (Kovalcik, 1979). In crohn's disease anal fissures, stenosis, skin tags, long standing anorectal fistula, chronic perianal induration and rectal involvement may also be present. And if any of these features are present that should alert the surgeon to look for the possibility of regional enteritis.

## **SPECIFIC INFECTIONS:**

Occasionally perianal abscesses are caused by specific microorganisms, tuberculosis being the most common (Chung et al 1997){19}. If a patient who has AIDS or is on steroid presents with perianal abscess for the first time and if associated with a fissure, induration and stenosis should alert the surgeon to rule out the possibility of tuberculosis (Bode et al 1982){20}. In such cases guinea pig inoculation for culture and biopsy of the cavity should be advised. If there is atypical tuberculoid reaction in the material biopsied the distinction between acid fast disease, syphilis, leprosy and crohn's is difficult. Sometimes tuberculosis is responsible for recurrent anorectal abscess. Other specific infections like actinomycosis, legionella, amoebiasis, schistosomiasis, nocardia and a variety of fungal infection may also cause perianal abscess. Occasionally gravid female



threadworm may discharge eggs from the anal mucosa and that produces granulomas at ectopic sites. Sometimes these threadworms may cause perianal abscess.

### **PANCYTOPENIA:**

Patients receiving chemotherapy, those with immunocompromised states (such as patients with organ transplantation receiving drugs to control rejection and those with certain blood dyscrasias may develop an unusual form of perianal abscess. Clinical features are perineal pain, fever and a fluctuant swelling with no evidence of pain. These abscesses often complicate thrombocytopenia , acute leukemia and other neutropenic states. If the perianal swelling is tender without pus a biopsy should be taken and peripheral smear study should be done. About 3% of patients with acute leukemia presented with anorectal abscess (Walsh and Stickley 1934{21}; Blank 1955). Treatment should include drainage of abscess, broad spectrum antibiotics and treatment for haematological disorder.

### **ANORECTAL TRAUMA:**

Repeated anorectal trauma due to repeated enemas may be complicated by perianal abscess.

### **COLORECTAL NEOPLASIA:**

Benign tumours that can present as perianal abscess are angiomyxoma and leiomyoma (Bracey et al 2003). In certain series anorectal abscess may be the presenting feature of a rectal carcinoma. Nelson et al conducted a study on 15 patients with perianal

abscess in which 9 of them presented as perianal abscess. Majority of the tumours were adenocarcinoma. Three main groups of adenocarcinomas are associated with perianal abscess. The first group is rectal adenocarcinoma which extends extensively into perianal tissues that results in necrosis and sepsis. They occur commonly in elderly and are associated with poor prognosis. Therefore it is essential to biopsy any suspicious perianal abscess especially in elderly patients. The second group comprises of tumours that arise in association with an anal fistula (Schaffzin et al, 2003){22}. They are slow growing tumours. The other category of tumours arise from anal glands such as epidermoid carcinomas. Rarely tumours associated with hidradenitis, carcinoids and primary lymphoma may present as perianal abscess.

## **MANAGEMENT:**

Antibiotic treatment alone has no influence on perianal abscess unless this complicates pancytopenia. Exposure to antibiotics was found to have no influence on microorganisms recovered at the time of drainage (Eykyn and Grace;1986). Antibiotic therapy alone may lead to expansion of the abscess into a huge collection associated with extensive tissue necrosis and can also be complicated by synergistic gangrene of perineum. (Brightmore 1972{23}; Marks et al 1973; Lichtenstein et al 1978). If the abscess ruptures spontaneously incidence of recurrent abscess or fistula is high ( Chrabot et al; 1983) with high incidence of extensive tissue destruction.



**A 50 YRS MALE PATIENT  
PRESENTING WITH PERIANAL  
ABSCESS**



**A 40 YRS FEMALE PRESENTING  
WITH PERIANAL ABSCESS –  
INCISION AND DRAINAGE AND  
DEROOFING WAS DONE**

Antibiotics are used to prevent septicaemia and synergistic infection of perineum. Antibiotics are definitely advised for patients with valvular heart disease or with a prosthetic implant and in diabetics.

Incision and drainage with primary suturing under antibiotic cover was once practiced. Since there was high recurrence rate (Leaper et al; 1976) and increased healing time (Simms et al;1982){24} and as about 35% wounds broke down primary suturing for perianal abscess was abandoned.

Rather than a long incision for a huge perianal abscess multiple counter incisions can be made to drain the perianal abscess. The wound healing is delayed due to the step deformity produced by putting a long incision. Severe pain is inflicted during removal of the pack,. Hence packing is generally not recommended unless there is continuous bleeding from the wound. Horse shoe abscesses should also be drained in a similar manner with incisions on both sides and connecting the two sides rather than a single long incision. It may be preferable to drain a large abscess by putting as many incisions as necessary, by leaving the skin intact and it should be encircled with a penrose drain that is sutured onto itself so that premature extrusion is avoided. The healing of superficial tissues is delayed due to the drains in situ and that allows the abscess to fill and close from the depth. The drains may be removed after two to three weeks.

The idea of searching for a fistula at the time of incision and drainage is controversial. McElwain and McLean reported no adverse results on 1000 patients treated with primary fistulotomy during drainage of abscess{6}. This study was done

before the advent of endoanal ultrasonography and anal physiological studies to determine the extent of sphincter injury. Anal fistula must not be searched for if the surgeon is not experienced. But an experienced surgeon can look for a fistula by probing into the corresponding anal crypt. Primary fistulotomy may be attempted if the fistula is superficial. If the thickness of the sphincter muscle involved is uncertain a loose seton may be inserted into the fistulous tract. Seton should be of braided nonabsorbable suture. The seton should be tied loosely so that it can act both as a drain as well as a marker for future surgery.

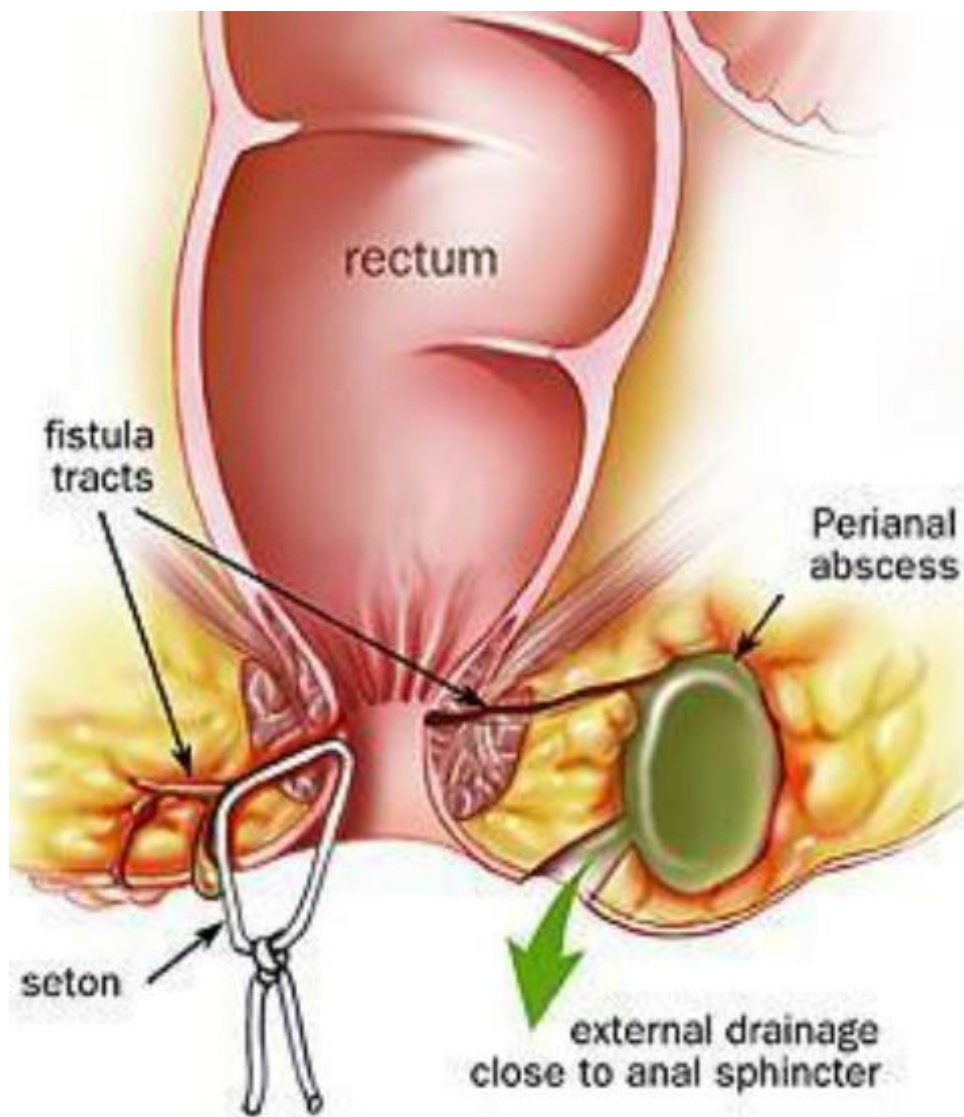
In horseshoe abscesses deroofting of deep postanal space should be done. A Penrose drain is inserted after draining the abscess on either side and secured for prolonged drainage. A seton may be placed and it should be tied loosely if a midline posterior fistula is identified.

If a patient with crohn's disease presents with perianal abscess, the drainage of the abscess should be done as close to the anal canal as possible so that an incision in the external sphincter is avoided. As a result a shorter fistulous tract might form rather than a longer tract, so that the future management of the patient is easier.

Placement of a mushroom catheter in the abscess is an alternative method of drainage of abscess that is popular at the Cleveland Clinic. The catheter can also be used for a contrast CT examination or for a sonogram. This may provide a road map for subsequent surgeries of complex or recurrent abscess. If an abscess appears on the



opposite side the surgeon should search for the presence of a horse shoe abscess-fistula arising in the midline, most often posterior midline.



If there is prolonged drainage from the site of incision and drainage that persists beyond two to three months then existence of a fistula must be suspected. If the abscess heals and recurrence occurs at the same site a fistula must be suspected . prolonged therapy with antibiotics and cauterization of the fistulous tract is fruitless and in turn delays the need for reexploration.

## **COMPLICATIONS OF PERIANAL ABSCESS:**

### **RECURRENT ABSCESS:**

Reoperation within ten days is defined as early recurrence. It can be due to incomplete drainage, missed loculations and missed abscesses (Onaca et al ; 2001){25}. Late recurrence indicates a persistent unrecognized anorectal fistula.

Recurrent perianal abscess more rarely indicates some underlying disorder such as crohns disease, tuberculosis, hidradenitis suppurativa, AIDS or a missed carcinoma.

Recurrent abscess or fistula was reported in 65 percent of patients when the abscess was simply drained ( Ramanujam et al ; 1984)

### **SYNERGISTIC GANGRENE:**

Perianal abscess leading to secondary necrotizing infection is rare. In patients with ischiorectal abscess the incidence is common. But the diagnosis is delayed often. Patients with obesity, diabetes, steroid therapy, chronic ill health and chemotherapy for malignant disease are more prone to develop this complication. Complications arising from



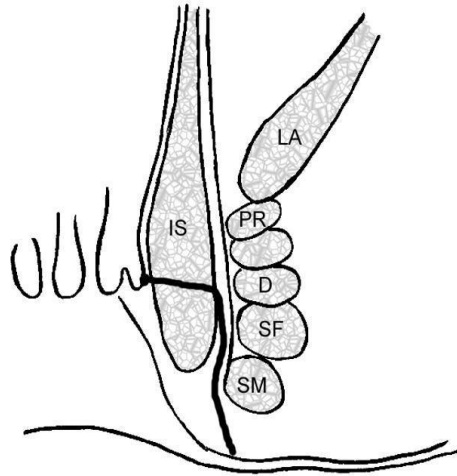
necrotizing fasciitis include gas gangrene, faecal incontinence, sterility, recurrent ano-rectal fistula and septicaemia. Wide excision and extensive surgical drainage of all necrotic material in the perineum with antibiotic therapy and nutritional support is the treatment. A proximal stoma is often needed.

### **FISTULA IN ANO:**

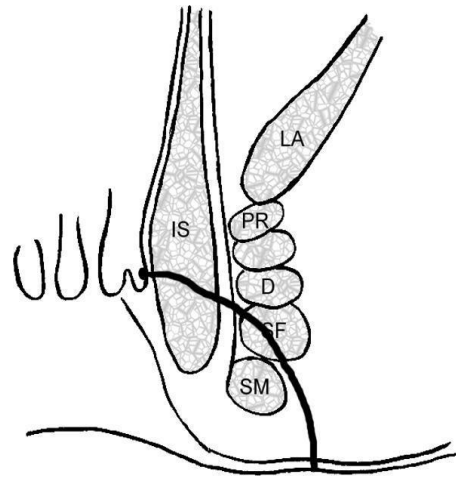
The risk of fistula is very variable. Buchan and Grace (1983) {14} reported recurrent fistula in 27% of cases. Laying open of an associated fistula at the time of initial drainage of abscess did not guarantee a lower incidence.

According to Park {26} the anal fistula is classified into four types:

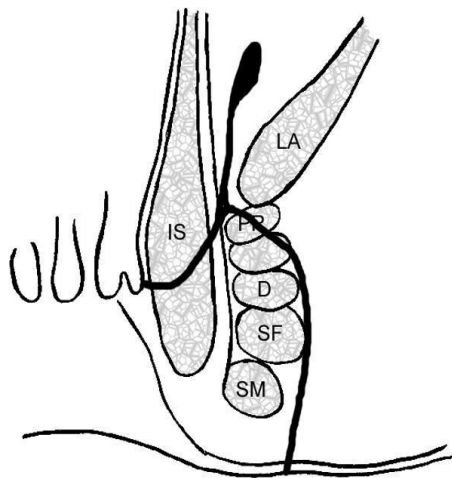
- Intersphincteric -70%
- Transsphincteric - 25%
- Suprasphincteric – 5%
- Extrasphincteric – 1%



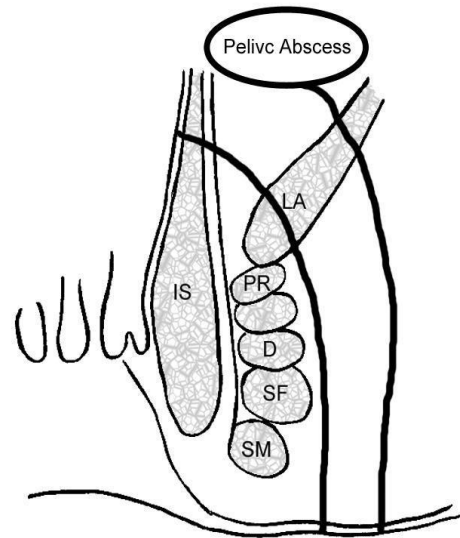
Intersphincteric Fistula



Transsphincteric Fistula



Suprasphincteric Fistula



Extrasphincteric Fistula

- IS** - Internal sphincter
- SM** - Submucosal ext. sphincter
- SF** - Superficial ext. sphincter
- D** - Deep external sphincter
- PR** - Puborectalis muscle
- LA** - Levator ani muscle



Hippocrates in 430 BC made a reference to surgical management of fistulas. He was the first person to describe the use of a seton (in latin *seta means* a bristle) . In 1376 an English surgeon John Arderne wrote “ *Treatises of Fistula in Ano; Haemorrhoids, and Clysters*”. He described the procedure of fistulotomy and use of seton. History says that Louis XIV was treated for fistula in ano in the eighteenth century. Salmon established a hospital for the treatment of fistula in ano and other disorders of rectum in London.

In the late nineteenth and early twentieth centuries surgeons like Goodsall and Miles, Thompson , Milligan and Morgan, and Lockhart Mummery made enormous contributions to the management of fistula in ano. Various theories on pathogenesis of fistula in ano was given by them.

A fistula in ano is an abnormal tract in the perianal area with an external opening that is communicating with the anal canal or rectum by an internal opening. Majority of fistulas arise because of cryptoglandular infection with resultant perianal abscess. The abscess denotes the acute inflammatory event whereas a fistula in ano represents the chronic process.

The quality of life is significantly affected in patients with fistula. The symptoms range from minor perianal discomfort and hygienic problems arising from mucous or fecal discharge to perianal sepsis. The management of fistula in ano remains challenging. Surgery is the treatment of choice and the aim is to eradicate the fistulous tract thereby avoiding recurrent and persistent disease, at the same time the function of the anal sphincter is preserved.

The Parks, Gordon, and Hardcastle (also known as the Parks Classification) is the most widely used classification for fistula in ano.

#### **INTERSPHINCTERIC FISTULA IN ANO :**

1. This results from drainage of a perianal abscess.
2. This type of fistula usually begins at the dentate line. It then tracks through the internal anal sphincter to the intersphincteric space between the internal anal sphincter and external anal sphincters and then ends in the perianal skin or perineum
3. This accounts for 70% of all anal fistulas.
4. Other possible tracts are those with no perineal opening, with a high blind tract or with a high tract to lower rectum or pelvis.

### **TRANSSPHINCTERIC FISTULA IN ANO:**

1. This type of fistula results from drainage of an ischiorectal fossa abscess.
2. The common course of this type of fistula is that it tracks from internal opening in the dentate line through the internal anal sphincter and external anal sphincters into the ischiorectal fossa. It then terminates in the perianal skin.
3. Incidence of this type of anal fistulas is 25 %.
4. A high tract with perineal opening or a high blind tract are the other possible tracts.

### **SUPRASPHINCTERIC FISTULA IN ANO:**

1. This form of fistula is developed from a supralelevator abscess
2. It usually courses from the internal opening that is located at the dentate line to the intersphincteric space. The track then courses superiorly above the puborectalis muscle and then the tract curves downwards lateral to the external anal sphincter into the ischiorectal fossa and then reaches the perianal skin.
3. This type accounts for 5% of fistulas in ano.
4. The other possibility of the cause is a high blind tract which is palpable above the dentate line through the rectal wall.

## **EXTRASPINCTERIC FISTULA IN ANO :**

### CAUSES

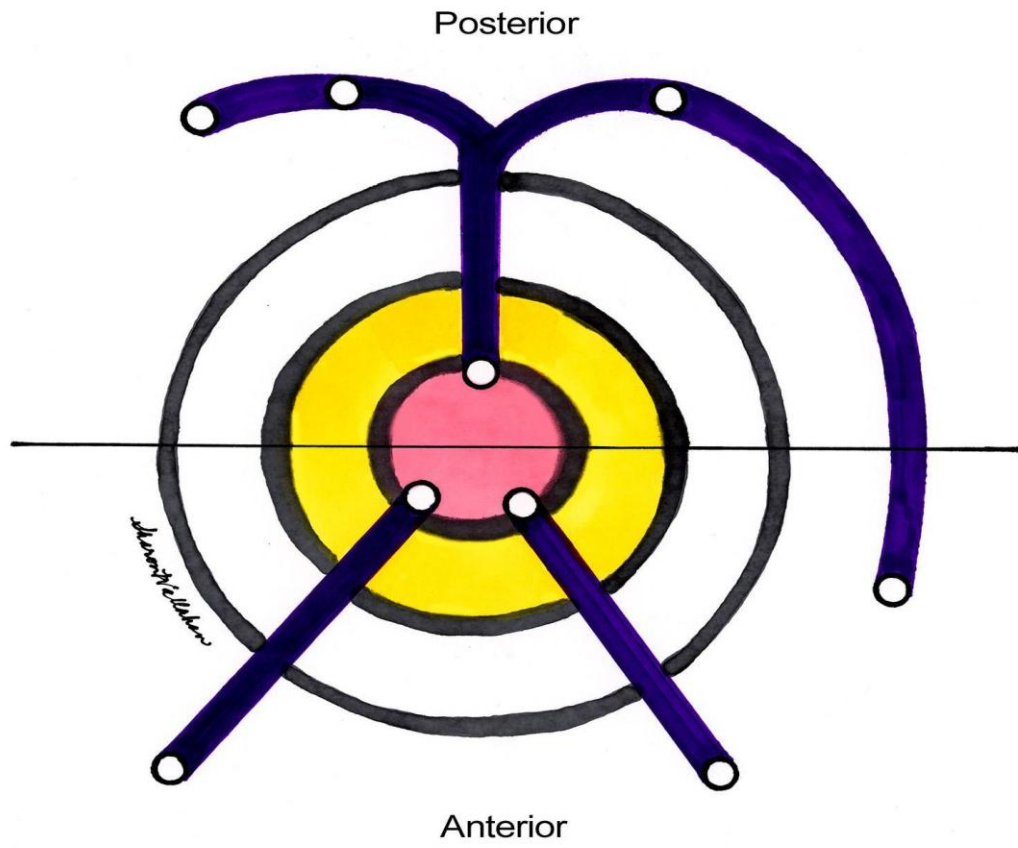
- 1) Foreign body penetration of the rectum via drainage through the levator ani muscle
- 2) penetrating injury to the perineum
- 3) Crohn's disease
- 4) carcinoma of rectum
- 5) pelvic inflammatory disease

- The course of this type of fistula starts from perianal skin that passes via ischiorectal fossa tracking upwards and then the tract passes through the levator ani muscles to the rectal wall. This tract lies entirely outside the sphincter mechanism. Connection to the dentate line may or may not be present.
- This type of fistulas account for 1% of all anal fistulas in ano.

### GOODSALL'S RULE:

- Fistulas with an external opening that is in relation to the anterior half of the anus is of direct type.
- Fistulas with external openings that is in relation to posterior half of the anus has a curved track (may be of horse shoe type), opens in the midline posteriorly and may also present with multiple external opening all connected to a single internal opening.

# GOODSALL'S RULE



Fistula in ano is one of the common surgical conditions affecting thousands of patients every year. In the past, the treatment of fistula in ano were limited to placing a seton and fistulotomy. Nowadays the treatment modalities include procedures such as a muscle sparing dermal island flap, endorectal advancement flap, placement of anal fistula plug and use of fibrin sealant injection. More recent advances include procedures such as ligation of the intersphincteric fistulous tract.

#### Fibrin Glue

A soluble clot is formed by the combination of a mixture of thrombin, fibrinogen and calcium ions due to cleavage of fibrinogen to fibrin. The fistulous tract is sealed by this clot in thirty to sixty seconds. The fistulous tract is replaced by collagen in a week. Dislodgement and abscess formation because of incomplete tract filling were regarded as the causes for failure of this technique.

#### Fibrin Plug

This technique was first introduced by Robb & Colleagues in 2006. The plug is made from intestinal submucosa of porcine and was fashioned into a cone. This shape increases the stability and avoids dislodgement during straining. Failure occurs if multiple fistula tracts are present.



Adipose derived stem cells:

They are used for the treatment of complex fistula in ano. In this technique the recurrence rate is seventeen percent at one year follow up.

Mucosal advancement Flap:

In this method the internal ring is closed with endorectal/ endoanal flaps. This is a sphincter sparing technique. The tract may or may not be closed. Setons may be used to drain the tracts followed by flap advancement.

LIFT procedure( ligation of the inter sphincteric fistula Tract):

This technique was first described by Rojanasakul in Thailand.

This technique involves high ligation of fistulous tract with lateral approach.

Here, the remaining outer tract is curetted and the intersphincteric tract is resected and this technique eliminates the cryptoglandular tissue.

This is a sphincter sparing technique and incontinence is avoided.

## **METHODS AND MATERIALS:**

**Study group** : patients admitted in Govt Kilpauk Medical College  
Hospital and Govt Royapettah Hospital

**Size of the study** : 100 patients

**Study design** : Prospective study

**Place Of Study** : Department of General Surgery  
Kilpauk Medical College Hospital  
Kilpauk, Chennai – 10.

**Duration of study** : 7months (Jan 2015 – July 2015)

## **METHODOLOGY:**

- 100 eligible patients were chosen.
- Clinical assessment done at time of inclusion in the study.
- Detailed history and examination done.
- Basic routine investigations will be done for all patients
- Consent will be obtained for inclusion under study for surgery

- Pus drained by I&D sent for pus C/S and appropriate antibiotics started
- Patients followed up for recurrence and development of complications

**Inclusion criteria :**

patients who present with acute swelling in the perianal region in the age group more than 10 yrs with pus being let out on incision and drainage.

**Exclusion criteria :**

- 1)patients under the age group of 10 yrs
- 2)Recurrent perianal abscess
- 3)patients with other types of anorectal abscess

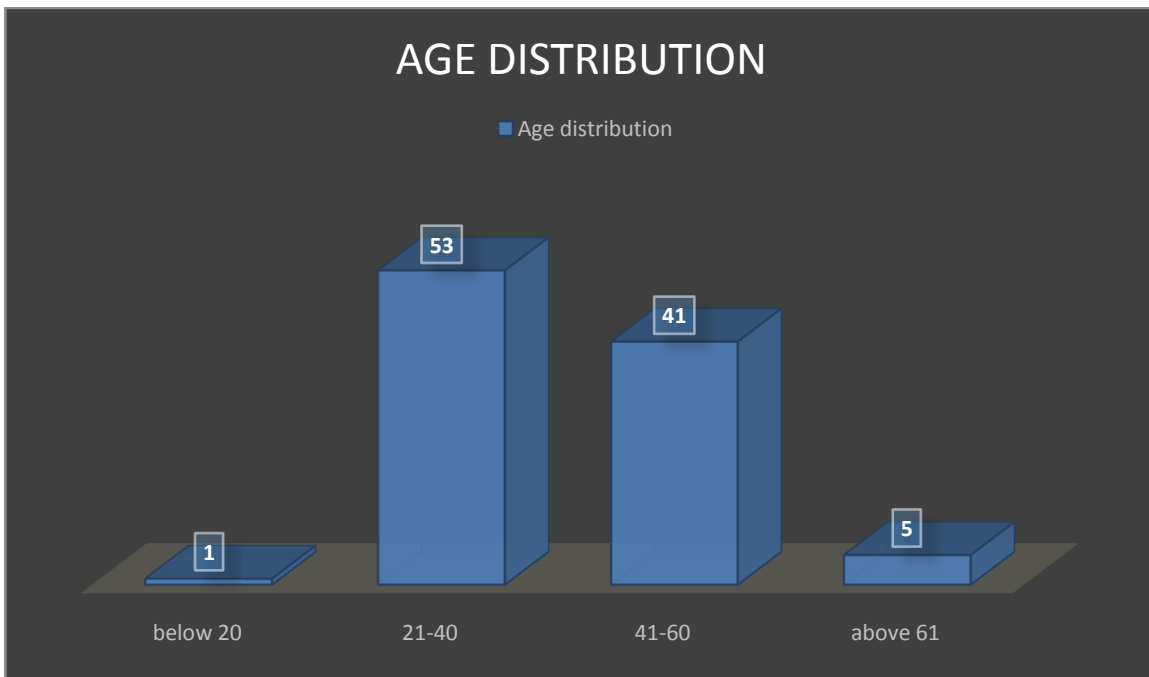
**Data collection:**

The data of each patient will be collected on a proforma specially designed for this study and which includes demographic details, clinical features, past medical history, clinical and Lab values which will be analysed for statistical significance and correlation.

# OBSERVATION AND ANALYSIS

## 1.Age distribution:

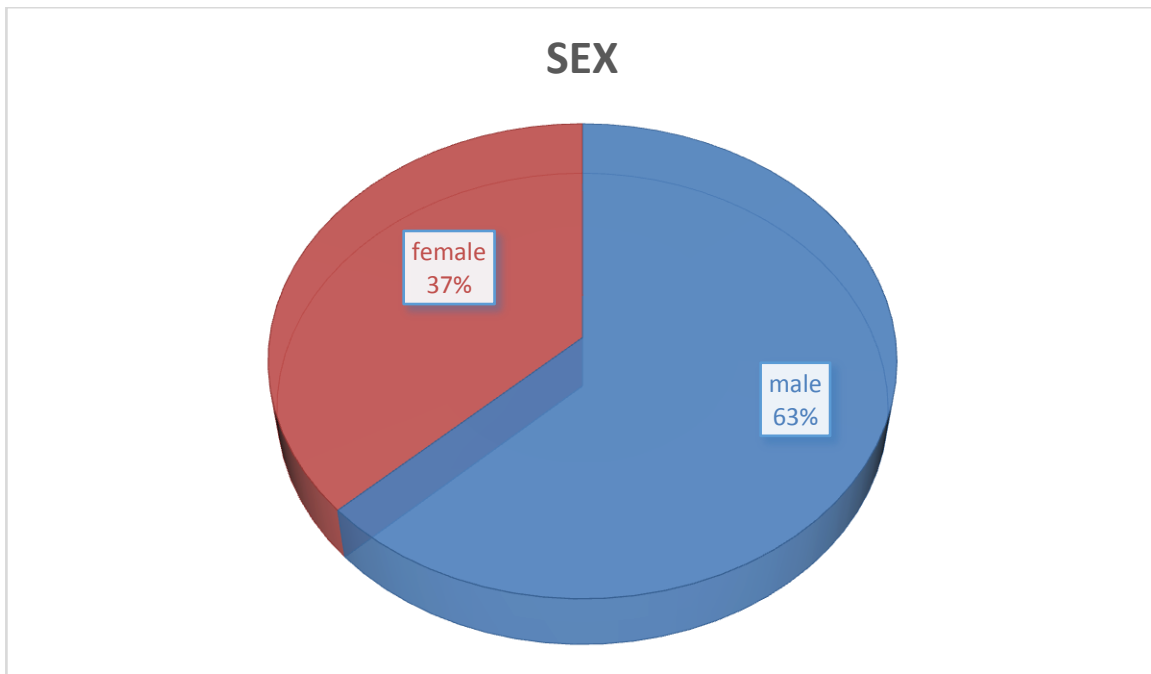
Age	Numbers
Below 20	1
21-40	53
41-60	41
Above 61	5



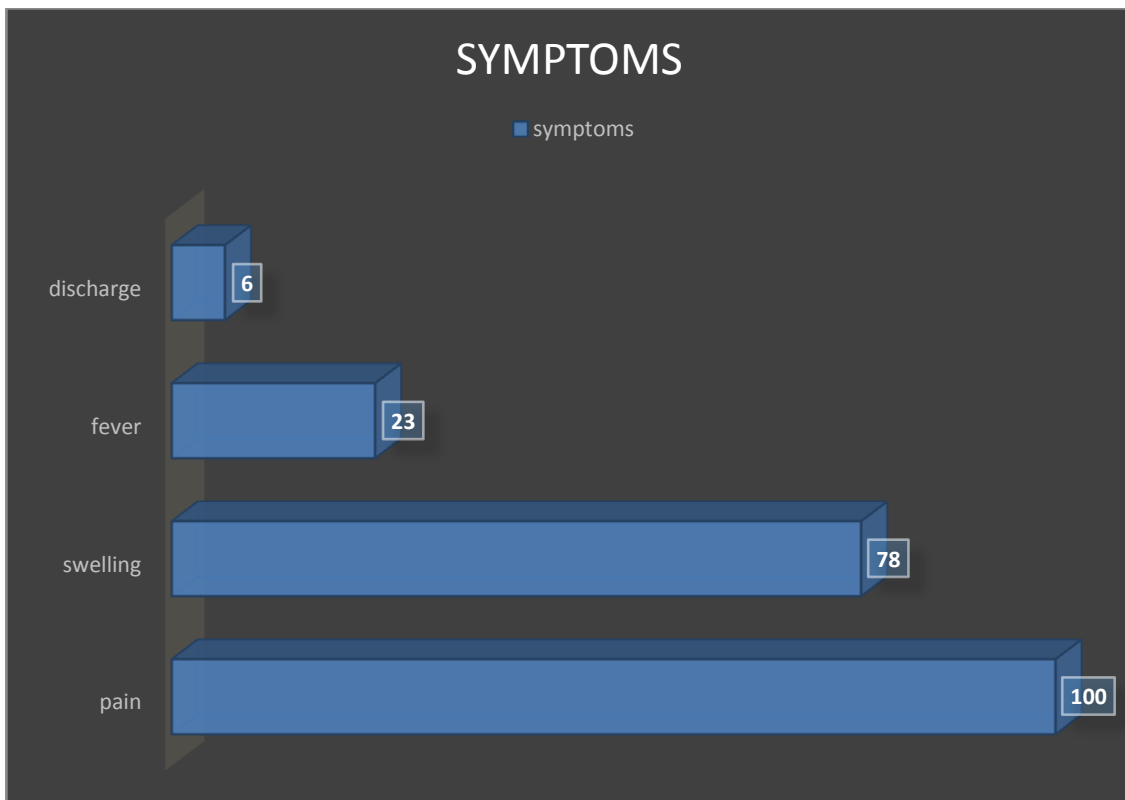
## 2) Sex distribution

**MALE-63%**

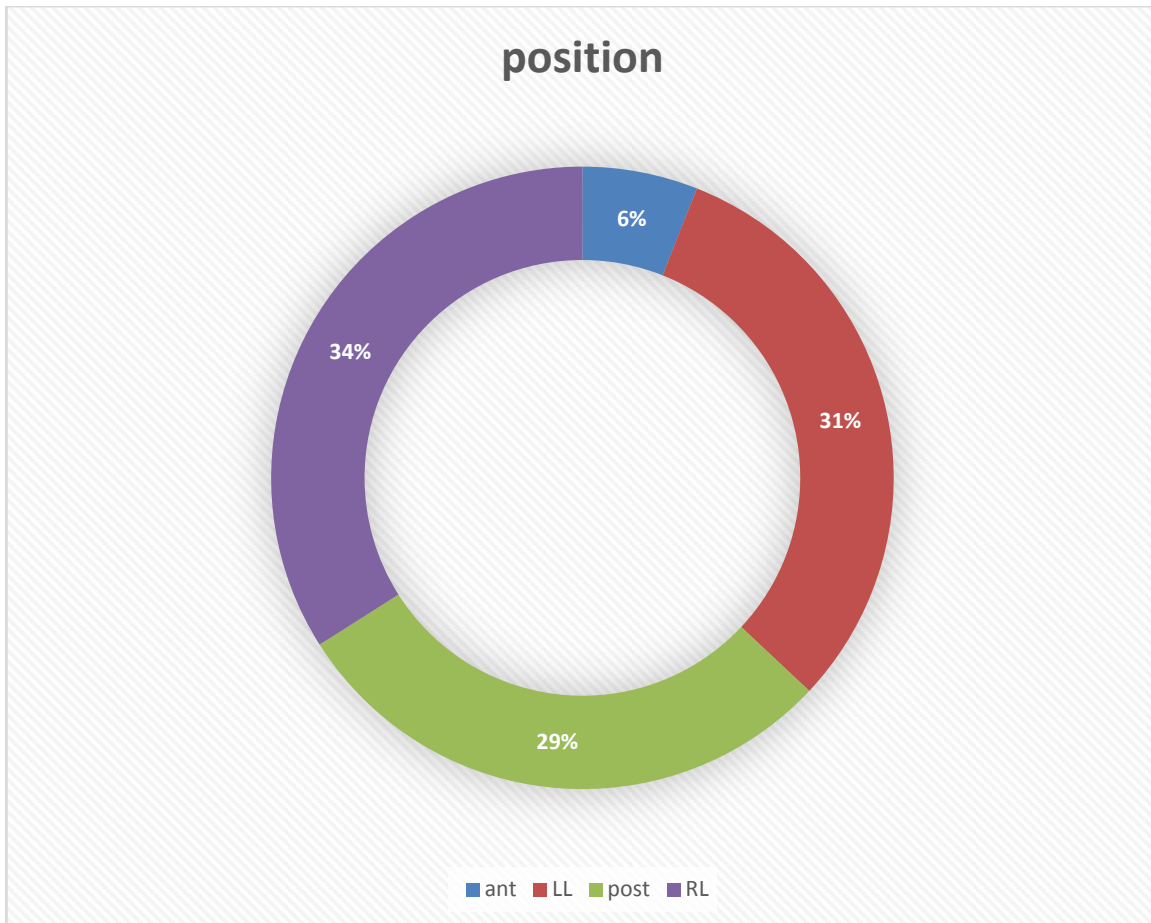
**FEMALE-37%**



### 3) Symptoms distribution

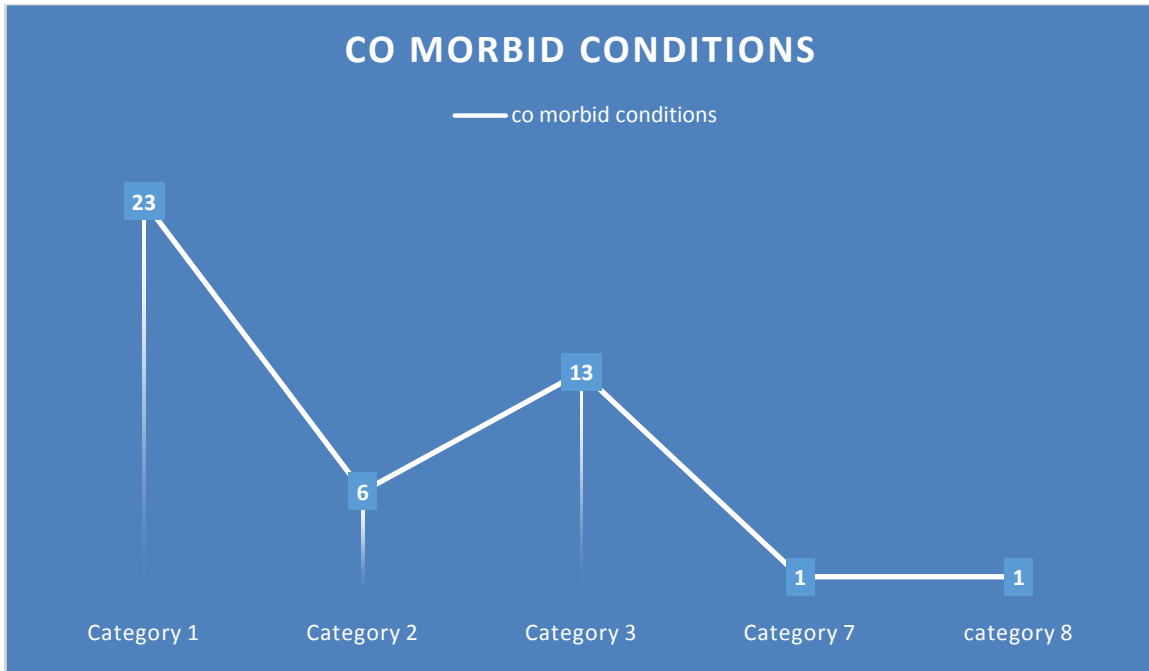


#### 4) Position of perianal abscess:



ant – anterior ; LL – left lateral ; post – posterior ; RL – right lateral

## 5) Co - morbid conditions



Category 1 - Diabetes Mellitus

Category 2 - Hypertension

Category 3 - Obesity

Category 4 - Tuberculosis

Category 5 – Crohns disease

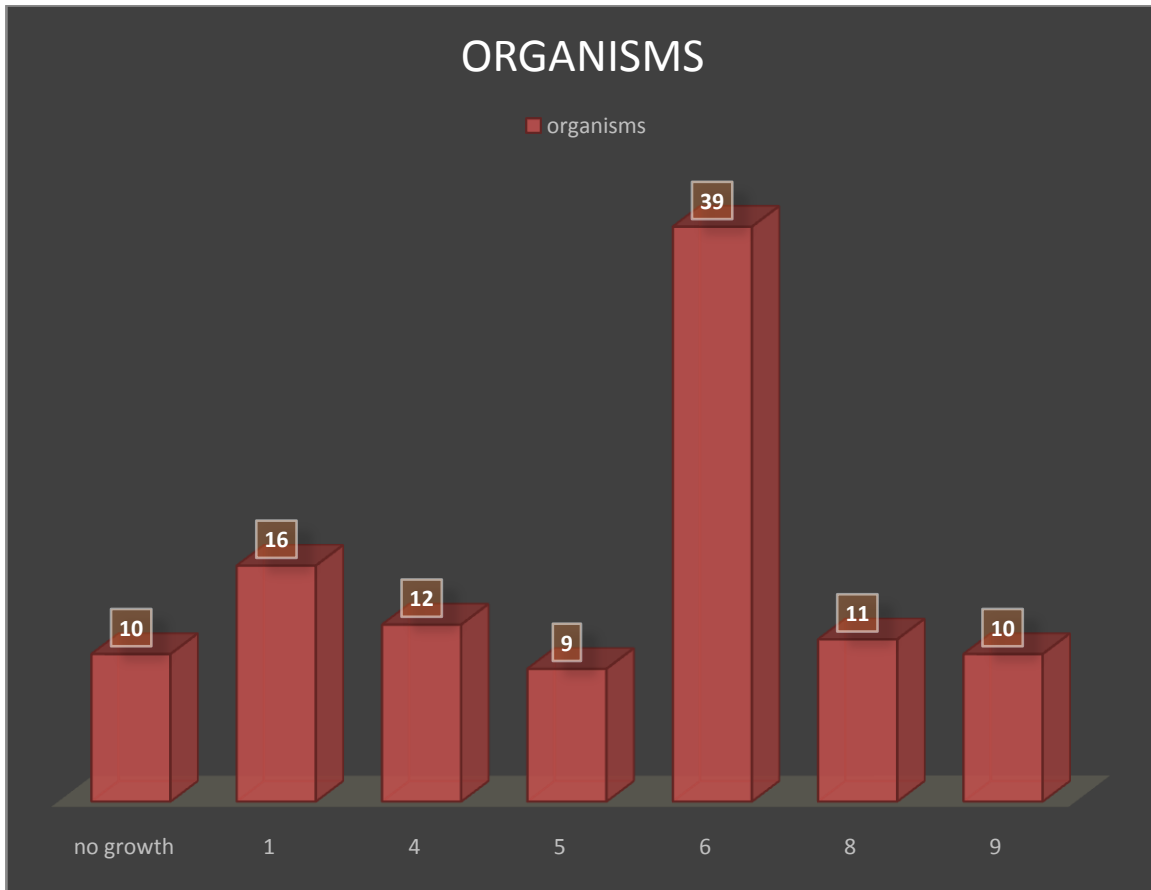
Category 6 – Hidradenitis suppurativa

Category 7 - HIV

Category 8 - HBsAg



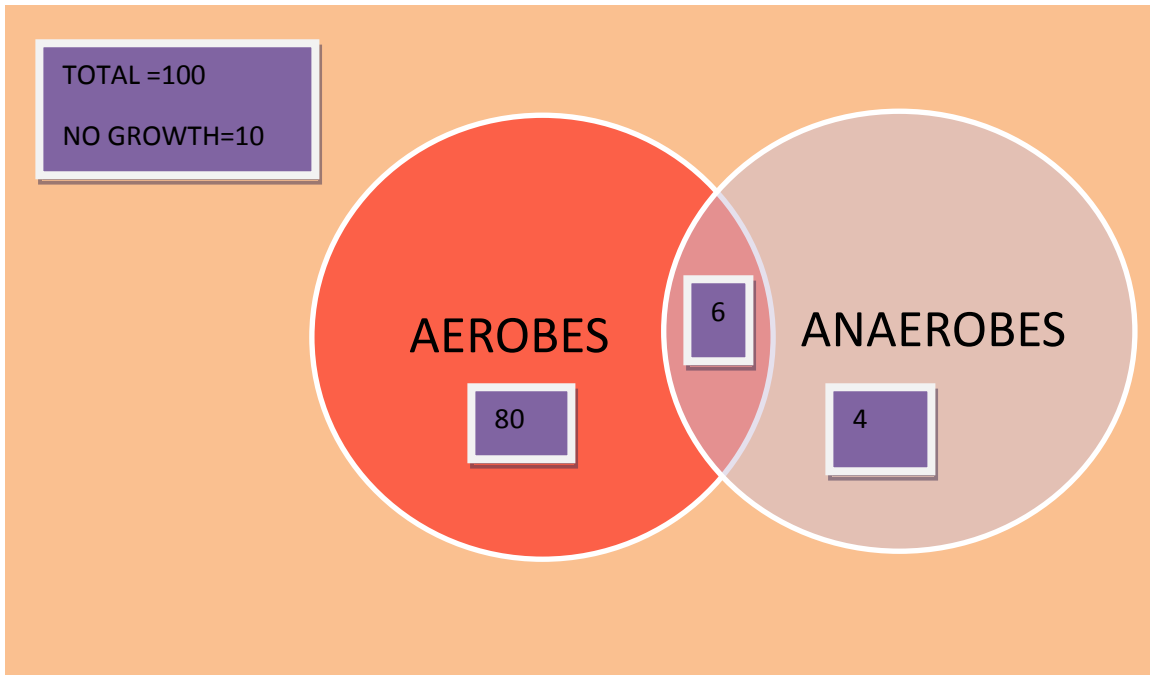
## 6) Organisms:



1. Staphylococcus aureus
2. Streptococcus spp.
3. Pseudomonas spp.
4. Proteus spp.
5. Klebsiella spp.

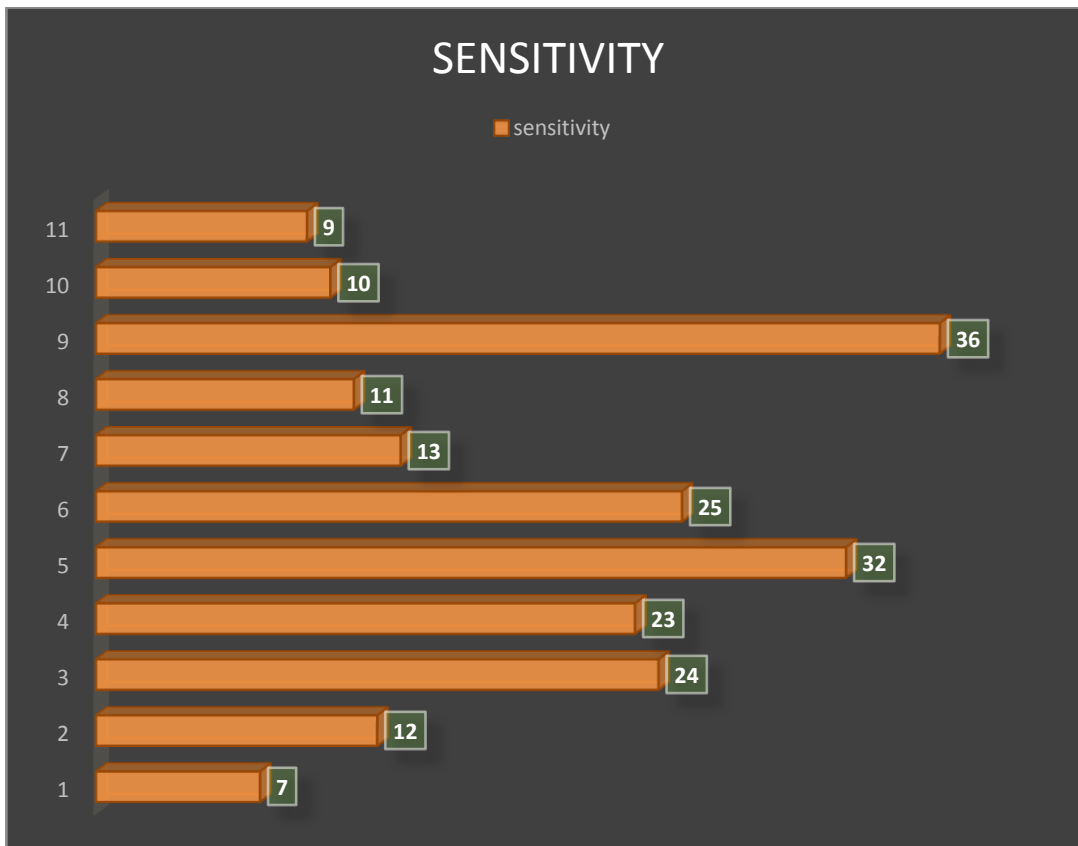
6. Escherichia coli
7. Enterococcus spp.
8. Other anaerobes
9. Bacteroides fragilis

## 7)Aerobes and anaerobes:



- Total aerobes grown in culture -80
- Total anaerobes grown in culture -10
- Mixed growth in culture -6
- No growth in culture -10
- Total patients - 100

## 8) Sensitive Antibiotics:



1. Ciprofloxacin

2. Cefotaxim

3. Ceftriaxone

4. Amikacin

5. Ofloxacin

6. Cefoperazone sulbactam

7. Imipenem

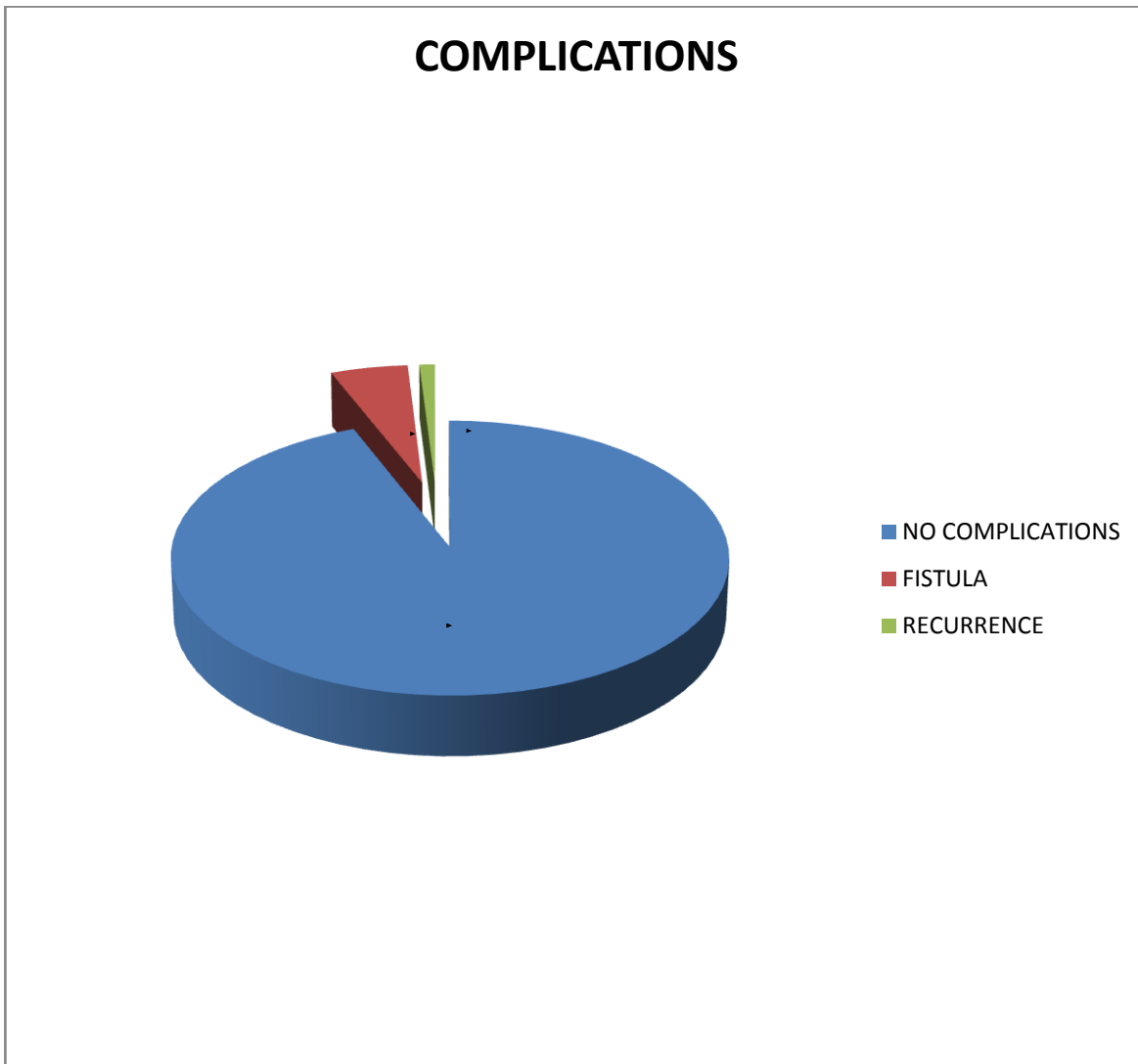
8. Erythromycin

9. Piperacillin tazobactam

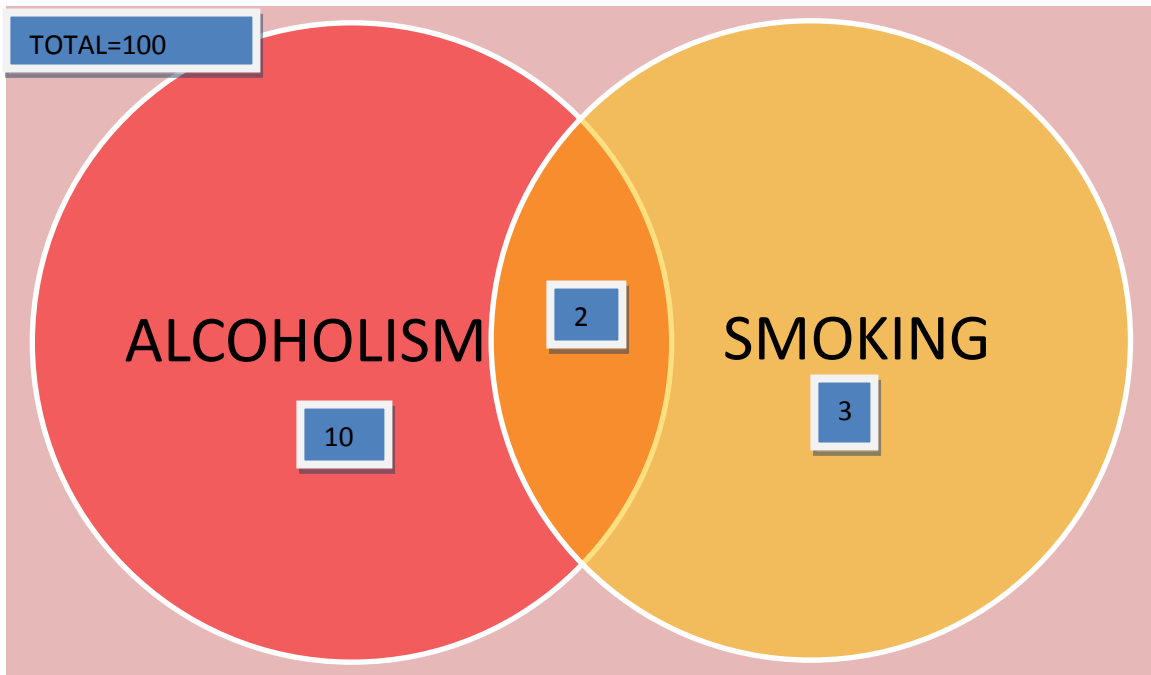
10. Linezolid

11. vancomycin

## 9)Complications:



## 10)Smoking and alcoholism:



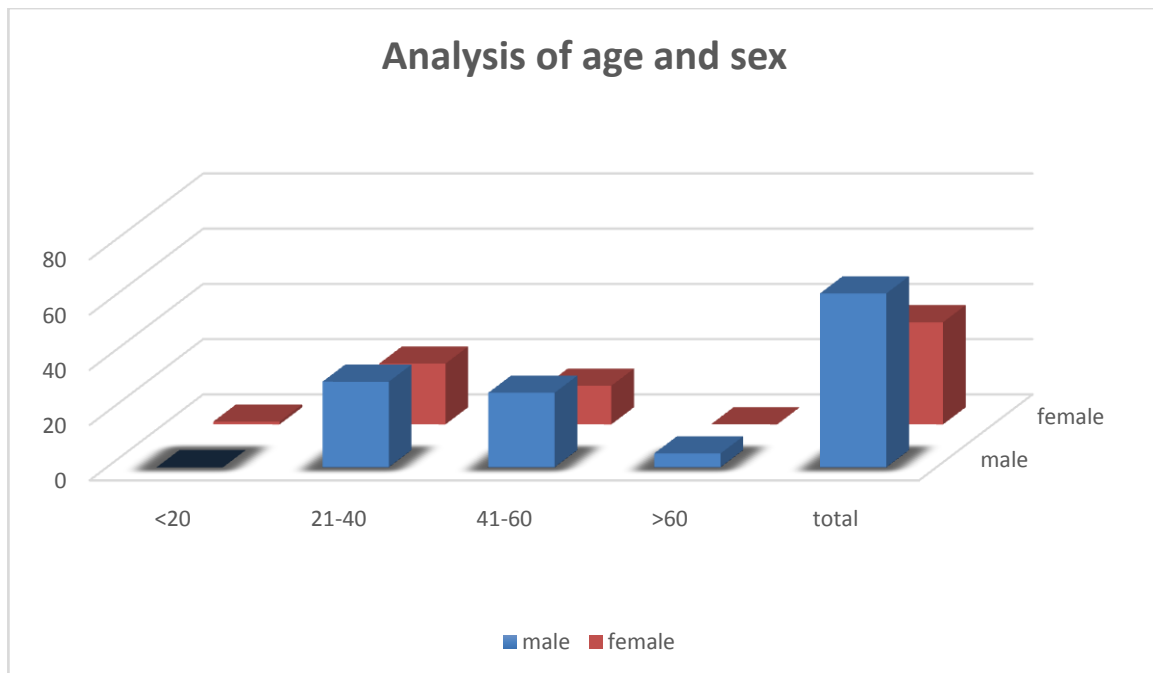
Total patients = 100

Alcoholics = 12

Smokers = 5

## 11) Analysis of age and sex:

SEX/AGE	<20	21-40	41-60	>60	total
Male	0	31	27	5	63
Female	1	22	14	0	37
Total	1	53	41	5	100



Chi square 5.24

P value 0.155

Not significant

## **12)Analysis of sex and position:**

<b>SEX/POSITION</b>	<b>ANT</b>	<b>LL</b>	<b>POST</b>	<b>RL</b>	<b>TOTAL</b>
<b>MALE</b>	<b>3</b>	<b>20</b>	<b>16</b>	<b>24</b>	<b>63</b>
<b>FEMALE</b>	<b>3</b>	<b>11</b>	<b>13</b>	<b>10</b>	<b>37</b>
<b>TOTAL</b>	<b>6</b>	<b>31</b>	<b>29</b>	<b>34</b>	<b>100</b>

**ANT – ANTERIOR ;**

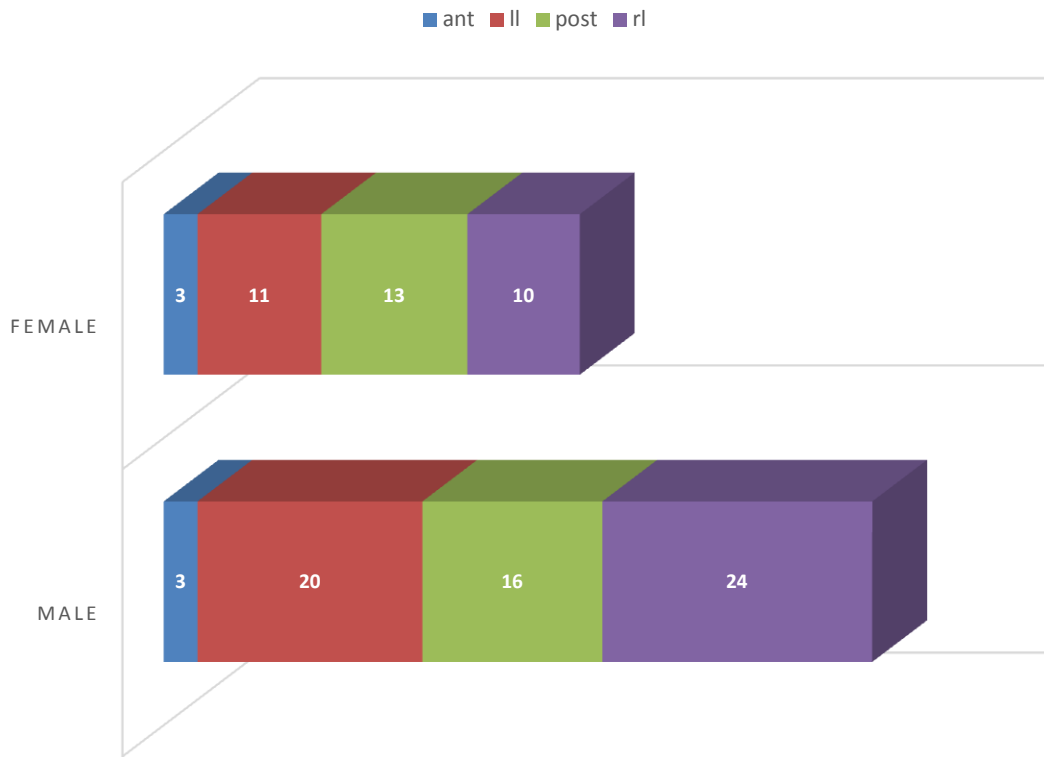
**LL – LEFT LATERAL ;**

**POST – POSTERIOR ;**

**RL – RIGHT LATERAL**

In males perianal abscess predominantly occurs in right lateral position, whereas in females most common position encountered is posterior. Altogether the predominant position is right lateral.

## ANALYSIS OF SEX AND POSITION



Chi square 2.07

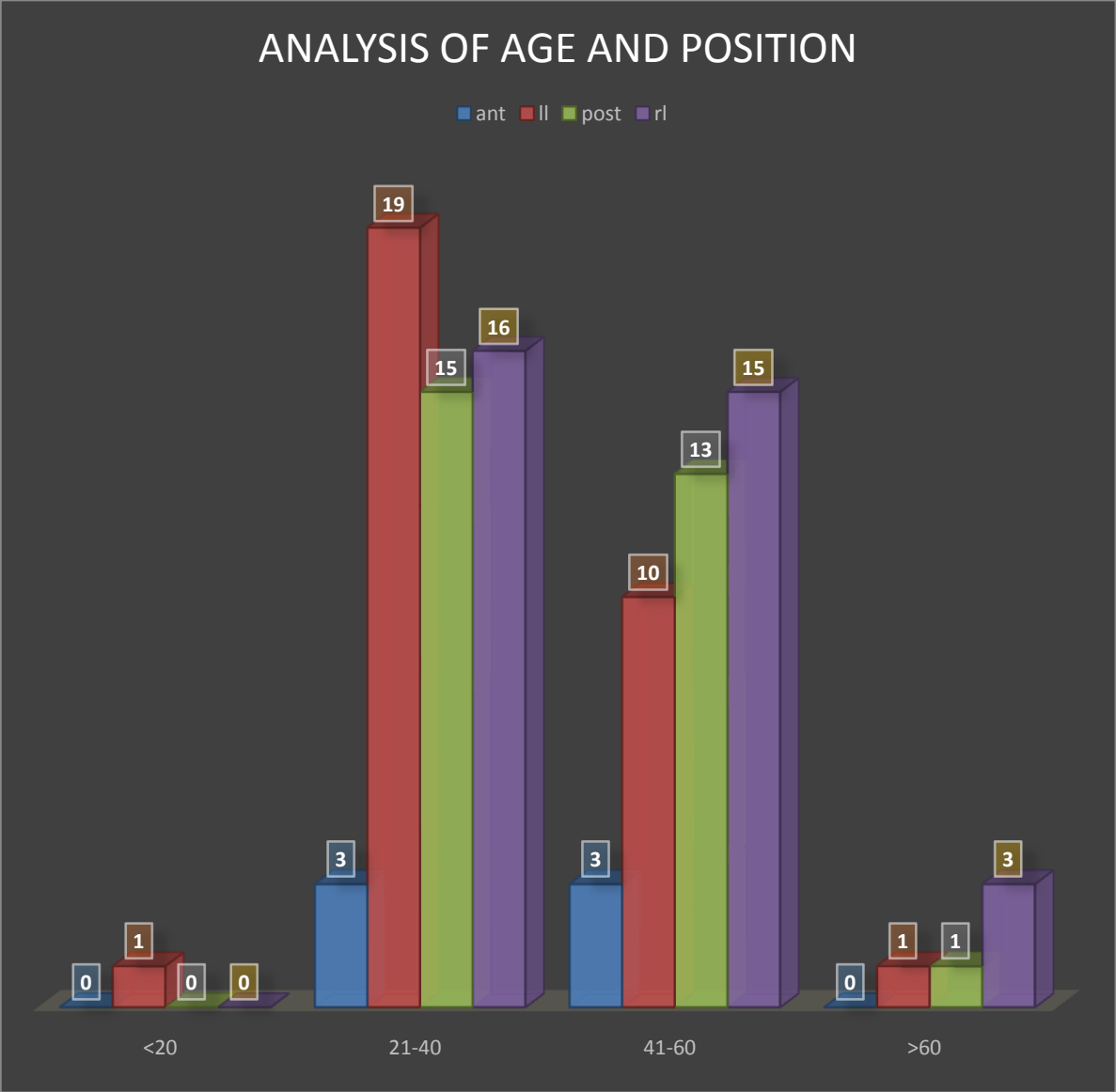
P value 0.558

Not significant



### **13) Analysis of age and position:**

<b>Age/position</b>	<b>Ant</b>	<b>LL</b>	<b>post</b>	<b>RL</b>	<b>total</b>
<b>&lt;20</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>21-40</b>	<b>3</b>	<b>19</b>	<b>15</b>	<b>16</b>	<b>53</b>
<b>41-60</b>	<b>3</b>	<b>10</b>	<b>13</b>	<b>15</b>	<b>41</b>
<b>&gt;61</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5</b>
<b>total</b>	<b>6</b>	<b>31</b>	<b>29</b>	<b>34</b>	<b>100</b>



Chi square 5.38

P value 0.8

Not significant

## DISCUSSION

In this study 100 patients with perianal abscesses were studied. Of the 100 patients 63 patients were male and 37 patients were female. As per Mehmet Ulug et al {11} who did a study on “The evaluation of bacteriology in perianal abscesses of 81 adult patients” 86% were male patients and 14% were female patients and the mean age of patients was  $40.5 \pm 11.3$  yrs in males and  $35.8 \pm 13$  yrs in females. In this study 63% were males and 37% were females and the mean age of male and female patients was  $42.3 \pm 11.8$  yrs (range 21-80) and  $37.6 \pm 7.4$  yrs (range 19-50) respectively.

In the report by Ramanujam et al the age of the patients ranged from 10 yrs to 82 yrs with 65% of patients in their third to fourth decade of life. In this study patients ranged in age from 19 – 80 yrs with 53% of patients in the age group of 21-40 yrs and 41% of patients in the age group of 41-60 yrs.

In a report by Hill et al {7} the number of male patients with perianal abscess were twice the number of female patients. As per the study by Ramanujam et al {5} on “Perianal abscesses and fistulas” involving 1023 patients, the male to female ratio was 2:1. In this study the male to female ratio is 1.7:1.

Perianal pain (100%) and swelling (62%) were the most common clinical findings recorded in the study by Mehmet et al. In this study the most common presenting feature was pain which was present in all patients (100%) followed by swelling (78%), fever (23%) and discharge (6%).

Majority of patients had abscess located in the posterior aspect (53%) of anal canal as per Ramanujam et al, followed by lateral (35%) and anterior (12%) positions. In a review by Vasilevsky and Gordon {13} on “The incidence of recurrent abscesses or fistula-in-ano following anorectal suppuration” laterally placed abscesses were recorded with much higher incidence and four posteriorly located horse shoe abscesses were present. In this study majority of patients had abscesses in the lateral location with 34% of abscesses in the right lateral side and 31% of abscesses in the left lateral side, followed by 29% of abscesses in the posterior location and the least (6%) in the anterior relation of anal canal.

Smoking and alcoholism was noted in 15 patients. Twelve patients were alcoholics and five were smokers. Both alcoholism and smoking was noted in 2 patient.

Incision and drainage of abscess was done in all patients and antimicrobial therapy was given to all.

Of the 100 specimens, all except 10 specimens yielded bacterial growth. Aerobic bacteria only were isolated in 80 patients (80%), anaerobic bacteria only in 4 patients (4%), mixed aerobic and anaerobic bacteria in 6 patients (6%). A total of 10 anaerobic and 86 aerobic isolates were recovered from 100 abscesses. The predominant isolates were *Escherichia coli* (n = 39), *Staphylococcus aureus* (n=16), *Proteus mirabilis* (n=12), *Enterococcus* spp. (n=11), *Bacteroids fragilis* (n=10), *Klebsiella* (n=9).

In the study by Mehmet et al 7 specimens yielded no bacterial growth. Aerobic bacteria alone were isolated in 53% of patients, anaerobic bacteria alone in 9.9% patients and mixed aerobic and anaerobic bacteria in 28.4% of patients. A total of 31 anaerobic and 101 aerobic organisms were cultured from 81 abscesses. The predominant anaerobic organisms were *Bacteriodes s* (n=20) and *Peptostreptococcus* (n=6). The predominant aerobic isolates were *Escherichia coli* (n= 36), coagulase-negative *Staphylococci* (n= 16), *Enterococcus* (n= 11), and *Staph. aureus* (n= 10).

Most of the organisms were sensitive to piperacillin-tazobactam(36%), followed by ofloxacin (32%), cefoperazone sulbactam(25%), amikacin(24%) and ceftriaxone (23%).

According to Mehmet Ulug et al. a predisposing condition was present in twenty

eight ( 34.5% ) patients. A single comorbid condition was present in 15 patients, two comorbid conditions were present in 12, and three comorbidity were present in two. Diabetes (22.2%), obesity (8.6%), and malignancy (6.1%) were the most common underlying comorbid conditions.

In this study an underlying condition was present in 34 patients out of 100 patients. A single condition was present in 24 patients, two comorbid conditions were present in 9, and three comorbidity were present in one. Diabetes mellitus (23%), hypertension (6%), and obesity (13%) were the most common conditions. One patient had AIDS and another one patient had HBsAg infection.

The patients were followed for a period of three months. In this study 94% of patients developed no complications. Complications occurred in six patients. Of these five patients developed fistula in ano and one presented with recurrent abscess. According to Mehmet ulug et al. complications were noted in 38% of patients, most common being fistula in ano (27%), followed by recurrence (9%) and sepsis in one patient.

## CONCLUSION

Perianal abscesses are very common. They are more common in men than in women.

Majority of the aerobic and anaerobic organisms cultured from the perianal abscesses are of GIT and skin flora origin. The isolation of anaerobic bacteria together with aerobic organism is not surprising since anaerobes are the predominant organisms in GIT. Isolation of gut specific organisms from the pus from a perianal abscess would suggest that a fistula may be present and a careful review of the case is necessary. Whereas if skin organisms are grown in culture further evaluation is unnecessary.

Incision and drainage is the main treatment for perianal abscess. This is important because the abscess environment (low PH, capsule of the abscess, and the presence of binding proteins ) is detrimental to the effectiveness of antibiotics. Although antibiotics may prevent suppuration if given early or may prevent spreading of an abscess, they cannot be substituted for drainage of abscess.

With appropriate drainage of the abscess most of them resolve. however a

Significant number of patients who underwent treatment for perianal abscess would develop persistent aggravating symptoms. An anal fistula indicates a chronic phase of an unhealed abscess. Because of this after drainage of perianal abscesses it is advised to do careful examination under anaesthesia seven to ten days later when the results of culture and sensitivity are available to look for an underlying fistula.



## ***BIBLIOGRAPHY***

---

## **BIBLIOGRAPHY**

1. Chiari H. Ueber die analen Divertikel der Rectumsschleimhaut und ihre Beziehung zu den Analfisteln. Med Jahr 1878: 8:419
2. Klosterhalfen B, Offner F, Vogel P et al. anatomical nature and surgical significance of anal sinus and anal intramuscular glands. Dis Colon Rectum 1991; 34:156
3. Shafer AD, McGlone TP, Flanagan RA. Abnormal crypts of Morgagni: the cause of perianal abscess and fistula-in-ano. J Pediatr Surg 1987; 22:203
4. Pople IK, Ralphs DNL. An aetiology for fistula in ano. Br J Surg 1988; 75:904.
5. Ramanujam PS, Prasad ML, Abcarian H & Tan AB (1984) Perianal abscesses and fistulas : a study of 1023 patients. Dis Colon Rectum 27 : 593-597.
6. McElwain JW, Alexander RM, MacLean MD. Primary fistulectomy for anorectal abscesses :clinical study of 500 cases. Dis Colon Rectum 1966; 9:181.
7. Hill JR (1967) Fistulas and fistulous abscesses in the anorectal region : personal experience in management. Dis Colon Rectum 10 : 421-434
8. Chrabot CM, Prasad ML & Abcarian H (1983) Recurrent anorectal abscesses. Dis Colon Rectum 26 : 105-108
9. Eykyn SN & Grace RH (1986) The relevance of microbiology in the management of anorectal sepsis. Ann R Coll Surg Engl 68 : 237-239

10. Grace RH, Harper IA & Thompson RG (1982) Anorectal sepsis : microbiology in relation to fistula in ano. Br J Surg 69 : 401-403
11. Mehmet Ulug et al; Ercan Gedik, MD; Sadullah Girgin. The evaluation of bacteriology in perianal abscesses of 81 adult patients; Braz J Infect Dis vol.14 no.3.
12. Thomson JPS & Parks AG (1979) Anal abscesses and fistulas. Br J Hosp Med 21 : 413-425
13. Vasilevsky C-A & Gordon PH (1984) The incidence of recurrent abscesses or fistula-in-ano following anorectal suppuration. Dis Colon Rectum 27 : 126-130
14. Devaraj B, Khabassi S, Cosman BC (2011). Recent smoking is a risk factor for anal abscess and fistula. Dis Colon Rectum 54:681-685.
15. Barrett WL, Callahan TD & Orkin BA (1998). Perianal manifestations of human immunodeficiency virus infection : experience with 260 patients. Dis Colon Rectum 41 : 606-611.
16. Bevans DW Jr, Westbrook KC, Thompson BW, et al. perirectal abscess: a potentially fatal illness. Am J Surg 1973; 126:765.
17. Abcarian H. surgical management of recurrent anorectal abscesses. Contemp Surg 1982; 21:85

18. Winslett MC, Aflan A & Ambrose NS (1988) Anorectal sepsis as a presentation of occult rectal and systemic disease. *Dis Colon Rectum* 31 : 597- 600.
19. Chung CC, Choi CL, Kwok SP (1997). Anal and perianal tuberculosis : a report of three cases in 10 years. *JR Coll Surg Edinb* 42 : 189-190.
20. Bode WE, Ramos R & Page CP (1982). Invasive necrotizing infection secondary to anorectal abscess. *Dis Colon Rectum* 25 : 416-419.
21. Walsh G and Stickley CS (1934). Acute leukemia with primary symptom in the rectum. *South Med J* 96 :684-689.
22. Schaffzin DM,Stahl TJ & Smith LE (2003). Perianal mucinous adenocarcinoma : unusual case presentations and review of the literature. *Ann Surg* 69 : 166-169.
23. Brightmore T (1972). Perianal gas producing infection of non-clostridial origin. *Br J Surg* 59 : 109-116.
24. Simms MH, Curran F, Johnson RA et al (1982). Treatment of acute abscess in the casualty department. *BMJ* 284: 1827-1829.
25. Onaca N, Hirschberg A & Adar R (2001) Early reoperation for perirectal abscess a preventable complication. *Dis Colon Rectum* 44 : 1469-1473
26. Parks AG (1961) The pathogenesis and treatment of fistula-in-ano. *BMJ* 1 : 463-469

# ***APPENDIX***

---

***PROFORMA***

---

## **PROFORMA**

**1. Patient name:**

**2. Age:**

**3. Sex:**

**4. IP No:**

**5. D.O.A**

**6. D.O.D**

**7. Department:**

**8. Hospital:**

**9. Occupation**

**10. Chief complaints:**

**C/O pain in the perianal region**

**C/O swelling in the perianal region**

**11. H/O Presenting illness**

**H/O fever**

**H/O trauma**

**H/O altered bowel habits**

**H/O skin lesions**

**12. Past history:**

**H/O Diabetes/ Hypertension/ Dyslipidemia/ CAD/ CKD/BA**

**H/O tuberculosis**

**H/O chronic drug intake**

**13. Body mass index:**

**14. General examination.**

**15. Vitals**

**a.Pulse rate:**

**b.Blood pressure:**

**c.Temperature:**

**16. Local examination:**

**a.inspection:**

**b. palpation:**

**17. Abdominal examination:**

**18 .P/R:**



**19. Protoscopy**

**20. Cardiovascular examination:**

**21. Respiratory system examination:**

**22. CNS examination:**

**23 . Diagnosis:**

**24. Investigation:**

- Complete hemogram
- Urine routine
- Blood sugar
- Blood urea
- Serum creatinine
- Serum electrolytes
- USG abdomen & pelvis
- ECG all leads
- Chest Xray PA view
- Pus C/S

***CONSENT FORM***

---

## நோயாளி ஒப்புதல் படிவம்

**ஆராய்ச்சியின் விவரம் :**

**ஆராய்ச்சி மையம் :** அரசு கீழ்பாக்கம் மருத்துவக் கல்லூரி மருத்துவமனை

**நோயாளியின் பெயர் :**

**நோயாளியின் வயது:**

**பதிவு எண் :**

**நோயாளி கீழ்க்கண்டவற்றுள் கட்டங்களை (✓) செய்யவும்**

1. மேற்குறிப்பிட்டுள்ள ஆராய்ச்சியின் நோக்கத்தையும் பயனையும் முழுவதுமாக புரிந்து கொண்டேன், மேலும் எனது அனைத்து சந்தேங்களையும் கேட்டு அதற்கான விளக்கங்களையும் தெளிவுபடுத்திக் கொண்டேன்.
2. மேலும் இந்த ஆராய்ச்சிக்கு எனது சொந்த விருப்பத்தின் பேரில் பங்கேற்கிறேன் என்றும், மேலும் எந்த நேரத்திலும் எவ்வித முன்றிவிப்பு மின்றி இந்த ஆராய்ச்சியிலிருந்து விலக முழுமையான உரிமை உள்ளதையும் இதற்கு எவ்வித சட்ட பிணைப்பும் இல்லை என்பதையும் அறிவேன்.
3. ஆராய்சியாளரோ, ஆராய்ச்சி உதவியாளரோ, ஆராய்ச்சி உபயத்தாரரோ, ஆராய்ச்சி பேராசிரியரோ, ஒழுங்குநெறி செயற்குழு உறுப்பினர்களோ எப்போது வேண்டுமானாலும் எனது அனுமதியின்றி எனது உள்நோயாளி மற்றும் புற நோயாளி பதிவுகளை இந்த ஆராய்ச்சிக்காகவோ அல்லது எதிர்கால பிறஆராய்ச்சிகளுக்காகவோ பயன்படுத்திக் கொள்ளலாம் என்றும் மேலும் இந்த நிபந்தனை நான் இவ்வராய்ச்சிலிருந்து தகும் என்றும் ஒப்புக்கொள்கிறேன். ஆயினும் எனது அடையாளம் சம்பந்தப்பட்ட எந்த பதிவுகளும் (சட்டபூர்வமான தேவைகள் தவிர) வெளியிடப்படமாட்டது என்ற உறுதிமொழியின் பெயரில் இந்த ஆராய்ச்சிலிருந்து கிடைக்கப்பெறும் முடிவுகளை வெளியிட மறுப்பு தெரிவிக்கமாட்டேன் என்று உறுதியளிக்கிறேன்.
4. இந்த ஆராய்ச்சிஆசன வாயின் அருகில் வரும் சீழ் கட்டியை குறித்தது. அந்த நோயின் தன்மையையும், பின் விளைவுகளையும் பற்றியும், அறுவை சிகிச்சையின் போது கீறி எடுக்கப்படும் சீழை பரிசோதனைக்கு அனுப்பி கிருமியின் தன்மையையும் அதற்கு உகந்த மருந்தை பற்றியும் அறிய நடத்தும் ஆராய்ச்சி என்பதை மருத்துவர் மூலம் அறிந்து கொண்டேன்.
5. இந்த ஆராய்ச்சிக்கு நான் முழுமனதுடன் சம்மதிக்கின்றேன் என்றும் மேலும் ஆராய்ச்சி குழுவினர் எனக்கு அளிக்கும் அறிவுரைகளை தவறாது பின்பற்றுவேன் என்றும் உறுதியளிக்கிறேன்.
6. இந்த ஆராய்ச்சிக்குத் தேவைப்படும் அனைத்து மருத்துவப்பரிசோதனைகளுக்கும் ஒத்துழைப்பு தருவேன் என்று உறுதியளிக்கிறேன்.
7. இந்த ஆராய்ச்சிக்கு யாருடைய எற்புறுத்தலுமின்றி எனது சொந்த விருப்பத்தின் பேரிலும் சுயஅறிவுடனும் முழுமனதுடனும் சம்மதிக்கின்றேன் என்று இதன் மூலம் ஒப்புக்கொள்கிறேன்.

**நோயாளியின் கையொப்பம் / பெருவிரல் கைரேகை**

**இடம்:**

**தேதி:**

**ஆராய்ச்சியாளரின் கையொப்பம்:**

**இடம்:**

**தேதி:**

***MASTER CHART***

---

S.No	Name	Hosp.No	Sex	Age	Clinical Presentation	Abs Position	Co morbid	H/o Consti	Alcohol - A	Smoking -S	Complications	Organism grown	C/S		
			Male (M)	<20 = 1	swelling- s	Right lat RL	DM -1	HT -2	Obs -3		Fistula -F	SA - 1	E.coli -6	Cipro - 1	Imipenem -7
			Female (F)	20 - 40 = 2	pain - p	Left Lat LL	TB - 4	Crohns -5	Hydra -6		Recur - R	Strep -2	Anae - 7	Cefo -2	Erythro -8
				40 - 60=3	discharge -d	Ant A	HIV - 7	HBsAg -8			Sepsis -S	Pseudo -3	Entero -8	Ceftri - 3	Piptaz - 9
				>60 = 4	fever - f	Post P						Proteus -4	BF - 9	Amika -4	Linezolid -10
												Klebsi -5	NG - 0	Oflax -5	Vanco -11
														Cefapera -6	
1	DILIPKUMAR MISHRA	4781	M		3 P,F	RL		3					0		
2	MURUGANANTHAM	689	M		2 P,S	RL							5	2,4	
3	KONDAIAH	5954	M		3 P,S	A	1,2		C	ALC	S		6	3,4	
4	RAJA	1438122	M		2 P,S	LL		8		ALC			6	9,10	
5	ANUSUYA	3463	F		2 P	LL							1	4,5	
6	PADMA	271	F		2 P,F	RL		1	C				0		
7	ALAGARSAMY	1440210	M		4 P	RL							5	6,8	
8	RAMESH	1439113	M		2 P,S,F	LL							8	9,10,11	
9	THULASI	33893	F		3 P,S	P		1					1	8,9	
10	SARAVANAN	21468	M		2 P,S	LL	1,3						1	3,4	
11	VINCENT	20738	M		3 P,S,F	RL				S		8,9		3,6	
12	TAMIL	14168	M		2 P,S,F	P						6,9		3,8	
13	SATHIYA	15017	F		3 P,S	RL		7			F		4	9,11	
14	ANNAMALAI	1228	M		4 P,S	RL	1,2,3		C	ALC			8	9,10	
15	MANJULA	14336	F		2 P,F,D	P		1					1	9,11	
16	ALAGIRI	20924	M		3 P,S	P							6	7,8,9	
17	NAGENDHIRAN	19737	M		2 P,D	RL							4	3,4,5	
18	SUNDAR	17885	M		2 P,S,F	A				S			5	1,2,3	
19	DHANALAKSHMI	10285	F		3 P,S,F	RL							1	4,6,8	
20	MEGALA	719	F		3 P,S	RL					F	6,9		9,11	
21	FATHIMA	1435439	F		3 P,S	LL					F		5	9,10	
22	KASI	12949	M		2 P,S	RL							1	1,2,4	
23	JEYARAMAN	11851	M		2 P,S,F	LL		1		ALC			6	5,11	
24	JESINTHA	18039	F		2 P,S,F	LL		3					0		
25	RAJA	9342	M		3 P,S	P					F		6	3,5	
26	MUMTHAJ	16752	F		2 P,S	P		1					4	6,4	
27	SIVA	1832	M		2 P,S	LL							1	5,8	
28	PRAKASH	15238	M		2 P,S	P							1	7,11	
29	BANU	16402	F		2 P,S	P							4	2,5	
30	DHEENADHAYALAN	12813	M		3 P,S	P							1	3,6	
31	RAJAMANIKHAM	66528	M		3 P	RL		3	C				4	1,5	
32	MANI	9876	M		2 P,F	RL							1	2,6,7	
33	SELVI	12872	F		2 P,S	A		3				6,9		3,7	
34	SIVAGAMI	8405	F		2 P,S	LL	1,3		C				4	5,9	
35	PADMANABHAN	13245	M		2 P,S,F	LL							6	6,8	
36	AMMU	818	F		2 P,S	LL	1,2						1	5,7,3	
37	GANAPATHY	1441230	M		3 P,D	LL				S			6	4,9	
38	SHAKTHIVEL	13254	M		3 P,S	RL			C				6	5,9	
39	JANAKI	340	F		2 P	LL		1					6	8,9	

40	INDRADEVI	24 F	3 P,S,F	A		1				6	3,4
41	DEVI	1441789 F	2 P,F	LL						4	3,6
42	BHAVANI	1437508 F	2 P,S	RL	2,3					8	3,8
43	MUNUSAMY	3456 M	4 P,F,D	P		1		ALC		8	2,5
44	KARTHIKEYAN	546 M	2 P,S,D	P						6	3,6
45	ELANGO	13456 M	3 P,S	LL					4,9		1,5
46	SHANMUGAM	1442578 M	3 P,S,F	RL						8	2,6,7
47	DEVI	1436092 F	2 P,S,F	P						6	3,7
48	CHITRALEKHA	22965 F	3 P,S	P						6	2,4
49	KATHIRESAN	1468765 M	3 P	P						6	3,4
50	ANUSUYA	21685 F	1 P,S	LL				C		6	9,10
51	MAARI	M	3 P,S	LL		1				4	4,5
52	RAMAN	24880 M	2 P,S,F	LL	2,3				F	6	7,10
53	SELVAMEENATCHI	19409 F	2 P	P						5	5,10
54	KARTHIGA	17009 F	2 P,S	P					6,8		6,9
55	RAGUPATHY	25011 M	3 P,S	LL						6	5,9
56	KARUNAKARAN	13267 M	3 P	RL						6	4,8,9
57	SADASIVAM	11889 M	2 P,S,F	RL						6	5,6
58	VEERAPPAN	13875 M	2 P,S,F	LL						4	2,9
59	RADHAKRISHNAN	15158 M	3 P,S	LL		1		ALC		6	3,9
60	VARADHAN	1286 M	3 P,S	RL				ALC		0	
61	RADHIKA	2453 F	2 P,S	RL		1				6	4,3
62	KEERTHANA	11786 F	3 P,D	A		1				6	5,9
63	SUSEELA	13493 F	2 P	RL						6	3,6,4
64	VAITHISWARAN	1618 M	2 P,S	LL						1	5,3
65	KANIMOZHI	17655 F	3 P,S	LL						9	5,6,9
66	MUTHU	11001 M	3 P,S	RL						5	4,5,9
67	RAJA	23571 M	3 P,S	RL		1		ALC	S	0	
68	MUNIYAMMAL	16444 F	3 P,S	P						6	5,7,6
69	STELLA	15220 F	3 P,S	P						6	9,10
70	SOLOMON	18003 M	3 P	P						8	4,5
71	KUPPAN	18384 M	3 P,S	LL						5	7,10
72	SAMUVEL	10348 M	2 P,S	LL						9	5,10
73	VIJAY	15989 M	2 P,S	RL						1	6,9
74	MURALITHARAN	13667 M	2 P,S,F	P						6	5,9
75	MOHAMMAD HASIM	10315 M	2 P,S	A		3				4	4,9
76	THIRUMALAI	18643 M	3 P	RL						6	5,9
77	THOMAS	20912 M	2 P,S	RL		1				9	8,9
78	RAJESHWARI	17645 F	2 P,S	P						8	3,4
79	REVATHY	20446 F	2 P,S	P				ALC		5	3,6
80	SRINIVASAN	9911 M	2 P,S	LL		3				6	1,2,3
81	MALLIGA	F	2 P,S,F	LL						8	9,11
82	GUNASUNDARI	17932 F	2 P,S	RL	1,3					6	5,9
83	SYED IBRAHIM	18954 M	3 P,S	RL				ALC		0	
84	RAMESH	23531 M	2 P,S	RL						6	7,9,11
85	DHANASEKAR	18797 M	4 P,S	LL						4	5,9
86	ANNADURAI	18274 M	2 P	P						1	1,6
87	VENKATAIAH	17601 M	3 P,S	P						0	

88 ESTHER	19168 F	3 P,S	P	1,2			6	5,3
89 SURYA	26650 M	2 P,S	LL			R	6	5,9
90 BAVANI	25685 F	3 P,S	RL				0	
91 NANDAKUMAR	16333 M	4 P,S	RL		ALC		9	,4,6
92 ESWARI	20255 F	3 P,S	LL				8	7,9,11
93 BEEM RAO	20150 M	2 P,S	P				0	
94 NAVEENKUMAR	10563 M	3 P,S	P	1			1	2,6,4
95 GOPAL	4621 M	3 P,S	P			6,9		5,7
96 SHAFURNISHA	21389 F	2 P	RL	1			6	2,6,6
97 AYYANAR	24522 M	3 P,S	LL				1	5,6,9
98 VIGNESH	24706 M	2 P,S,F	RL	3			6	1,5,6
99 PRABHU	20308 M	2 P	RL		ALC		0	
100 SHAKTHIVEL	26325 M	2 P,S	P				5	4,6,9

INSTITUTIONAL ETHICAL COMMITTEE  
GOVT.KILPAUK MEDICAL COLLEGE,  
CHENNAI-10

Protocol ID.No.16/11/2014  
CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "A clinical study on perianal abscess"-For Project Work submitted by Dr.Rhutu Venugopal.E.V, IInd Year MS (General Surgery), Department of General Surgery, Govt.Kilpauk Medical College and Hospital, Chennai.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.



*[Handwritten signature in red ink]*  
CHAIRMAN,  
Ethical Committee

Govt.Kilpauk Medical College,Chennai

*[Handwritten signature in black ink]*  
28/11/2014