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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/17222
DOI URL: http://dx.doi.org/10.21474/IJAR01/17222

RESEARCH ARTICLE

CLINICAL STUDY OF CHRONIC FISSURE-IN-ANO AND COMPARATIVE STUDY OF DIFFERENTMODALITIESOF ITS TREATMENT IN NMCH&RC

Dr. Bhuvaneshwari[1], Dr. Mahadeva Swamy J.S[2] and Dr. Vishal M.G[3]

1. Senior Resident, Department of General Surgery, SIMS, Shimoga-577201.
2. Senior Resident, Department of General Surgery, JSS Medical College, Mysore-570004.
3. Senior Resident, Department of General Surgery, RIMS, Raichur-584102.

Manuscript Info

Manuscript History
Received: 10 May 2023
Final Accepted: 14 June 2023
Published: July 2023

Key words:-
AnalFissure, Lord's Anal Dilatation, Diltiazem, InternalSphincterotomy

Abstract

Anal fissure is a most common painful condition whichcauses considerable morbidity and affects the patient's quality of life to a greater extent. The majority of acute anal fissures heal spontaneously. However, some of the acute anal fissures do not resolve but become chronic. Thiswarrantspromptttreatmentof the condition with appropriatemethods.Selecting a better method of treating this condition that can achieve optimal clinical results and getting the least pain and inconvenience to the patient has always posed a challenge to the surgeons. This has led to the innovation of a number of surgical and pharmacological methods that relaxes the anal sphincter.

Aimof The Study: To study the different clinical presentations and etiological factors of the fissure in ano& different modalities of treatment of fissure in ano i.e., application of 2% Diltiazem ointment, Lord's Anal Dilatation and Subcutaneous Lateral Internal Sphincterotomy. &to evaluate the efficacy Subcutaneous Lateral Internal Sphincterotomyas a treatment modality in the management of chronic anal fissure in comparison with application of 2% Diltiazem ointment & with Lord's Anal Dilatation.

Materials & Methods: The material for the study was taken from the cases attending thesurgery OPD and admitted In-patients of all the units of the Department of General Surgery, Navodaya Medical College Hospital & Research Centre,whowerediagnosed to haveChronicanal fissure. This study was a prospective study which included 90 patients presenting with chronic anal fissure over a period of 18 months from November 2019 to May 2021.Thesepatientswererandomly selectedandclassifiedintothree groups(A,B,C) eachconsistingof30 patients & each group with one type of treatment modality, like group A for 2% diltiazem, B for lord's anal dilatation & C for LIS. Follow-up of the patients was done by history and per-rectalexamination to assess the efficacy of the treatment and the complications like pain,bleeding,sphincter spasm, dischargeperanum and incontinence.

Results : This study showed the results in favour of Lateral Internal Sphincterotomywith a healing rate of 100% with faster pain-relief and minimal or no complications ifperformedbythehands of an experienced surgeon, whereas latency in the clearance of symptoms and lesions was

Corresponding Author:- Dr. Bhuvaneshwari
Address:- Senior Resident, Department of General Surgery, SIMS,Shimoga-577201.

seen with 2% Diltiazem and Lord's Anal Dilatation with adverse effects as well. With the healingrate of 100% of Fissure-in-ano in LIS therapy group, 81% in Lord's Anal Dilatation and 71% with topical 2% Diltiazem therapy, & adverse effects or complications being maximum in 2% Diltiazem therapy group, 13 patients (46%) when compared to Lord's Anal Dilatation (41% , 11 patients) and LIS group (32%, 09 patients), weconcludethatLateralinternalsphinterotomy(LIS) appearstobethebetterlineoftreatmentasthereis 100%healingrate, minimal complications and no recurrence.

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Introduction:-

Proctological diseases are group of disorders or conditions affecting the mankind sincetime immemorial. They consist of a diverse set of disorders which causes significantdiscomfort to the patients. Majority of the population (30-40%) suffers from theseconditions onceintheirlifetime.[1]

Anal fissure, a common disease under this category was first described byRecamier[2] in 1829. Chronic anal fissure is a very common and distressing problem which occurs with equal frequency in men and women. It is a vertically oriented tear or ulceration in the squamous liningoftheanalcanalbetweenthepectinatelineandanalverge.Thisconditionisassociated with pain on defecation, bleeding per anum and anal sphincter spasm. Theycan affect any age group but occurs particularly in young and otherwise healthy adults but showsno sex preponderance. Most of the anal fissures are acute, resolving spontaneously orwithincreaseddietaryfibreintakeandstoolsoftenerswhereappropriate.Thoselesions which fail to heal despite simple lifestyle modifications and persist beyond sixweeksareconsideredasChronic anal fissures.

Achronicfissureisusuallydeeperandgenerallyhasinternalsphincterfibres exposed in its base. It is most frequently associated with a hypertrophic anal papillaat its upper aspect and with a Sentinel pile at its distal aspect.

A chronic fissure classically occurs at the posterior midline position (6 o'clock position), with the anterior midline position occurring in 10% of females and 1% of males. Fissures occurringatpositionsotherthanthe6o'clockpositionorthepresence ofmultiplefissures may suggest other pathological diseases like tuberculosis, inflammatory bowel disease, syphilis and immunosuppressive diseases like human immunodeficiency virus.

The clinical hallmark of anal fissure is pain during, and especially after, defecation. The pain may be short-lived with acute fissures, but may last hours or even become continuous in chronic cases. The pain is often severe enough for patients to dread or even attempt to avoid bowel movements altogether; some patients describe the pain as akintopassing razor blades or broken glass.

The standard algorithm for anal fissure therapy has traditionally consisted of a trial of fibre supplementation, sitz baths, and topical analgesics; if the pain is intolerable or if conservative care fails, surgery is performed (usually a lateral internal sphincterotomy).

Surgical techniques like manual anal dilatation or lateral internalsphincterotomy, effectively heal most fissures within a few weeks, but however may result inpermanently impaired anal continence. This has led to the research for alternativenon-surgical treatment, and thus 'Chemical Sphincterotomy' is being investigated and usedas the possible firstlineof treatment forchronic anal fissure.

Topicalnitroglycerineointmenthasbeenshowntobeveryeffectivebutithas a reduced compliance due to side effects such as headache. Topical calcium channel blockersoffers a suitable alternative for fissure treatment,healing 65-95 % caseswithlesserside effects. Topical 2% diltiazem gel has been reported to cause healing of chronicanal fissures in 60-75%, with less than 80% patients having no adverse effects inpreviousstudies.[3]

The present study comprises the comparison of 2% Diltiazem gel application, Lord's Anal Dilatation and Lateral Internal Sphincterotomy in the treatment of chronic fissure in anowithrespectto both efficacyand complications.

Materials & Methods:-

The material for the study was obtained from the cases attending thesurgery OPD and admitted In-patients of all the units of the Department of General Surgery, Navodaya Medical College Hospital & Research Centre,whowerediagnosed to haveChronicanalfissure.This study included 90 patients presenting with chronic anal fissure over a period of 18 months from November 2019 to May 2021.Thesepatientswererandomly selectedandclassifiedinto3groups eachconsistingof30 patients.

Group A: 30 patients who were subjected to chemical sphincterotomy using topicalapplicationof2% Diltiazem gel.
GroupB:30patientswhoweresubjectedto Lord's Anal Dilatation
Group C: 30 patients who were subjected to LateralInternalSphincterotomy.

MethodofCollectionofData:-

The cases attending the surgery OPD, admitted In-patients of all the units of the Department ofGeneral Surgery who came with complaints of painful defecation with or withoutbleeding per rectum of more than 6 weeks duration were considered for this study. After obtaining approval and clearance from the institutional ethical committee, the patients fulfilling the inclusion criteria were enrolled for the study after obtaining informed consent. Prior Informed Consent was obtained before evaluating each patient.

Adetailed history was taken and per-rectal examination was done to diagnose chronic analfissure. Systemic examination and basic investigations done. Patients were randomlysubjectedtochemicalsphincterotomy, Lord's Dilatationorsurgicalsphincterotomy.Chemicalsphincterotomy involves local application of 2% Diltiazem gel thrice a day, for aperiodof8weeks.Surgicalmodeofmanagementinvolves Lord's Dilatation &LateralInternalSphincterotomy. All the three groups were advised plenty of oral fluids, high fibrediet,laxatives and sitz bath. Patients were followed up for a period of 6 months.

Follow-up of the patients was done by history and per-rectalexamination to assess the efficacy of the treatment and the complications like pain,bleeding,sphincter spasm, dischargeperanum and incontinence.

InclusionCriteria :
All patients who presented in surgical out patient department and those admitted In-patients with complaints ofpainful passage of stool, with or without bleeding of more than 6 weeks duration,diagnosed to be having chronic anal fissure based on the history and on clinicalexamination, of all age group and both the sexes, were included in the study.

ExclusionCriteria :
1. Haemorrhoids
2. Tuberculosis (TB)
3. Anorectalabscesses
4. Analmalignancies
5. Immunocompromisedpatients
6. Previoushistoryoffaecalincontinenceoranalstenosis
7. Patientswhohaveundergonepreviousanalsurgeries
8. Patientswithhistoryofbleedingdiathesis.
9. Elderly patients with a history of heart disease.

Investigations :
All patients were subjected to Routine laboratory investigations :CompleteHaemogram, Renal function tests, Urine Routine& Microscopy, Diabetic profile, HIV, HbsAg, Chest X-ray PA View, ECG.

Relevant special investigations: Sigmoidoscopy and Colonoscopy (as and when required)

Follow-up

Patients were followed up at 2, 4, 6, 8, 14 weeks and 6 months. During each visitenquiriesweremaderegardingtheexpectedcomplicationsusingaquestionnaire &also examined. Results ofthefollow-up aretabulatedandanalysed.

Methodofapplicationof 2% Diltiazemgel

Patientswereadvisedto apply1.5to 2cms lengthofgelthricedailyatleast 1.5cm intotheanus.Patientswereinstructedtowashhandsbeforeandafteruseof gel.

Lord's Anal dilatation

The patient under spinal or general anaesthesia was positioned in lithotomy. The anus is forcibly stretched by introducing first both index and then adding to it, themiddle fingers of both hands; for four minutes. This method, which is also referred to as manual dilatation of the anus, involves the forceful stretching of the anal sphincter with as many as six or eight fingers. Postoperativelypatientswerekeptnilorallytillevening.Thefootendofthetableelevated. I.V. fluids were administered. A dose of sedation was given at night. Allpatients were given antibiotics post-operatively. On the same day liquid diet wasadministered and from first post- operative day onwards solid diet. All patients weregiven mild laxatives like Cremaffin (milk of magnesia 11.25 ml, liquid paraffin 3.75ml, per 15 ml of emulsion) three tea spoons, at bedtime next day onwards followingthe operation and sitz bath was started from second post operative day.

Post-operativeassessment for bleeding and hematoma formation was done. Patients were dischargedbetween 3rd and 4th post-operative days. They were followed up regularly.

Digitalexaminationwasdonetoassesstherelaxationofsphincterorfor infection.

InternalSphincterotomy

Internalsphincterotomywascarriedoutunderspinalanaesthesia.Postoperativelypatientswerekeptnilorallytillevening.Th efootendofthetableelevated. I.V. fluids were administered. A dose of sedation was given at night. Allpatients were given antibiotics post-operatively.On the same day liquid diet wasadministered and from first post- operative day onwards solid diet.The rest of the care was similar to as for Lords anal dilatation.

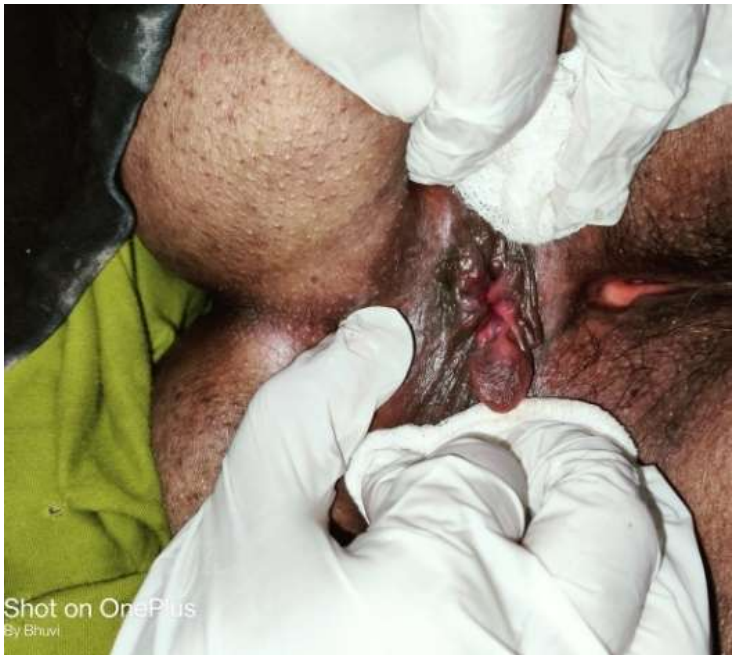


Fig 1:- Chronic fissure in ano with sentinel pile.

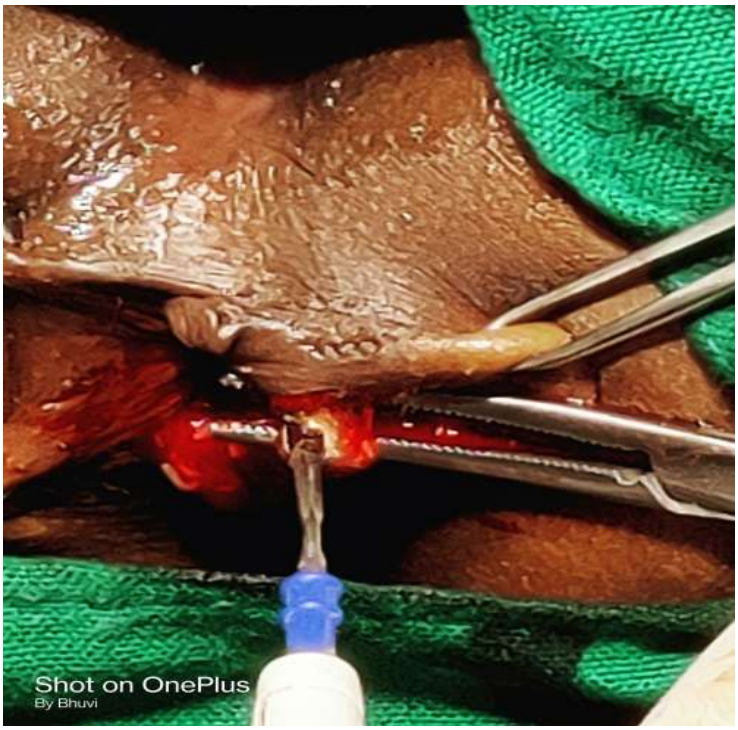


Fig 2:- Lateral internal sphincterotomy –internal sphincter fibres being divided.

Fig 3:- Intra-operative image of Chronic fissure-in-ano with both anterior & posterior sentinel pile

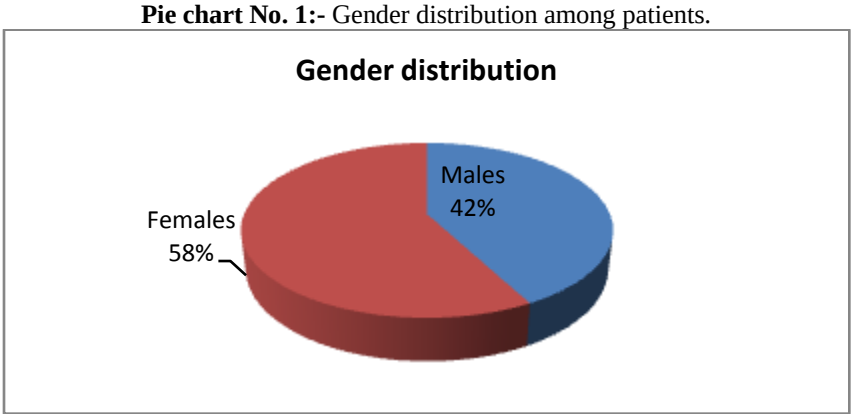
Statistical Analysis &Result:-

After obtaining the data, patientswererandomlydividedintothreegroupsofthirtypatientseach.Onegroupwassubjectedtochemicalsphincterotomy, and one group for Lord's Anal Dilatation and the other to surgical sphincterotomy. The data was later analysedfromtheirproforma sheets.

Table 01:- Gender Distribution Among Patients:

PATIENTS	MALES	FEMALES
Total = 90	38	52

Pie chart No. 1:- Gender distribution among patients.

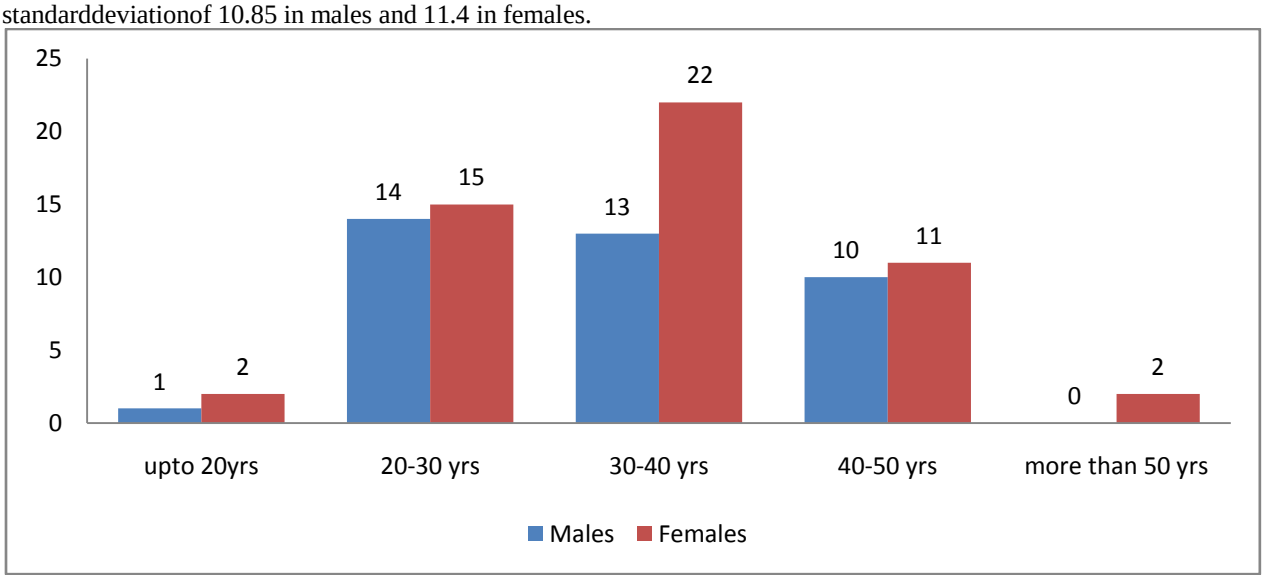


❖ In our study, among 90 patients, 52 patients were females and 38 patients were males with female to male ratio 1.4:1.

Table 02:-Age Distribution.

AGE	Males	Females
<20yr	1	2
21-30 yrs	14	15
31-40yr	13	22
41-50yr	10	11
>50yr	0	2
Total	38	52

❖ It is observed from the above table that the most of the patients are in the age group 20-50 years of age and mean year of occurrence of chronicanal fissure in males is 32.43 years and in females is 36.63 years with a standarddeviationof 10.85 in males and 11.4 in females.



Graph 1:- AgeandSexdistributionof thepatients.

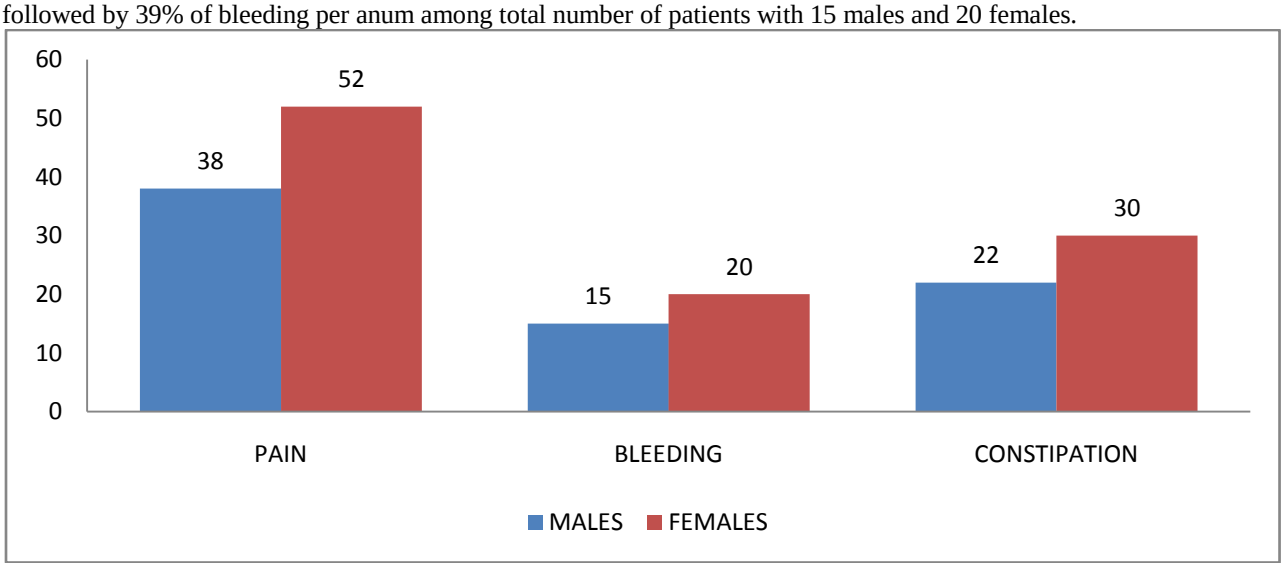
Table 03:-Symptoms.

SYMPTOMS	MALES	FEMALES
PAIN	38`	52
BLEEDING	15	20
CONSTIPATION	22	30

❖ In our study, most common symptom was Pain during defaecation accounting for 100 % among the total

patients with males 38 and females 52 in number.

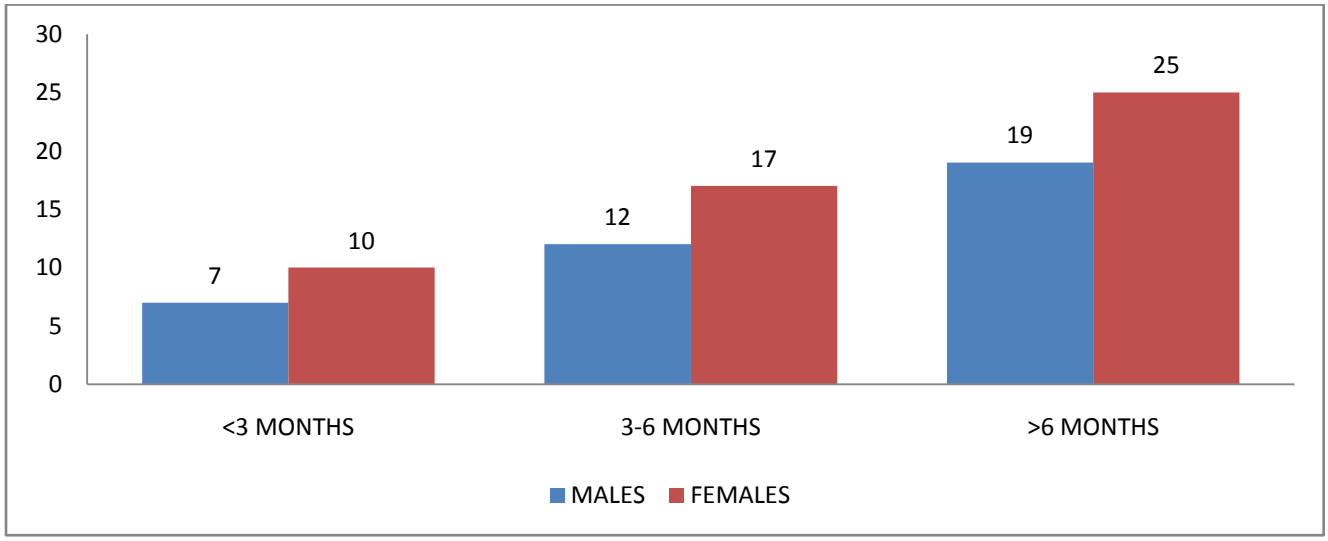
❖ Next commonest symptom was constipation accounting for 58% in total with 22 males and 30 females, followed by 39% of bleeding per anum among total number of patients with 15 males and 20 females.



Graph 2:- Symptoms of Chronic fissure-in-ano.

Table 04:- Duration Of Symptoms:

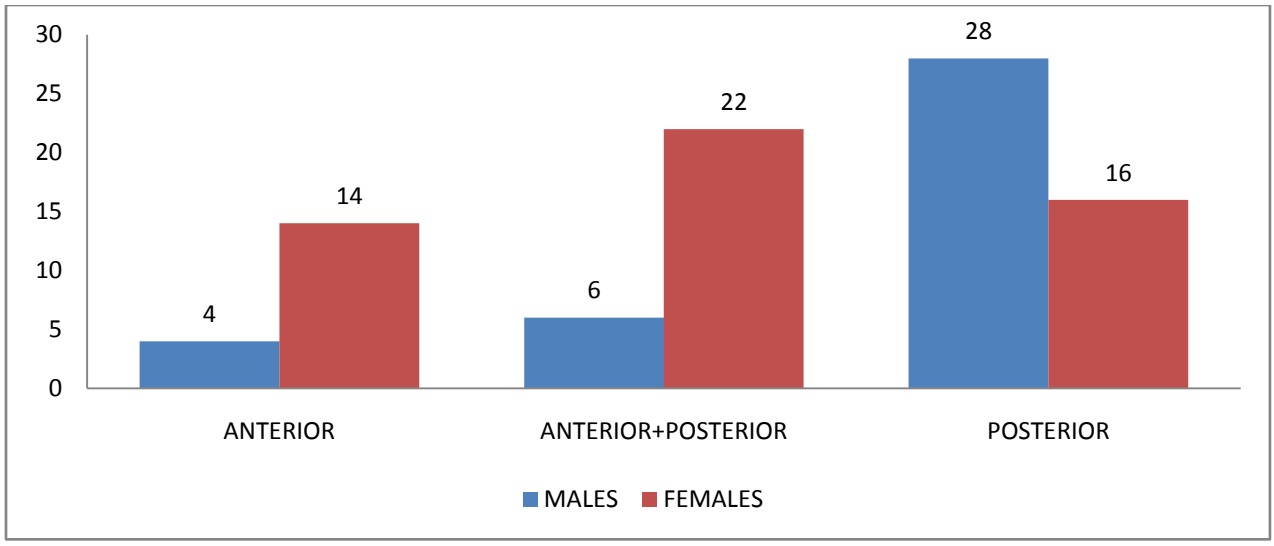
DURATION	MALES	FEMALES
<3 MONTHS	7	10
3-6 MONTHS	12	17
>6 MONTHS	19	25



Graph 3:- Duration of symptoms of chronic fissure-in-ano.

Table 05:- Site Of Fissure-In-Ano.

POSITION	MALES	FEMALES	TOTAL	PERCENTAGE
ANTERIOR	04	14	18	20%
ANTERIOR+POSTERIOR	06	22	28	31%
POSTERIOR	28	16	44	49%



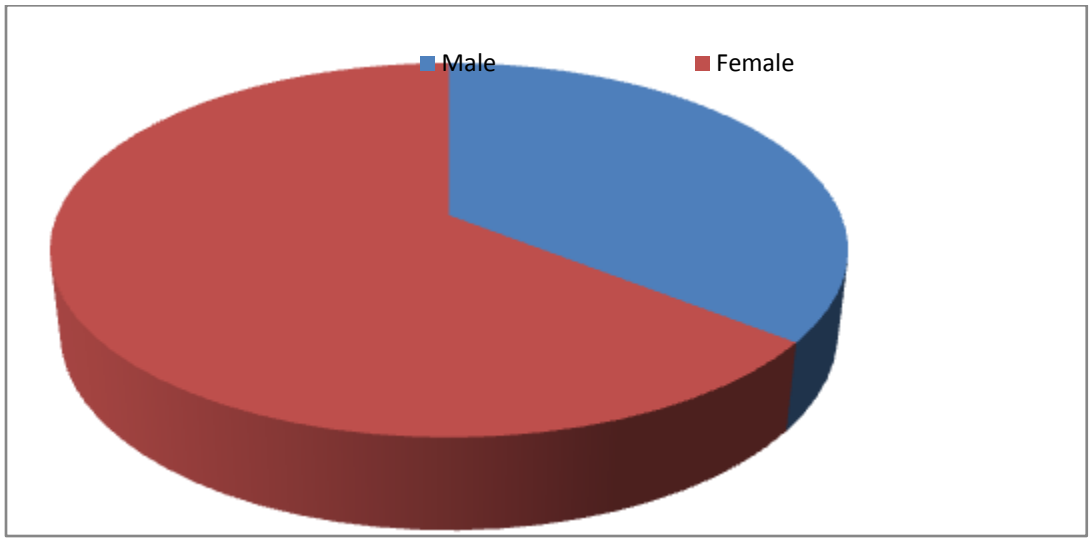
Graph 4:- Siteof occurrence of ChronicfissureinanoaccordingtoSex

❖ In our study, the most common site of fissure-in-ano is posterior, with 49% among the total study subjects with 28 males and 16 females. This is followed by both anterior + posterior being 31% in total and anterior being 20% in total.

❖ In our study, Anterior fissures were comparatively common in females than males (Female:Male ratio = 7:2) and posterior fissures are common in males than females Male:Female ratio = 7:4)

PresenceofSentinelpile :

Out of the 90 patients in our study, Sentinel pile was present in 70 patients accounting for 78% with 25 males and 45 females.

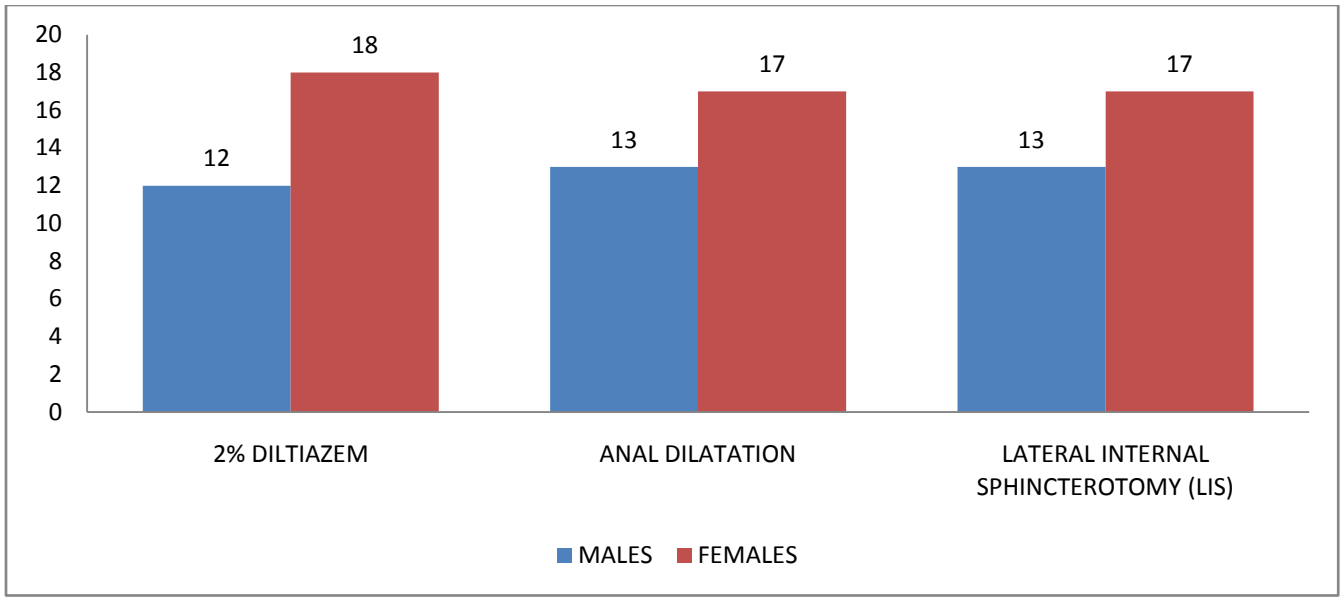


Pie Chart 2& Fig.6:- Presence of Sentinel Pile.

Sex-wise distribution of patients in each treatment group :

SEX/TREATMENT GROUP(30 each)	2% DILTIAZEM	LORD'S ANAL DILATATION	LATERAL INTERNAL SPHINCETROTOMY (LIS)
MALES	12	13	13
FEMALES	18	17	17
TOTAL	30	30	30
PATIENTS FOR STUDY	28 out of 30	27 out of 30	28 out of 30

Table 6:- Sex-wise distribution of patients among different treatment groups.



Graph 5:- Sex wise distribution of patients among different treatment groups.

❖ In our study, the patients were subjected to three different treatment groups as 2% Diltiazem application, Anal Dilatation and Lateral Internal Sphincterotomy with 30 patients each and the sex distribution was done equally among all the three groups.

Lost for follow up :

SEX/TREATMENT GROUP(30 each)	2% DILTIAZEM	ANAL DILATATION	LIS
MALES	02	01	01
FEMALES	-	02	01
TOTAL	02	03	02

Table 7:- Patients lost for follow-up among different treatment groups.

❖ In our study, a total of 7 patients were lost for the follow up.

Duration for healing and post-operative findings :

Healing:

a. 2% Diltiazem group

Out of 30 patients who underwent treatment with 2% Diltiazem gel, 20 fissures healed completely within 4-8weeks accounting for 71% out of 28 patients as 2 patients were lost to follow up.

b. Anal Dilatation group

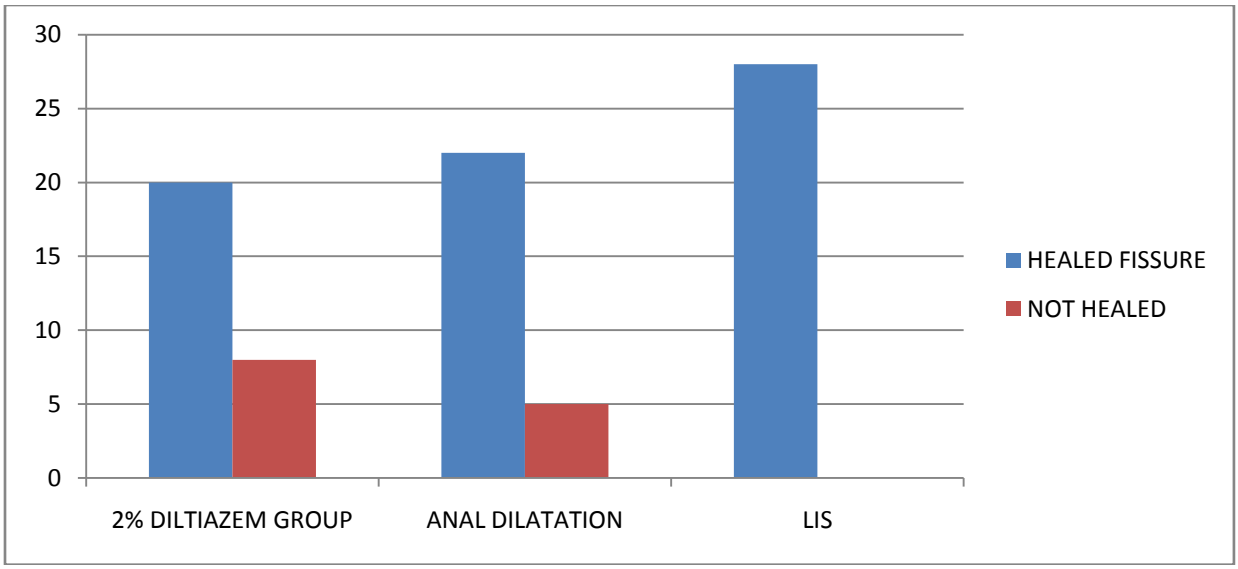
Out of 30 patients who underwent treatment with Anal Dilatation, 22 fissures healed completely, accounting for 81% out of 27 patients as 3 patients were lost to follow up.

c. Lateral Internal Sphincterotomy (LIS)

Out of 30 patients, 28 fissures healed completely out of 28 patients, giving rise to 100% healing rate, as 2 patients were lost to follow up.

Table 8:- Healing of Chronic Fissure-in-ano among patients in each treatment group.

TREATMENT GROUP(30 each)	2% DILTIAZEM	ANAL DILATATION	LIS
HEALED	20	22	28
NOT HEALED	08	05	0
PERCENTAGE	71%	81%	100%



Graph 6:- Healing of chronic fissure-in-ano after different treatment modalities.

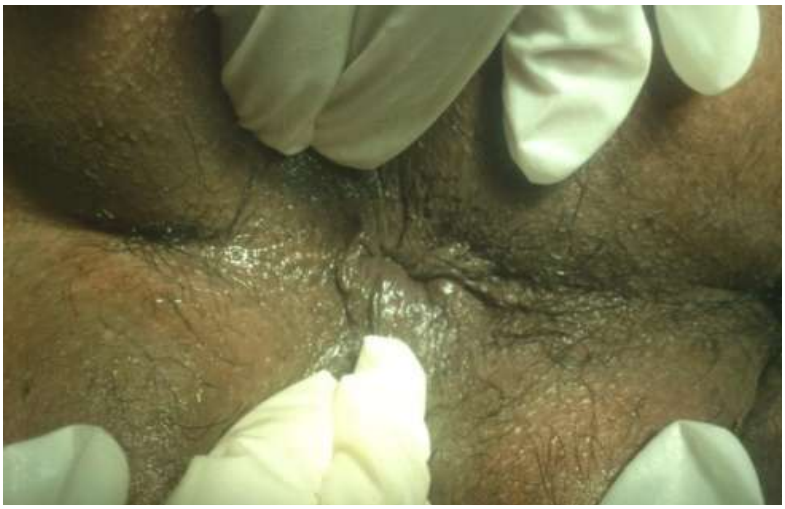


Fig 4:-Healedanal fissure.

Pain Relief:

DURATION/ TREATMENT GROUP(30 each)	2% DILTIAZEM	ANAL DILATATION	LIS
4 weeks	06	15	20
8 weeks	11	06	08
14 weeks	03	02	-
6 months	02	01	-
No relief	06	03	-

Table 9:- Pain relief among patients after different treatment.

2% Diltiazemgroup :

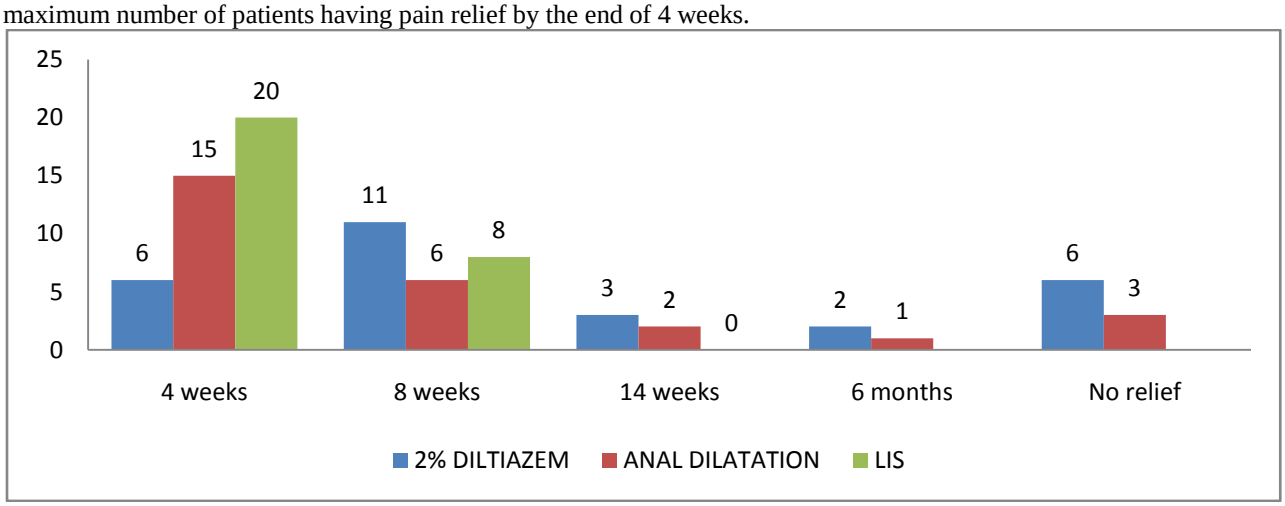
In our study, 22 patients out of 28, had complete pain relief by the end of 6 months accounting for 79%, with maximum number of patients having pain relief by the end of 8 weeks and 06 patients had no pain relief.

Anal Dilatation :

In our study, out of 27 patients, 24 patients had pain relief by the end of 6 months accounting for 89%, with maximum number of patients having pain relief by the end of 4 weeks and 3 patients had no pain relief.

Lateral internal sphincterotomy :

In our study, 28 out of 28 patients had complete pain relief by the end of 8 weeks accounting for 100%, with maximum number of patients having pain relief by the end of 4 weeks.



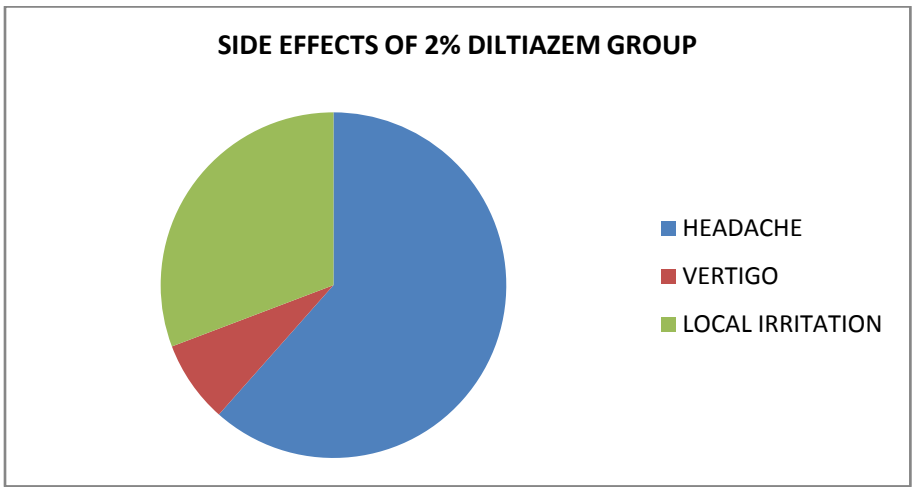
Graph 7:- Pain relief among fissure-in-ano patients after treatment.

Side effects/Complications after treatment of Chronic fissure-in-ano using different modalities of treatment :

2% Diltiazem Group:

COMPLICATIONS/SIDE EFFECTS	NUMBER
HEADCHE	08
VERTIGO	01
LOCAL IRRITATION	04
TOTAL	13
PERCENTAGE	46%

Table 10:-Side effects among patients in 2% Diltiazem group.



Pie Chart 3:- Side effects/Complications of 2% Diltiazem group.

Anal Dilatation:

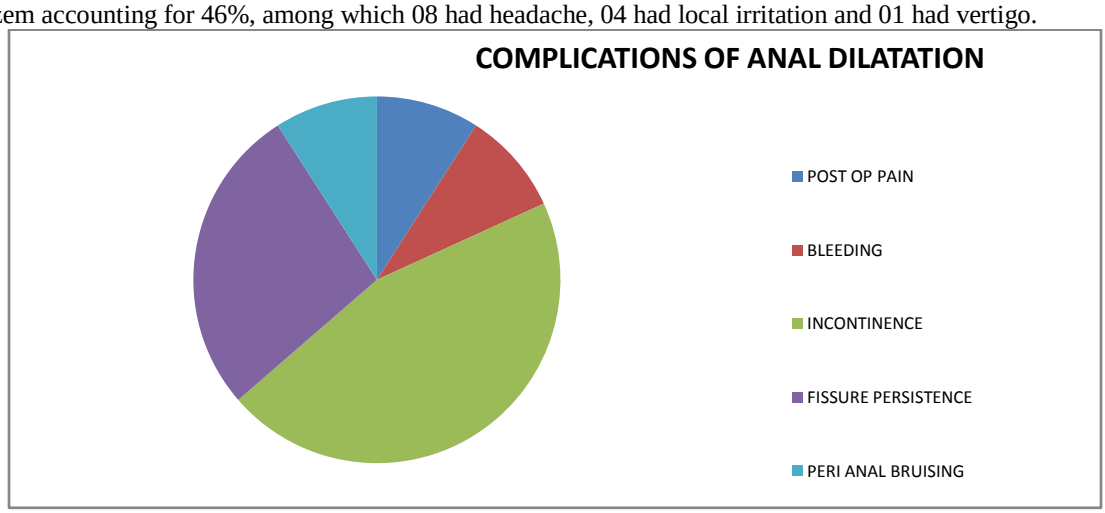
COMPLICATION	NUMBER
POST-OP PAIN	01
BLEEDING	01
INCONTINENCE	05
FISSURE PERSISTANCE	03
PERI-ANAL BRUISING	01

TOTAL	11
PERCENTAGE	41%

Table 11:- Complications among patients treated with LAD.

2% Diltiazemgroup :

In our study, a total of 13 patients had side effects/complications following treatment with topical application of 2% Diltiazem accounting for 46%, among which 08 had headache, 04 had local irritation and 01 had vertigo.

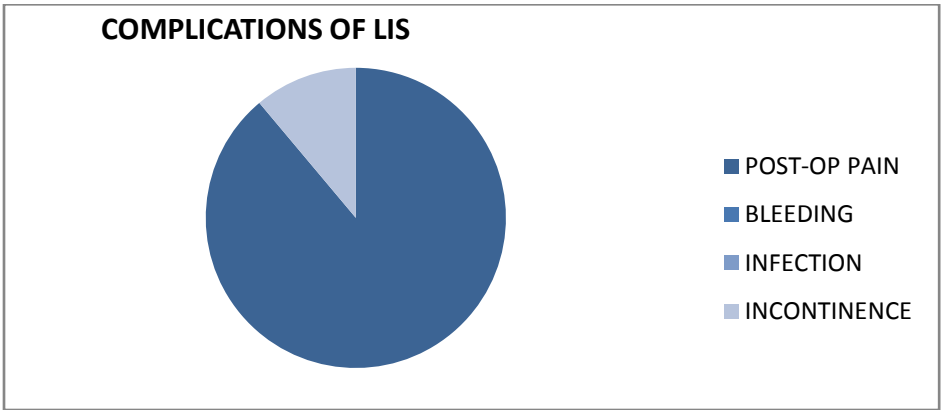


Pie Chart 4:- Complications of Anal Dilatation.

Lateral Internal Sphincterotomy:

COMPLICATIONS	**NUMBER**
POST-OP PAIN	08
BLEEDING	-
INFECTION	-
INCONTINENCE	01
TOTAL	09
PERCENTAGE	32%

Table 12:-Complications following LIS.



Pie Chart 5:- Complications among LIS treatment group.

Anal Dilatation :

In our study, a total of 11 patients had complications following surgical treatment with Anal Dilatation accounting for 41%, among which 05 had incontinence, 03 had fissure persistence, and post-op pain, bleeding, peri-anal bruising were noted in 01 patient each.

Lateral Internal sphincterotomy :

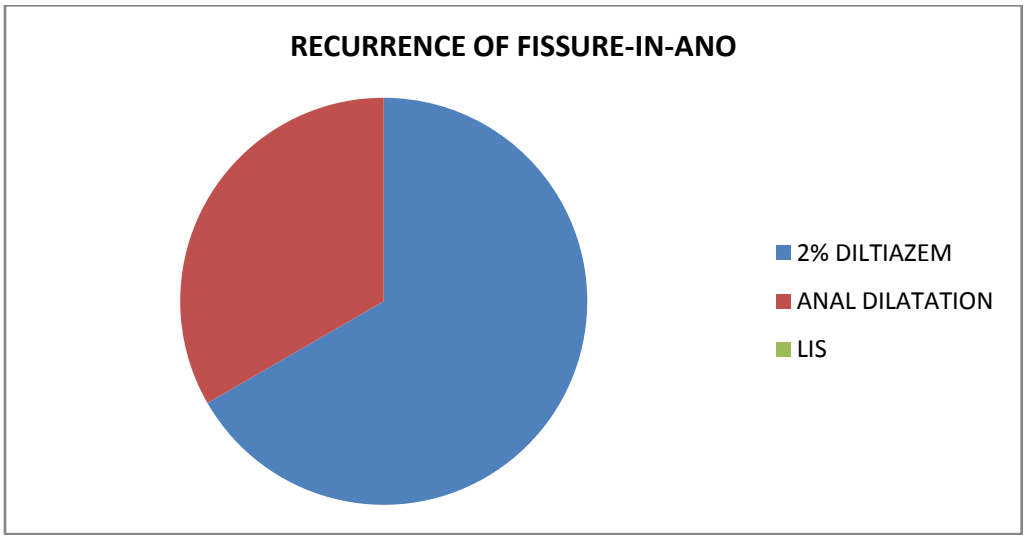
In our study, a total of 09 patients had complications following surgical treatment with LIS accounting for 32%, where in 08 patients had post-op pain and 01 with incontinence. There was no bleeding or infection among the study subjects noted.

Recurrence of fissure-in-ano after treatment :

TREATMENT GROUP	2% DILTIAZEM	ANAL DILATATION	LIS
RECURRENCE	06	03	0
TOTAL PATIENTS	28	27	28
PERCENTAGE	21.42 %	11.1 %	0 %

Table 13:- Recurrence of Chronic fissure-in-ano after treatment.

- In our study, recurrence of fissure-in-ano was maximum among those patients who underwent treatment with 2% Diltiazem accounting for 21% (06 out of 28 patients) and next common being Anal Dilatation treatment group accounting for 11% (03 out of 27 patients).
- No recurrence was noted among the patients who underwent treatment with LIS.



Pie Chart 6:- Recurrence after treatment with different modalities of treatment.

Summary

This study included 90 patients with chronic anal fissure who presented to Department of General Surgery,NavodayaMedical College Hospital & Research center, Raichur. Diagnosiswasmadeonthebasisofthoroughhistoryandclinicalexamination.

The commonest age group affected was 31-40 years age group (35 cases) andleastaffected were < 20 yearsand>50years age group (3 and 2 cases respectively).Theincidencewas more infemales compared to males.Female to Maleratiowas 1.4:1.

Posterior midline fissure (44 cases) was more common than anterior midlinefissure (18 cases) and both (anterior + posterior) were present in 28 cases. Sentinel pile was present in 70 casesandsphincterspasm was present in all cases.

Outof30patientswhounderwenttreatmentwith2%Diltiazemgel,2werelost to follow up during various stages of treatment. Out of the remaining 28 patients,20(71%) fissures healed completelybetween 4-14 weeks. Out of 30 patients who underwent treatment with Lord's Anal Dilatation, 3 were lost to follow-up, and out of remaining 27 patients, 22(81%) fissures healed completely between 4-8 weeks.Out of 30 patients who underwent treatment with Lateral Internal sphincterotomy, 2 were lost to follow-up and 28 out of 28 patients (100%) had complete healing within 4 weeks.

In the Diltiazem group, 6 patients were pain-free at the end of 4 weeks. 11patients were free of pain by 8 weeks and 3 patients were pain free by 14 weeks, 2 patients were free of pain by 6 months. 6patients were not relieved of pain at the end of 14 weeks-6 months. 8 patients experienced mildheadache, 1 patient had vertigoand local irritationwas present in 4patients in this group. In the Lord's Anal Dilatation, 15 patients were pain-free at the end of 4 weeks. 6 patients were free of pain by 8 weeks, 2 patients were free of pain by 14 weeks & 1 patient was pain-free by 6 months. 3 patients were not relieved of pain at the end of 6 months.5 patients experienced incontinence, 3 had persistence of fissure and few other side effects such as post-op pain, bleeding, peri-anal bruising.

In the lateral internalsphincterotomy(LIS), 20 patients were pain-free within 4 weeks and 8 patients had pain relief by 8 weeks. A total of 28(100%) out of 28 were pain free following this treatment. 8 patients had post-operative pain and 1 patient had developed transient incontinence to flatus in this LIS group.

Conclusion:-

The current study shows that Lateral Internal Sphincterotomyis the better mode of treatment with respect to healing, faster pain-relief and minimal or no complications. The healingrate of Fissure-in-ano in LIS therapy group was 100%, 81% in Lord's Anal Dilatation and 71% with topical 2% Diltiazem therapy. Adverse effects or complications were maximum in 2% Diltiazem therapy group, 13 patients (46%) when compared to Lord's Anal Dilatation (41% , 11 patients) and LIS group (32%, 09 patients).

By comparing the above three modalities of treatment for chronic anal fissure,weconcludethatLateralinternalsphinterotomyappearstobethebetterlineoftreatmentasthereis 100%healingrate, minimal complications and no recurrence.

Discussion:-

Fissure-in-anoisaverycommonproblemacrosstheworld and a remarkably painful condition in an otherwise healthy population.The exact cause of anal fissure is still unknown but the precipitating factor is generally considered to be the trauma to the anal canal mucosa caused by hard stools due to chronic constipation. Once the fissure has established, spasms of internal sphincter prevents drainage and subsequent healing (Allan and May, 1985) and is the basic cause of persistence of pain. Thus decreasing or inhibiting the contraction of internal anal sphincter should be main stay of any treatment of analfissure.

Therapy focuses on breaking the cycle of pain, spasm, and ischemia thought to be responsible for the development of fissure in ano. Therationaleoftreatingthisconditionliesinreducingtheinternalanalsphincter tone, relieving the spasm and thereby improving the circulation. Operative treatment includes Lord's anal dilatation, fissurectomy, lateral internal sphincterotomy(LIS), excision of anal ulcer/fissure, anal advancement flap/anoplasty, combined surgical &cryo-therapeutic treatment that includes Lateral internal sphincterotomy (LIS) followed by curettage with N-protossideCryosound, CO2 Laser surgery, LIS with Radiofrequency surgery and Multiple anal sphincterotomy.. Of thesurgicalmodalitiesavailable,thegoldstandardprocedureislateralinternalsphincterotomy, wherein there is partial division of the internal anal sphincter awayfromthefissuresite.

Inourpresentstudy,acomparativeanalysisoftopicalapplicationof2%diltiazemgel, Anal Dilatation andlateralsphincterotomyhasbeendonewithregardstoefficacy,adverse effects and complications in patients with chronic anal fissure.In the present study the age group most affected was 20-50 years with mean age in males being 32.43 years and in females being 36.63 years. According to J.C. Goligher[27] thediseaseisusuallyencounteredinmiddleagedadults.InUdwadiaT.E[54]seriesmaximumincidencewasseen in 31-40years agegroup.Therewasonlyaslightfemalepreponderance (58%)comparedtomales(42%) in our study but other studies by Lock &Thombson et al (1977) [3] the Birmingham series noted a slightly male preponderance.

In our analysis, painful defecation was a universal and the most commonsymptom (100%) among all the study subjects. This was followed by constipation and bleeding per anum in 58%and39%ofthepatientsrespectively.Lock &Thombson et al (1977) [3] found pain and spasm to be present in 69 % of patients.

The presence of posterior anal fissure was noted in 28 males and 16 female subjects. The overall incidenceof posterior analfissurewasfoundtobe 49%making itthemostcommonsiteinvolved. The tables below show the comparison of different studies with our study with respect to healing rate.

Studies	Numberofpatients	Healingrate(%)
Knightetal[9](2001)	66	89.4
Bharadwajetal[12](2000)	27	73
Kocheret al[57](2002)	31	67
Shrivastava et al[15](2007)	90	80
Presentstudy	28	71%

Table14:- Comparisonof ResultswithDiltiazem.

Studies	Numberof patients	Healingrate(%)
Jensen et al [58](1984)	--	100
Evansetal[59](2001)	65	97
Wiley et al[60](2004)	79	97
Presentstudy	28	100

Table15:- Comparisonof ResultswithLIS.

ComparisonbetweenDiltiazemgeltherapy, Lord's anal dilatation andinternalsphincterotomyshowed a difference in pain relief, fissure healing, complications and recurrence in our study, which arestatisticallysignificant. Hence, the best modality of treatment for chronic fissure-in-ano is Lateral Internal Sphincterotomy (LIS) > Lord's Anal Dilatation > 2% Diltiazem gel.

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