

## Prevalence of Hypothyroidism among Anal Fissure Cases – A Single-Center, Retrospective and Observational Study

Gokila M.<sup>1</sup>, G. Vinayagam<sup>2</sup>

<sup>1</sup>Postgraduate, Department of General Surgery, Sri Venkateshwaraa Medical College Hospital and Research Centre

<sup>2</sup>Associate Professor, Department of General Surgery, Sri Venkateshwaraa Medical College Hospital and Research Centre

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Corresponding author: Dr G Vinayagam

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### Abstract

**Background:** Fissure in ano is common proctologic condition. Fissure in ano is common condition which affects young and middle-aged people with an equal incidence in males and females. The effect of hypothyroidism on gastrointestinal system seems to be multifactorial with alterations of the hormone receptors, neuro-muscular disorders and myopathy by infiltrating the intestinal wall. Aim of the study was to look for prevalence of Hypothyroidism among Fissure in Ano patients.

**Objective:** The present study aimed to analyse the association between Hypothyroid state and occurrence of Fissure in ano among consecutive 52 patients who were diagnosed and admitted with fissure in ano.

**Materials and Methods:** Inclusion criteria was composed of all the patients diagnosed and admitted with fissure in ano during the study period July 2021 to July 2021. Whereas, exclusion criteria were composed of 1) patient age less than 12 years, 2) any patients with history of Crohn's disease, Haemorrhoidectomy, Ulcerative colitis and Abdominal tuberculosis and 3) those patients who are on medications and conditions that affect T3, T4 and TSH values like Pregnancy, treated thyroid abnormalities, total thyroidectomy patients, sepsis, lithium, phenytoin, metaclopramide. Medical records of all the patients admitted with fissure in ano whom underwent Thyroid Function Test during admission were retrieved and data were collected. The collected data was entered in Microsoft Excel to maintain the quality of data. The data was tabulated and analyzed by using Statistical Package for the Social Sciences (version 24). The data was analyzed and percentages were calculated.

**Result:** Our study reported slight predominance of female patients (71.1%) than male patients (28.8%) among the study population. The majority of both gender patients were between the age of 30-50 years (55.78%), with 23% of patients were more than 50 years and only 21.1% of patients were less than 30 years. Females suffered the maximum (43.24%) from hypothyroidism than the males. Females suffered from the maximum duration of both acute and chronic illness (71.1%) from hypothyroidism than the males. The maximum number among hypothyroid patients were suffering from chronic illness.

**Conclusion:** In conclusion, there is an increased prevalence of hypothyroidism in cases of anal fissure among females.

**Keywords:** Fissure in ano; Hypothyroidism; Prevalence; India

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## Introduction

An anal fissure (AF) is a small break or tear in the skin of the anal canal, which typically runs from below the dentate line to the anal verge, and is usually situated in the posterior midline [1]. AF causes severe pain and bleeding with bowel movements, and is associated with spasm of the internal anal sphincter which may lead to reduction of blood flow and delayed healing. Most AF are minor and thought to heal spontaneously, but those that are still symptomatic after 4 to 6 weeks are often referred to as chronic AF [2]. This condition was first described by Lockhart–Mummery in 1934. Exact etiology of fissure in ano is not known [3].

Hypothyroidism is a condition where the circulatory levels of thyroid hormone are decreased (or) there will be a generalized resistance to circulatory level of TH [4]. Hypothyroidism is a common disorder; more prevalent among females with yearly 350/100,000 new cases are being diagnosed of hypothyroidism. Hypothyroidism is marked by slowing down of all the metabolic process [5].

Several studies [6-9] showed an association between fissure in ano and increased internal anal sphincter pressure, where in hypothyroidism might also be a cause for increased internal sphincter pressure due to the delayed relaxation effect. The effect of hypothyroidism on gastrointestinal system seems to be multifactorial with alterations of the hormone receptors, neuro-muscular disorders and myopathy by infiltrating the intestinal wall [10].

To the best of our knowledge, there are less retrospective and observational studies related towards identification of the prevalence of hypothyroidism among anal fissure cases among Indian population.

## Results

**Table 1: Distribution of gender among the study population**

Sr.No	Gender	Frequency	Percentage (%)
1	Male	15	28.8
2	Female	37	71.1
Total		52	100

In view of the above, a retrospective, observational, single-center study was carried out in Department of General Surgery, Sri venkateshwaraa Medical College Hospital and Research Centre, Puducherry between July 2021 to July 2022 on consecutive 52 patients who were diagnosed and admitted with fissure in ano.

## Method

This retrospective, observational, single-center study was carried out in Department of General Surgery, Sri venkateshwaraa Medical College Hospital and Research Centre, Puducherry between July 2021 to July 2022 on consecutive 52 patients who were diagnosed and admitted with fissure in ano between the study duration.

Inclusion criteria was composed of all the patients diagnosed and admitted with fissure in ano during the study period July 2021 to July 2021. Whereas, exclusion criteria were composed of 1) patient age less than 12 years, 2) any patients with history of Crohn's disease, Haemorrhoidectomy, Ulcerative colitis and Abdominal tuberculosis and 3) those patients who are on medications and conditions that affect T3, T4 and TSH values like Pregnancy, treated thyroid abnormalities, total thyroidectomy patients, sepsis, lithium, phenytoin, metaclopramide. Medical records of all the patients admitted with fissure in ano whom underwent Thyroid Function Test during admission were retrieved and data were collected. The collected data was entered in Microsoft Excel to maintain the quality of data. The data was tabulated and analyzed by using Statistical Package for the Social Sciences (version 24). The data was analyzed and percentages were calculated.

There was a slight predominance of female patients (71.1%) than male patients (28.8%) among the study population.

**Table 2: Distribution of age among the study population**

Sr.No	Age (years)	Frequency	Percentage (%)
<b>Male</b>			
1	<30	5	9.6
2	30-50	8	15.38
3	>50	2	3.8
<b>Female</b>			
4	<30	6	11.5
5	30-50	21	40.4
6	>50	10	19.2

From the above table 2, the majority of both gender patients were between the age of 30-50 years (55.78%), with 23% of patients were more than 50 years and only 21.1% of patients were less than 30 years.

**Table 3: Prevalence of Hypothyroidism in Fissure in ano cases**

Sr.No	Gender	Total cases n (%)	Hypothyroid state (%)
1	Male	28.8% (15)	0
2	Female	71.1% (37)	43.24% (16)

From the above table 3, it was observed that females suffered the maximum (43.24%) from hypothyroidism than the males.

**Table 4: Duration of Illness**

Sr.No	Gender	Acute n (%)	Chronic (%)
1	Male	7.7% (4)	21.1% (11)
2	Female	13.4% (7)	57.7% (30)

From the above table 4, it was observed that females suffered from the maximum duration of both acute and chronic illness (71.1%) from hypothyroidism than the males.

**Table 5: Duration of illness among hypothyroid patients**

Sr.No	Duration of illness among hypothyroid patients	Acute-n (%)	Chronic (%)
1	Number of patients	12.5% (2)	87.5% (14)

From the above table 5, it was observed that the maximum number among hypothyroid patients were suffering from chronic illness.

**Table 6: Fissure Position**

Sr.No	Duration	Anterior	Posterior	Anterior & Posterior
1	Acute	0	12.5% (2)	0
2	Chronic	12.5% (2)	56.25% (3)	18.75% (9)

From the above table 6, it was observed that around 12.5% patients suffering from acute illness had fissure position as posterior. Whereas, 56.25%, 18.75% and 12.5% patients suffering from chronic illness had fissure position as posterior, Anterior & Posterior and only anterior, respectively.

**Table 7: Hypothyroid State**

Sr.No	Hypothyroid State	Percentage (%)
1	Newly diagnosed	50
2	Not on adequate medication	18.75
3	On irregular medication	31.25

From the above table 7, it was observed that maximum number of cases (50%) were newly diagnosed cases of hypothyroidism. Whereas, few cases were attributed to 'irregular medication' (31.25%) and remaining cases were 'not on adequate medication' (18.75%).

### Discussion

To the best of our knowledge, there are less retrospective and observational studies related towards identification of the prevalence of hypothyroidism among anal fissure cases among Indian population.

According to study done by Unnikrishnan *et al.* in 8 cities in India, the overall prevalence of Hypothyroidism was 10.9%. A significantly higher proportion of females with 15.86% has compared to males with 5.02% were diagnosed. Anal Fissures were common in the age group between 20 to 40 years, with incidence of 67.5% in males and 82.9% of females attending the surgical outpatient department [11].

Fissure in ano can be classified as acute and chronic or primary and secondary [12-14]. Chronic fissure in ano is characterised by sentinel pile, hypertrophic anal papillae, anal spasm and / fibrosis of internal sphincter muscle [13,15]. Whereas, the acute cases have fresh mucosal edges.

Primary fissure in ano are essentially benign might be due to constipation, hard stools, repeated trauma due to diarrhoea, poor anal hygiene, vaginal delivery [16].

Secondary fissure may be due to chronic disease, tuberculosis, malignancy, infections like HIV or Syphilis or Herpes [17,14].

Constipation is the most frequent gastrointestinal complaints in case of hypothyroidism [18,19].

There is an increase in chance of elevated internal sphincter pressure and decreased vascular supply in case hypothyroid individuals, because of the delayed relaxation of the sphincter fibres and due to decreased vasorelaxation effect of thyroid

hormones over the vascular smooth muscles [20,21].

The common presentation of fissure in ano is sharp anal pain during defecation which is associated with the passage of bright red blood per rectum [16]. Anal fissures are most commonly treated by surgical lateral internal anal sphincterotomy [12,13,22].

Other modalities of treatment used to treat are high fibre diet, sitz bath, topical nitrates, Calcium channel blockers, Botulinum toxin injections, Anal dilatation, advancement flap and fissurectomy [22,23].

The most probable pathological reason for constipation in hypothyroid patient is the accumulation of mucopolysaccharides, especially hyaluronic acid in gastro intestinal tissue leading to intestinal edema. This reduction in the motor activity delays the intestinal transit time for faeces, which allows more water absorption and eventually causes constipation. The incidence of hypothyroidism in patients with an anal fissure is 32% [7]. We would like to make the following recommendations based on the findings of this study:

1. Evaluation of thyroid profile in cases of fissure in ano should be a routine workup.
2. Proper evaluation and pre-op work up of hypothyroidism should be done to avoid anesthetic complications.
3. Patients with high TSH value should be treated with proper medications for hypothyroidism

Limitations of this study are that this study is carried out over for a limited time over a limited number of patients with financial and infrastructural constraints. All the findings and facts that are quoted in the study may vary from a large study covering wider range of aspects and variables.

### Conclusion

This study is concluded that there is an increased prevalence of hypothyroidism in cases of anal fissure among females and

hypothyroidism might be a risk factor for fissure in ano. Hence all clinicians while treating the anal fissure among female patient especially age group of 30 to 50 years should be aware of hypothyroid state of the patient. Even though there is no history suggestive of hypothyroid symptoms we should evaluate the thyroid profile as a routine workup. before surgery we should achieve normal TSH value with Thyroxine supplementation, will help to prevent anaesthetic complications during surgery.

**Ethical approval:** The study was approved by the Institute Ethics Committee.

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