

## Original Research Article

# Assessment of thyroid profile in patients with fissure in ano in the South Indian population

Madhumitha Prabhakaran\*, Bharath Narayanasami, Arcot Rekha

Department of General Surgery, Saveetha Medical College and Hospital, Chennai, Tamil Nadu, India

**Received:** 06 August 2019

**Revised:** 17 September 2019

**Accepted:** 19 September 2019

### \*Correspondence:

Dr. Madhumitha Prabhakaran,

E-mail: [madhu.prabhakaran412@gmail.com](mailto:madhu.prabhakaran412@gmail.com)

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### ABSTRACT

**Background:** Hard faeces result in local trauma to the rectal mucosa which secondarily activates internal anal sphincter hypertonia. This will compress end arteries of the anus and cause ischemia of the posterior commissure and eventually anal fissures. A precipitating history of constipation is found in approximately 20% of patients with anal fissures. Constipation is one of the classic signs of hypothyroidism.

**Methods:** Patients who presented to the surgical OPD of Saveetha Medical College and Hospital, Thandalam, India during the months of March and April of 2019 with lower abdominal complaints were screened for fissure in ano. The thyroid profile of these patients was analysed.

**Results:** 38.2% of patients with lower gastrointestinal complaints and 3.6% of the total number of patients presenting to the surgical OPD were attributed to an anal fissure. The incidence of hypothyroidism in patients with an anal fissure is 32%. Since the incidence of hypothyroidism in our study is higher than the prevalence of hypothyroidism in the general population as documented by multiple studies in the past, we can conclude that there is a significant association between hypothyroidism and development of anal fissures.

**Conclusions:** By analysing the thyroid profile in patients with anal fissures, we found an association between the two entities. This information can be used to predict and prevent anal fissures in hypothyroid patients.

**Keywords:** Hypothyroidism, Fissure in ano, Anal fissure, Constipation, Thyroid profile, Lower gastrointestinal complaints

### INTRODUCTION

An anal fissure is defined as split in the mucosa extending from the anal verge to the dentate line. The fissures usually present with pain and rectal bleeding.

A precipitating history of constipation is found in approximately 20% of patients with fissure in ano. Hard feces result in local trauma to the rectal mucosa which in turn secondarily activates internal anal sphincter hypertonia. Subsequent sphincter spasm leads to further constipation and a vicious cycle is created. Treatment modalities such as anal dilatation and internal

sphincterotomy aim to break this cycle by disrupting the internal anal sphincter.<sup>1</sup>

The posterior midline of the anus is supplied by end arteries which pass through the internal anal sphincter before reaching the posterior commissure. The mean arteriolar blood pressure of the end arteries is 85 mmHg. As a result, it is thought that the blood flow to this area is potentially deficient.<sup>2</sup> Fissure in ano patients have Maximum resting anal pressure (MRAP) greater than 90 mmHg usually. This state of hypertonia will compress the end arteries, leading to ischemia of the posterior commissure and finally anal fissures.<sup>3</sup>

Some might say that hypertonia arises secondary to pain. But the inability to provide relief from the hypertonia by using painkillers disproves this theory.<sup>4</sup>

Constipation is one of the many classic signs of hypothyroidism. The pathophysiological changes observed in the digestive tracts of hypothyroid patients have not been definitely determined, but according to recent studies, a deficiency of thyroid hormone weakens the contractions of the muscles that line the digestive tract. The most probable pathological reason is the accumulation of mucopolysaccharides, especially hyaluronic acid in the gastrointestinal tissue leading to intestinal edema. This reduction in the motor activity delays the intestinal transit time of feces which allows more water absorption and eventually causes constipation.<sup>5</sup>

This evidence supports the hypothesis that an important etiological factor of anal fissures is hypothyroidism causing constipation.

**Objectives**

The objectives of the present study are to determine the incidence of patients with lower gastrointestinal symptoms attending the surgical outpatient department, to find the incidence of fissure in ano among patients with lower gastrointestinal symptoms attending the surgical outpatient department, to analyze the pattern of thyroid profile in patients with fissure in ano.

**METHODS**

This is a prospective, observational type of study conducted in Saveetha Medical College and Hospital. The data collection was initiated on March 2019 and continued throughout April 2019. Institutional ethics committee (IEC) clearance was obtained before beginning the study.

Patients attending the surgical outpatient department of Saveetha Medical College and Hospital, Thandalam, Chennai, India with lower abdominal complaints like lower gastrointestinal bleeding, painful defecation, constipation, or mass descending per rectum were screened. All patients with a clinical diagnosis of fissure in ano were identified. Of these patients, the ones who were admitted for surgical management for the fissure constituted our study population. Patients with a diagnosis of constipation, haemorrhoids, rectal or colonic malignancy, fistula, abscess, and those previously operated for a fissure were excluded from the study.

Informed consent for inclusion in the study was obtained. A thyroid assay was ordered for the entire fissure in ano patients who were admitted for surgical procedures. Patients with TSH values higher than the reference range (0.46-4.68 mIU/ml), or T3 values lower than the reference range (2.77-5.27 pg/ml), or T4 values lower than the

reference range (0.78-2.19 ng/dl) were labelled as hypothyroid.

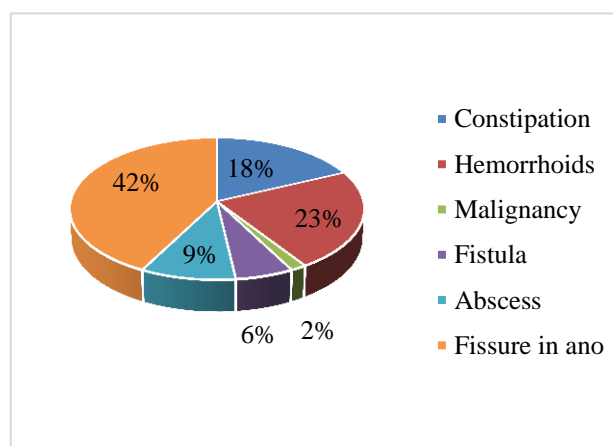
The association between hypothyroidism and fissure in ano was analysed and the available literature was reviewed. Statistics were analysed by using Microsoft Excel and creating tables, age distribution charts and pie graphs.

**RESULTS**

A total of 1835 male patients and 1497 female patients came to the Surgical OPD during the study period, of which 316 presented with lower gastrointestinal complaints. The incidence of lower gastrointestinal complaints in our surgical OPD was 9.4%. Of that, 38.2% of patients with lower gastrointestinal complaints and 3.6% of the total number of patients presenting to the surgical OPD were attributed to fissure in ano.

**Table 1: Diagnosis of male patients presenting with lower gastrointestinal complaints.**

Diagnosis	N (%)
Constipation	34 (17.99)
Hemorrhoids	43 (22.75)
Malignancy	3 (1.59)
Fistula	11 (5.82)
Abscess	18 (9.52)
Fissure in ano	80 (42.33)
<b>Total</b>	<b>189</b>



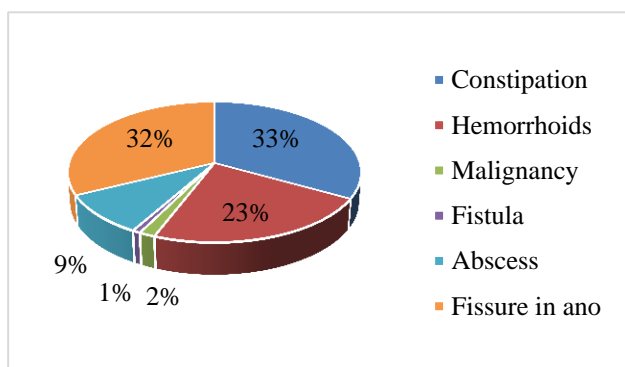
**Figure 1: Diagnosis of male patients presenting with lower gastrointestinal complaints.**

Of the 189 male patients with lower gastrointestinal complaints, 80 were diagnosed with fissure in ano. While 42.33% of the male patients had a fissure in ano, 17.99% had constipation, 22.75% had haemorrhoids, 1.59% had a lower gastrointestinal malignancy, 5.82% had a fistula, and finally 9.52% had an abscess (Table 1, Figure 1). Maximum clustering amongst the male patients with a fissure in ano was seen in the second decade of life (Table 2).

**Table 2: Age distribution of male patients diagnosed with fissure in ano.**

Age (in years)	N (%)
<20	2 (2.5)
20-29	30 (37.5)
30-39	24 (30)
40-59	22 (27.5)
>60	2 (2.5)
<b>Total</b>	<b>80</b>

Of the 127 female patients with lower gastrointestinal complaints, 41 were diagnosed with fissure in ano. While 32.28% of the female patients had a fissure in ano, 33.07% had constipation, 22.84% had haemorrhoids, 1.57% had a lower gastrointestinal malignancy, 0.79% had a fistula, and finally 9.45% had an abscess (Table 3, Figure 2). Maximum clustering amongst the female patients with a fissure in ano was seen in the second decade of life as well (Table 2).



**Figure 2: Diagnosis of female patients presenting with lower gastrointestinal complaints.**

**Table 3: Diagnosis of female patients presenting with lower gastrointestinal complaints.**

Diagnosis	N (%)
<b>Constipation</b>	42 (33.07)
<b>Hemorrhoids</b>	29 (22.84)
<b>Malignancy</b>	2 (1.57)
<b>Fistula</b>	1 (0.79)
<b>Abscess</b>	12 (9.45)
<b>Fissure in ano</b>	41 (32.28)
<b>Total</b>	<b>127</b>

Finally, a total of 50 patients with fissure in ano were admitted for surgical procedures and their thyroid assay was subsequently done. 16 patients had hypothyroidism characterized by increased free TSH values and low free T3 and free T4 according to the reference range [TSH: 0.46-4.68 mIU/ml, T3: 2.77-5.27 pg/ml, T4: 0.78- 2.19 ng/dl]. The incidence of hypothyroidism in patients with fissure in ano from our study is 32%.

**Table 4: Age distribution of female patients diagnosed with fissure in ano.**

Age (in years)	N (%)
<20	4 (9.75)
20-29	21 (51.22)
30-39	13 (31.71)
40-59	2 (4.88)
>60	1 (2.44)
<b>Total</b>	<b>41</b>

## DISCUSSION

Fissures were more common in the age group of 20 to 40 years with an incidence of 67.5% in males and 82.9% of females attending the surgical outpatient department with lower gastrointestinal complaints.

According to a study done by Unnikrishnan et al in eight cities in India, the overall prevalence of hypothyroidism was 10.95%. A significantly higher proportion of females with 15.86% as compared to males with 5.02% were diagnosed.<sup>6</sup>

In a population-based study done in Cochin on 971 adult subjects, the prevalence of hypothyroidism was 3.9%. The prevalence of subclinical hypothyroidism was high in this study as well with 9.4%. In women, the prevalence was higher (11.4%), when compared with men (6.2%).<sup>7</sup> Our study has an incidence of 32% which is higher.

The prevalence of hypothyroidism in India is 11%, 2% in the UK and 4.6% in the USA. Coastal cities like Mumbai, Goa, and Chennai, have a higher prevalence (11.7%) than cities located inland (9.5%).<sup>8</sup> The present study has a higher incidence of hypothyroidism.

In a study done by Velayutham et al, 11% of young females in the south Indian population had elevated TSH levels.<sup>9</sup> In the present study, the incidence is 32%.

This is a pilot study done to find an association between hypothyroidism and anal fissures. Since it is a small group study on 50 patients, more studies and meta-analysis are required in the future.

Lower gastrointestinal symptoms form a significant proportion of people attending the surgical outpatient department out of which one third are diagnosed with fissure in ano. The patients present with various types and degrees of symptoms and complications all of which are distressing. This positive association can be used to encourage screening of patients diagnosed with fissure in ano for thyroid derangements. Also patients diagnosed with hypothyroidism can be advised to manage their constipation to prevent anal fissures.

*Funding: No funding sources*

*Conflict of interest: None declared*

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

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**Cite this article as:** Prabhakaran M, Narayanasami B, Rekha A. Assessment of thyroid profile in patients with fissure in ano in the South Indian population. *Int Surg J* 2019;6:3694-7.