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Comparison of Anatomy and Type of Anal Fistula Tracks Between the Anal Endosonography and Operative Findings

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ABSTRACT

It has been shown that 30-50 percent of the anal glands branch out into the intersphincteric plane. Occlusion of the drainage duct results in stasis and infection. This is known as the Cryptoglandular Theory, which was introduced by Chiari and Herrmann and Desfosses. This infection can lead to an intersphincteric abscess. Twenty-two patients with complaints, clinical symptoms and signs suggestive of fistula-in-ano under all surgical units were included in the study. A baseline blood and urine investigations done in all patients. Relevant investigations were done in patients who had past history of medical illnesses as diabetes mellitus, hypertension, etc. These patients were thoroughly examined. The per rectal examination findings recorded in compliant patients and in whom there was no severe perianal pain. In conclusion this study has shown that anal endosonography is a useful and reliable tool in the preoperative evaluation of anal fistulae.

INTRODUCTION

Most perianal fistulas originate in the anal glands located in the subepithelial layer of the anal canal at the level of the dentate line. The duct of each gland has a direct opening into an anal (Morgagni's) crypt^[1]. Since the internal anal sphincter is a competent barrier against bacterial contamination, chronic infection of an anal gland can only lead to a perianal abscess or fistula when it extends into the intersphincteric plane. Causes and associations for perianal abscess (or fistula) formation include the following^[2].

- Foreign body intrusion.
- Trauma.
- Malignancy.
- Radiation.
- Immunocompromised state [e.g., leukemia, acquired immunodeficiency syndrome (AIDS)].
- Infectious dermatitides (e.g., suppurative hidradenitis).
- Tuberculosis.
- Actinomycosis.
- Crohn's disease.
- Anal fissure.

It has been shown that 30-50 percent of the anal glands branch out into the intersphincteric plane. Occlusion of the drainage duct results in stasis and infection. This is known as the Cryptoglandular Theory, which was introduced by Chiari (1878) and Herrmann and Desfosses (1880)^[3]. This infection can lead to an intersphincteric abscess. When the size of the abscess increases, it will invariably follow one of two avenues of extension. It can either follow the fibromuscular fibers running downward between the internal and external anal sphincter or through the external anal sphincter into the ischioanal space. Consequently, a perianal abscess, located at the anal verge has an intersphincteric origin while an abscess located further from the anus, usually has a transsphincteric origin^[3,4]. A perianal abscess, like all abscesses in other parts of the body, must be adequately drained. To minimize of the risk of a fulminant infection of perianal and perirectal tissues operative drainage must be performed as soon as possible. It is wise to make a generous elliptical incision, rather than a small incision with or without contra-incision. In about half of all cases, the abscess will recur either as a recurrent abscess or as a perianal fistula, even after adequate drainage^[5,6].

MATERIALS AND METHODS

Twenty-two patients with complaints, clinical symptoms and signs suggestive of fistula-in-ano under all surgical units were included in the study.

Inclusion Criteria:

- Both sexes were included.
- Patients presenting with symptoms and signs of fistula-in-ano.

Exclusion Criteria: The patients with fistula-in-ano due to Crohn's disease, tuberculosis, malignancy or any underlying chronic diseases leading to fistula formation were excluded from the study. A baseline blood and urine investigations done in all patients. Relevant investigations were done in patients who had past history of medical illnesses as diabetes mellitus, hypertension, etc. These patients were thoroughly examined. The per rectal examination findings recorded in compliant patients and in whom there was no severe perianal pain.

These patients were subjected for anal endosonography by a single sonographer, same sonography machine used in all patients. The sonography machine used was Phillips HDI 5000 Sono, CT and X-rays machine. The probes used were C 5-9 and L 12-5.

With endoanal ultrasonographic findings Into consideration the surgical approach was planned. Patients were subjected for a thorough Examination under Anaesthesia, details were recorded which were substantiated with the findings of clinical examination and simultaneous surgical procedure undertaken. Reliability of anal endosonography was defined after surgical treatment of all cases.

Histological examination was performed on all cases by excising a small portion of track. The histological examination of the tracks which showed diseases of exclusion criteria were not included in the study group patients.

RESULTS AND DISCUSSIONS

Table 1: Age Distribution

Age in years	Number	%
£20	1	4.55
21-30	3	13.64
31-40	2	9.01
41-50	10	45.45
51-60	3	13.64
>60	3	16.64
Range	18-80	-
Mean ±SD	45.27 ± 14.47	-

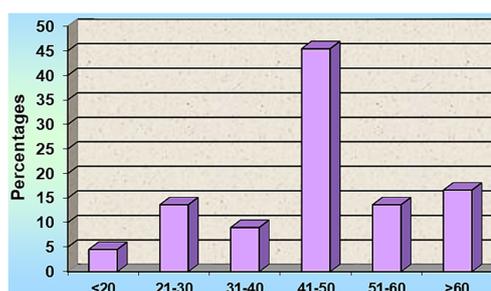


Fig 1: Age Distribution

Table 2: Comparison of Anatomy and Type of Anal Fistula tracks Between the Anal Endosonography and Operative Findings

Anatomy and type of Anal Fistula tracks	Anal Endosonography		Operative Findings	
	Number	%	Number	%
Anatomy				
Trans-Sphincteric Fistula (TSF)	18	81.8	18	81.8
Inter-Sphincteric Fistula (ISF)	3	13.6	3	13.6
Supra-Sphincteric Fistula (SSF)	-	-	-	-
Extra-Sphincteric Fistula (ESF)	1	4.5	1	4.5
Subcutaneous Fistula (SCF)	1	4.5	1	4.5
Type				
Simple	11	50.0	11	50.0
Complex	11	50.0	11	50.0

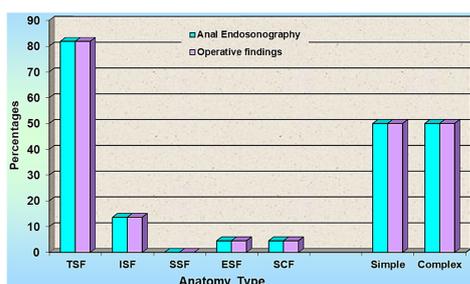


Fig 2: Anatomy and Type of Fistula Tracks

Numerous methods can be employed to identify the type of fistula, the course of the tract and the location of the internal opening, the basic principles and procedures of which include the application of Goodsall’s rule, careful physical examination, probing of the tract and a variety of injection and radiologic techniques^[3].

A naked eye examination of the perineum, digital rectal examination and proctoscopy are performed. Proctoscopy may show the internal opening, which is often revealed by the escape of pus. Probing of the fistula is not comfortable to the patient and it may be wiser to postpone this until the patient is under an anaesthetic in the operating theatre. Probing outlines the direction of the tract, help locate the course of the fistula and more importantly identify the internal opening. Inject hydrogen peroxide or dilute methylene blue into the external opening and watch for egress at the dentate line. Every effort must be made to find the internal opening, as risk of recurrence after surgery will be high if the internal opening has not been located^[7,8]. An intersphincteric fistula runs downward between the internal and external anal sphincter. The transsphincteric fistula runs from the intersphincteric space, through the external anal sphincter into the ischiorectal space.

Usually the external opening of an intersphincteric fistula is located near the anal verge, whereas the external opening of a transsphincteric fistula is almost always located several centimeters from the anal verge^[9]. In everyday practice, further distinction is made between transsphincteric fistulas that traverse the upper two-thirds of the external anal sphincter

(high transsphincteric fistulas) and transsphincteric fistulas that traverse the lower third of the external anal sphincter (Low transsphincteric fistulas). The suprasphincteric fistula runs upward between the internal and external anal sphincters, then bends around the puborectalis muscle and penetrates the pelvic floor, to traverse downwards through the ischiorectal space. An extrasphincteric fistula passes through the external anal sphincter and then branches out into two tracts., one extending cephalad, penetrating the pelvic floor (finally ending in the rectum) and one caudal (ending in the external opening). This classification is the relatively simple and relates the anatomical location of the fistulous tract to the anal sphincters, which is relevant for the choice of surgical treatment^[10].

CONCLUSION

In conclusion this study has shown that anal endosonography is a useful and reliable tool in the preoperative evaluation of anal fistulae. While magnetic resonance imaging (MRI) technique remains superior in all respects, anal endosonography is a reliable alternative, economical and conveniently available in our set-up.

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