



# Abscess of the Congenital Sinus of the Piriform Fossa: Case Report

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## Abstract

**Background:** The Sinus of Piriform Fossa Tracts (SPFT) an uncommon anomaly. The SPFT may manifest more commonly as cervical masses, recurrent lateral cervical infection or suppurative thyroiditis.

**Methods:** The present study aims to describe a case of a Sinus of Piriform Fossa Tracts (SPFT) in a 23-years-old woman with left cervical volume augmentation, with signs of active infection. (*inverter-paciente com 13 episódios de abscessos e que possuía seio*).

**Conclusion:** This study shows that the although uncommon anomaly, the SPFT is a severe condition and the patient should be treated clinically (*fase aguda-devido ao abscesso*) and the surgical procedure is considered fundamental to the definitive treatment of the SPFT.

## Introduction

The Sinus of Piriform Fossa Tracts (SPFT) an uncommon anomaly, initially described in 1972 by Sandborn & Shafer. Recurrent abscesses in pediatric patients are an uncommon manifestation having an underlying cause. The SPFT may manifest more commonly as cervical masses, recurrent lateral cervical infection or suppurative thyroiditis. They are almost always on the left side of the neck, which is believed to be a result of inadequate development of branchial derivations [1,2].

Infants and neonates may have respiratory distress, stridor, dysphagia and feeding difficulties due to tracheal compression from the abscess and the thyroid function is usually normal [3].

Treatment for piriform fossa sinus tracts ranges from simple incision and drainage procedure to complete surgical excision of the sinus tract [4].

In this study we report a case of a large SPFT associated with history of multiple abscess of the anterolateral cervical portion.

## Case Presentation

A 23-years-old woman referred to the Otorhinolaryngology, Head and Neck Surgery Service, Santa Casa, Belo Horizonte, MG, Brazil. At the physical examination the patient presented with left cervical volume augmentation, with signs of active infection. The patient referred depression and concerns with the thirteenth infection focus since childhood, associated with severe cervical and throat pain. Several cervical drainage procedures showing scars in the anterolateral region of the neck. The patient had a Cervical Ultrasonography (CUS), showing hypoechoic and heterogeneous tissue, with debris and echogenic points in its interior, with defined limits and regular contours, with increased vascularization around.

The patient was hospitalized for clinical follow up and onset of venous antibiotic therapy, imaging propaedeutic and presented spontaneous drainage of purulent contents in the anterior cervical region, after initiation of antibiotic therapy. The region of fistula was enlarged, divulsion was performed under local anesthesia and laminar drain was installed at the site. A fibronasopharyngolaryngoscopy examination was performed, where the presence of an orifice in the piriform fossa was evidenced on the left side.

At the Computed Tomography (CT) demonstrated the presence of a fistulous trajectory in

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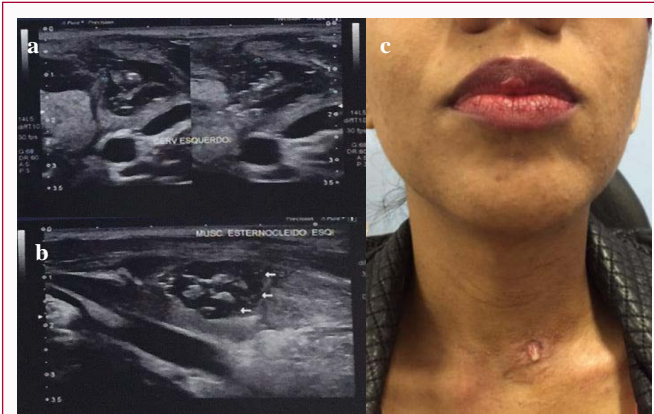
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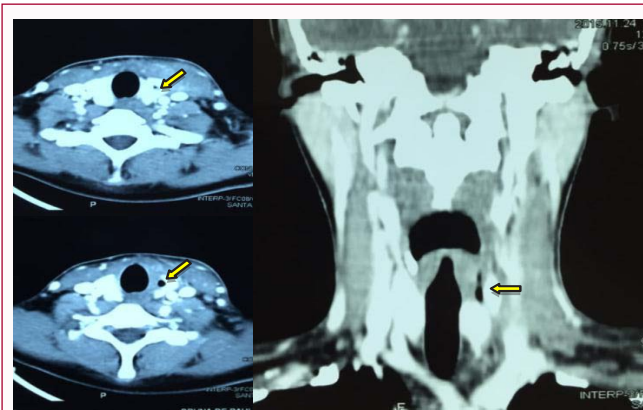
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**Figure 1:** (a,b) Cervical Ultrasonography (CUS) demonstrating a Hypoechoic and heterogeneous tissue, with debris in its interior, posterior to the sternocleidomastoid muscle. (c) Photograph showing the clinical presentation of the patient, a cervical mass associated with transcutaneous fistula and active suppuration.



**Figure 2:** (a,b,c) Computed tomography in axial and coronal sections showing a fistulous path passing internally to the left thyroid lobe.

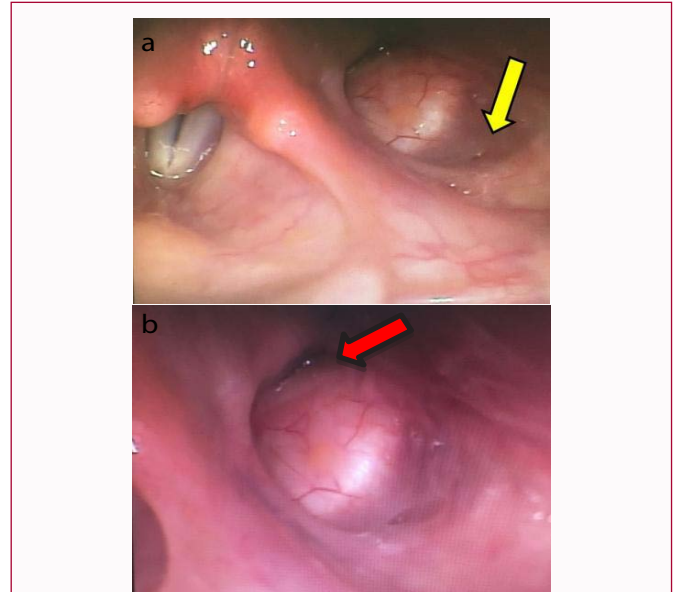
the left pyriform fossa, passing through the left lobe of the thyroid, following in a lower direction to the existing store inferior to the sternocleidomastoid muscle on the left, externalizing in anterior cervical skin.

After diagnosis of congenital sinus of the pyriform fossa, the patient continued in clinical treatment until complete remission of the infectious condition, in order to plan the cauterization of the tracheostomy in the left pyriform fossa.

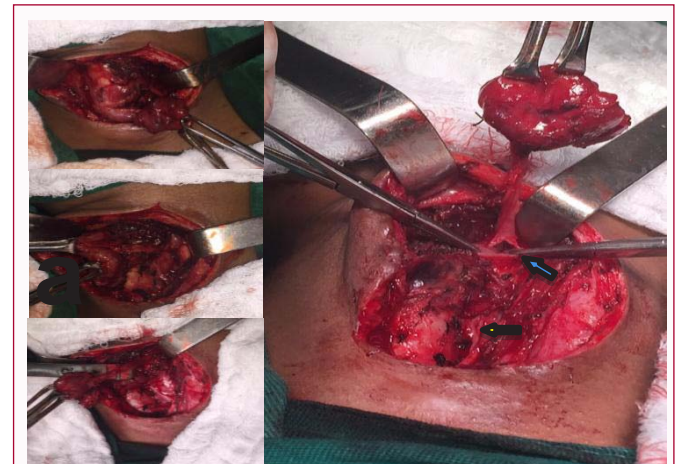
The initial proposal for the patient was direct laryngoscopy under general anesthesia and endoscopic cauterization, however, during the examination; a large dimension of the opening of the tract was seen in the pyriform sinus, opting for open surgery and surgical excision associated with left. The procedure was performed without interurrences, and the patient was followed up, without new episodes of infection (Table 1).

**Discussion**

Pereira KD and Davies JN [1] described a series of eight cases in pediatric patients, 06 male and 02 female, with mean age of 4-years, attended between 1999 and 2005, where three different clinical presentation were identified: 04 with intrathyroid abscess; 02 with recurrent deep cervical infections requiring repetitive drainage; 02 with symptoms not related to the treatment. Barium contrast



**Figure 3:** (a,b) Images of pharyngolaryngeal videoendoscopy and direct pre-laryngoscopy. Initially believed to be the image a (yellow arrow); after direct laryngoscopy under general anesthesia, with the purpose of endoscopic cauterization, a large aperture was found in the pyriform sinus, in the topography of the b-image (red arrow).



**Figure 4:** (a,b,c) Photograph of the surgical procedure showing sequence of left lobectomy associated with dissection of the fistulous path. (d) Image of the fistulous tract reaching the pyriform sinus (blue arrow). Identification of preserved recurrent laryngeal nerve (yellow arrow).

and hypopharyngoscopy were used in all patients, and the first method allowed diagnosis in five cases and the second method in all the cases. The treatment modalities used were surgical excision (5 cases), cauterization of the opening orifice with silver nitrate (01 case), 02 patient undergoing continuous follow up. It was reported that endoscopic cauterization is recommended as initial therapy for symptomatic patients with complete excision reserved for recurrent cases [1].

Any previous cervical abscess of the lower half of the neck without apparent cause is a congenital sinus of the pyriform fossa until proven otherwise. This term refers to the presence of an abnormal epithelial tract, which originates from the pyriform fossa. There are interpretations of which would be defects of the third and fourth branchial arches, as well as the persistence of the Thymopharyngeal nerve duct, being anomalies of the pharyngeal pouch.

Table 1: Procedure.

Authors	No. Of Cases	Age	Gender	Clinical Presentation	Active Infection Site	Number of Infections before treatment	Treatment
Pereira et al. [1]	1 of 8	4	Male	Neck Mass	No	3	Excision
	2 of 8	7	Female	Thyroid abscess	No	5	Excision
	3 of 8	<1	Male	Thyroid abscess	No	3	Excision
	4 of 8	<1	Male	Neck Swelling	Yes	3	Excision
	5 of 8	16	Male	Thyroid abscess	Yes	1	Excision
	6 of 8	2	Male	Thyroid abscess	No	1	Cauterization of tract
	7 of 8	13	Female	Asymptomatic	No	No	Observation
	8 of 8	4	Male	Asymptomatic	No	No	Observation
Palacios et al. [6]	1 of 12	7	Female	Acute Thyroiditis	No	No	Endoscopic Cauterization
	2 of 12	<1	Female	Neck Tumor	No	No	Endoscopic Cauterization
	3 of 12	5	Male	Acute Thyroiditis	No	No	Endoscopic Cauterization
	4 of 12	2	Female	Acute Thyroiditis	No	No	Endoscopic Cauterization
	5 of 12	6	Male	Acute Thyroiditis	No	No	Endoscopic Cauterization
	6 of 12	10	Male	Neck Tumor Abscesses	Yes	3	Endoscopic Cauterization
	7 of 12	5	Male	Neck Tumor	No	No	Endoscopic Cauterization
	8 of 12	4	Male	Acute Thyroiditis	No	No	Endoscopic Cauterization
	9 of 12	10	Male	Neck Tumor Abscesses	No	1	Endoscopic Cauterization
	10 of 12	9	Male	Neck Tumor Abscesses	No	1	Endoscopic Cauterization
	11 of 12	6	Male	Neck Tumor Abscesses	No	3	Endoscopic Cauterization
	12 of 12	14	Male	Neck Tumor	No	No	Endoscopic Cauterization
Costa et al., 2019 (Present study)	1	23	Female	Cervical Abscess	Yes	13	
Total: 19 cases		63% Newborn	57% NA				
		Mean: 12 years,	21% Male				
		other cases	21% Female				

Legends: NA: Not Available

The abnormal gill structures are classified as fistulas, cysts and breasts. The fistulas communicate the aerodigestive tract and the skin; cysts are closed structures that do not communicate with epithelial surfaces, the breasts communicate only with one of them, the skin or aerodigestive tract. For unknown reasons, the left side is affected in 90% of cases [5].

The differential diagnoses in pediatric patients are infected cyst of the thyroglossal duct, lymphadenitis, foreign body sepsis, and cellulitis. CT scan may show details as single or multiple lesions (complex, cystic or abscessed formations and even gas bubbles), and barium intake, followed by Valsalva maneuver may improve sensitivity to examination. The Valsalva maneuver may also improve sensitivity to the CUS because it may allow air to enter the anatomical defect.

Flexible endoscopy may allow visualization of secretion through the fossa in more severe cases; however, even normal examination after the acute phase does not eliminate the diagnosis of congenital sinus of the pyriform fossa. The best way to confirm this anomaly is proper exposure of the hypopharynx at the surgical center [5].

The flexible endoscopy allows the direct visualization of the drainage through the fossa in severe cases, after the acute phase, even with the normal physical examination the diagnostic should not be eliminated. The best form to confirm the SPFT is exposing the hypopharynx by surgical procedure.

Open resection has a described success rate of about 85%, but a reported complication rate of 6% the most common complication is vocal cord paralysis. Other complications are salivary fistula and infection. These problems are more frequent in young children. When acute suppurative thyroiditis is present, a partial thyroidectomy is recommended by many authors, but the failure rate has been described similar with or without thyroid lobectomy [6].

The electrocauterization, four weeks after the regression of the acute inflammatory process and the treatment with antibiotics is considered gold standard for the treatment of SPFTs [2,5].

In the acute setting, the choice of antibiotic should reflect typical oral flora as well as *Staphylococcus aureus*. Considering long term management, observation may be considered especially for asymptomatic SPFTs; however, 89% to 94% of patients will continue

to have recurrent infections [7].

The SPFT are an uncommon anomaly and the presentation of repeated anterior neck abscesses or cervical masses and suppurative thyroiditis should prompt the physician to consider this entity and began the laboratorial and image examinations. The CT scan of the cervical zone, CUS and the Barium swallowing maneuver should be recognized as useful exams to help the diagnose, but the best way to confirm this anomaly is *via.*, surgical exposure and direct vision. The patient should be treated clinically and the surgical procedure is considered fundamental to the definitive treatment of the SPFT. The electrocauterization is considered gold standard and the patient should maintain postoperative observation and a rigid follow up to observe if there are new recurrent infections. (*finalizar o artigo com an eficacia da cirurgia quando nao é possible an electrocauterizacao*).

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