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#### REFERÊNCIA

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## Clinical and manometric evaluation of women with chronic anal fissure before and after internal subcutaneous lateral sphincterotomy

Silvana Marques e Silva<sup>1</sup>, Viviane Fernandes Rosa<sup>2</sup>, Romulo Medeiros de Almeida<sup>3</sup>, Marcelo de Melo Andrade Coura<sup>4</sup>, Paulo Gonçalves de Oliveira<sup>5</sup>, João Batista de Sousa<sup>5</sup>

<sup>1</sup>Attending Postgraduate Program (PhD) in Medical Sciences, School of Medicine, Universidade de Brasília – Brasília (DF), Brazil. <sup>2</sup>Resident Physician, University Hospital, Universidade de Brasília – Brasília (DF), Brazil <sup>3</sup>MD, Assistant Professor, Surgical Clinics, University of Brasília School of Medicine – Brasília (DF), Brazil. <sup>4</sup>Staff surgeon – Federal District Health Department – Brasília (DF), Brazil. <sup>5</sup>PhD, Associate Professor, Surgical Clinics, School of Medicine, Universidade de Brasília – Brasília (DF) Brazil.

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**ABSTRACT: Objective:** To evaluate clinical and manometric parameters of chronic anal fissure females undergoing lateral internal sphincterotomy (LIS). **Methods:** A total of eight women with chronic anal fissure who underwent LIS were included in this study. The preoperative assessment was performed one week before surgery and included general and anorectal examination, anorectal manometry, and Jorge Wexner questionnaire. The post operative follow up was made every 15 days until complete healing. Jorge Wexner questionnaires and anorectal manometry were repeated at 1 month and 3 months after the surgery. Time to healing, manometric changes and complications were assessed. **Results:** All patients had preoperative increased anal resting pressure. The resting pressures and anal canal length were significantly decreased 3 months after surgery. Patients' complaints of itching and bleeding were also reduced. Fissures healed in 7 patients and median healing time was 45 days. No complications were observed due to the procedure. One patient had transient incontinence to flatus. **Conclusion:** Lateral internal sphincterotomy provided clinical improvement and reduced resting pressure of the internal anal sphincter in women with chronic anal fissure.

**Keywords:** anal fissure; anal canal; manometry; wound healing.

**RESUMO: Objetivo:** Avaliar a evolução clínica e manométrica de mulheres com fissura anal crônica submetidas à esfínterectomia lateral interna subcutânea. **Métodos:** Estudo prospectivo com oito pacientes. A avaliação inicial foi realizada por meio de questionários, exame físico e manometria anorretal na semana anterior ao procedimento cirúrgico. Durante o período pós-operatório, as pacientes foram avaliadas clinicamente a cada 15 dias, até a cicatrização completa. Os questionários e a manometria anorretal foram repetidos 1 mês e 3 meses após a operação. Foi avaliado o tempo para cicatrização da fissura, as alterações manométricas e as complicações decorrentes do procedimento. **Resultados:** Todas as pacientes apresentavam hipertonia esfínteriana interna no período pré-operatório. Após 3 meses da operação, as pressões de repouso e o comprimento do canal anal funcional diminuíram de modo estatisticamente significante. Houve redução das queixas de prurido e sangramento. A cicatrização completa da fissura ocorreu em sete pacientes. A mediana do tempo de cicatrização foi de 45 dias. Não houve complicações decorrentes do procedimento. Uma paciente apresentou incontinência transitória para flatos. **Conclusões:** A esfínterectomia lateral interna subcutânea proporcionou melhora clínica e diminuição das pressões de repouso dos esfínteres anais em mulheres com fissura anal crônica.

**Palavras-chave:** fissura anal; esfínter anal; manometria; cicatrização.

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## INTRODUCTION

Anal fissure was recognized as a disease in 1934<sup>1</sup>. It is one of the most frequent causes of anal pain and bleeding, affecting around 10% of the patients coming to an outpatient colorectal clinic<sup>2</sup>.

It can be defined as a vertical wound extending from the anal verge to the dentate line<sup>3</sup> often becoming chronic and causing significant pain. Its prevalence is similar in both genders and more commonly affects younger patients, although it can affect old patients as well<sup>4</sup>.

The majority of the anal fissure patients will report hard bowel movements and consequent local trauma, and, although there is no consensus regarding the anal fissure etiology, according to the most believed theory, this local trauma would result in internal sphincter spasm and consequent increased anal resting pressure which in turn would cause a posterior anal skin ischemia resulting in an unhealed wound<sup>5,6,7</sup>.

Currently, lateral internal sphincterotomy (LIS) is the “gold standard” for the surgical treatment of anal fissure patients<sup>8</sup>. Described in 1835, this procedure results in a 95% healing rate with up to 10% patients developing some degree of anal incontinence<sup>9</sup>.

The aim of this study was to evaluate clinical and manometric changes in females with chronic anal fissure undergoing LIS.

## METHODS

This was a prospective single center study including female patients with chronic anal fissure undergoing LIS.

The following exclusion criteria were considered: presence of acute anal fissure, clinical evidence of sepsis, inflammatory bowel disease or malignant neoplasm, history of prior anorectal surgery, use of immunosuppressant agents or inability to answer questionnaires.

The chronic anal fissure was characterized by the presence of fibrosis at the fissure base, exposing the internal anal sphincter fibers, associated or not with hypertrophied anal papilla and/or a sentinel skin tag.

The preoperative evaluation was made through general and anorectal physical examination and the Jorge Wexner questionnaire. All patients were submitted to anorectal manometry one week before surgery

with an eight-channel water perfusion system manometry device. More specifically the catheter was initially placed 6 cm from the anal verge and subsequent evaluations were made considering 1 cm intervals. High anal resting pressure was defined as an anal resting pressure greater than 70 mmHg.

The surgical procedure was performed by the same surgical team. The patient was positioned in the left lateral decubitus position and a proper antisepsis was performed with povidone-iodine. Local anesthesia was made using lidocaine 2% with vasoconstrictor and a 1.5 cm medium lateral incision was made around 1 cm from the anal verge. The internal anal sphincter was then isolated and sectioned using a bovie cautery up to the dentate line. The incision was finally loosely closed with 2-0 catgut chromic stitches.

Postoperatively, patients were clinically evaluated each 15 days until complete anal fissure healing. The Jorge Wexner questionnaire and anorectal manometric evaluation were repeated one and three months after the surgery. Time to complete healing, early and late complications, manometric changes resulting from the procedure and patient's satisfaction degree were assessed.

The statistical analysis was made with Statistical Package for the Social Sciences (SPSS) 17.0. The Mann-Whitney's test was used to evaluate the postoperative changes in manometric parameters. The Fisher's exact test was used to compare the pre and postoperative symptoms. A *p* value less than 0.05 was considered statistically significant.

This study was approved by the University of Brasília School of Medicine Research and Ethics Committee. All patients signed an informed consent form before they were enrolled in this study.

## RESULTS

A total of 8 patients with a median age of 46 (range 21–49) years were included in this study. Median of symptom time was approximately 60 weeks. The preoperative characteristics of patients are summarized in Table 1.

A statistically significant reduction in the number of patients complaining of anal itching and bleeding at defecation was observed 3 months after the surgery (Table 2).

**Table 1.** Preoperative characteristics of patients submitted to internal subcutaneous lateral sphincterotomy.

Characteristic		Number of patients	%
Fissure location	Anterior	2	25.0
	Posterior	6	75.0
Sentinel skin tag	Present	7	87.5
	Absent	1	12.5
Prior clinical treatment	Yes	7	87.5
	No	1	12.5

**Table 2.** Symptoms and signs of patients submitted to internal subcutaneous lateral sphincterotomy: preoperative evaluation and 3 months after the surgery.

Symptom/signs	Preoperative period (number of patients)	3 months after the surgery (number of patients)	p-value
Hard bowel movements	4	1	0.11
Pain at evacuation	8	5	0.20
Bleeding	7	3	0.05
Itch	7	3	0.05
Tenesmus	5	1	0.13
Skin tag	6	3	0.15

**Table 3.** Values of functional anal canal length and resting pressure and contraction pressure at the preoperative manometric evaluation and 1 month after the surgery.

Parameter	Preoperative period	1 month after the surgery	p-value
Resting pressure (mmHg)	115.28	111.52	0.50
Contraction pressure (mmHg)	195.31	178.71	0.50
Functional anal canal (cm)	3.25	2.50	0.08

**Table 4.** Values of functional anal canal length and resting pressure and contraction pressure at the preoperative manometric evaluation and 3 months after the surgery.

Parameter	Preoperative period	3 months after the surgery	p-value
Resting pressure (mmHg)	115.28	75.15	0.007
Contraction pressure (mmHg)	195.31	176.9	0.279
Functional anal canal (cm)	3.25	1.88	0.003

**Table 5.** Self-perception of health condition before and after internal subcutaneous lateral sphincterotomy.

Health condition	Preoperative period (number of patients)	1 month after the surgery (number of patients)	3 months after the surgery (number of patients)
Good or excellent	4	8	8
Tolerable or bad	4	0	0

$p=0.04$ .

**Table 6.** Postoperative patients satisfaction regarding lateral internal sphincterotomy.

Degree of satisfaction	1 month after the surgery (number of patients)	3 months after the surgery (number of patients)	p-value
Very satisfied	5	8	0.50
Satisfied	2	0	0.50
Not satisfied	1	0	0.08

Preoperatively all patients had high anal resting pressure. A reduction of these values was observed in seven patients at the final evaluation, becoming normal or close to the normal reference. In one patient the 3 months postoperative resting anal was higher than the preoperative values. However, this patient achieved complete anal fissure healing.

Maximum voluntary contraction pressures (MVCP) had variable alterations. Three patients had 3 months postoperative MVCP values higher than the preoperative values. All the remaining patients had a reduction in MVCP values. All of them kept final values above 100 mmHg, i.e., within the range of normal parameters.

The preoperative and 1 month postoperative resting anal pressure, contraction pressure and length of functional anal canal were statistically similar (Table 3). However, the three months postoperative resting anal pressure and length of functional anal canal were significantly lower than the preoperative values (Table 4).

Seven patients had complete anal fissure healing with a median time of 45 (range 15–90) days. One patient did not progress with complete wound healing, however, she had a reduction in resting anal pressure, from 99 to 59 mmHg, and significant improvement of her symptoms.

The only patient that had incontinence to flatus right after surgery fully recovered her anal continence at the final evaluation. The median Jorge and Wexner score was zero in the preoperative period and 1 and 3 months after the surgery.

No early or late complication was observed resulting from the procedure. Each patient's perception of her own health condition had a statistically significant improvement at the end of the treatment (Table 5).

All patients reported satisfaction with the treatment 3 months after the surgery (Table 6) and they said they would be willing to undergo the procedure again if necessary.

## DISCUSSION

LIS performed with local anesthesia in an outpatient setting is a safe and effective method for chronic anal fissure treatment<sup>11</sup>.

In this study, the patients were young and most of them had a fissure in the posterior midline, what is in agreement with the literature. In a recent study involving chronic anal fissure patients, only 25% of women and 8% of men had anterior fissures, while in 3% of the cases the two positions coexisted<sup>12</sup>. It is important to note that the presence of unusual locations or multiple lesions may indicate the diagnosis of other diseases, such as HIV, inflammatory bowel disease and other infectious causes<sup>5</sup>.

Only one patient did not had intestinal constipation at the preoperative evaluation. Constipation used to be considered an essential factor in anal fissure etiology. More specifically the anal trauma following a bowel movement would cause pain which in turn would increase anal resting pressure provoking more constipation and establishing a vicious circle. However, some studies have shown that a high resting anal pressure may not be caused by pain, as it does not respond to topical anesthetics<sup>13</sup>. In addition, 25% of the patients with chronic anal fissure do not present history of intestinal constipation<sup>12,14</sup>.

According to the most accepted theory regarding anal fissure etiology relies on a relative ischemia of the posterior anal midline. At a glance, the average blood pressure of the terminal arteries that cross the internal sphincter is 85 mmHg. This pressure would not be great enough to overcome the high resting anal pressure (90 mmHg) observed in anal fissure patients. As a result, the blood flow to fistula area would be decreased, preventing its healing<sup>15</sup>.

Schouten et al.<sup>16</sup> defined an inverted correlation between irrigation of the posterior midline and maximum resting anal pressure in both health and anal

fissure patients. In the evaluation of these authors, healthy individuals had lower perfusion at the posterior midline when compared to other studied quadrants. Patients with anal fissure had greater resting anal pressures and lower perfusions. In our study, all patients had high resting anal pressure at the preoperative manometric evaluation.

Currently LIS is the most commonly used surgical technique for chronic anal fissure treatment as it is associated with high healing rate and significantly improvement in patient quality of life<sup>17-19</sup>. It provides permanent reduction of resting pressure of the anal canal in more than 95% of the patients<sup>20,21</sup> and the healing rate is also over 95%<sup>21,22</sup>.

In our study, seven out of eight patients achieved complete fissure healing with a median time of 45 days. Almost all patients had, at the final evaluation, decreased resting and squeezing anal pressure. Moreover, self-perception of their health condition improved in the postoperative period, and all patients said they were satisfied or very satisfied with the treatment in the last evaluation.

Other authors evaluated 487 patients, with an average of 72 months follow-up after sphincterotomy. The overall healing rate was 96% and the median healing time was 3 weeks. Although some degree of incontinence during the follow-up occurred in 45% of the patients; most of them were of mild intensity and transient duration. Finally, 95% of the patients were happy with the surgical outcomes<sup>23</sup>.

Alper et al.<sup>24</sup> evaluated patients submitted to sphincterotomy, hemorrhoidectomy and compared

them to patients with regular manometric evaluations. As expected, anal fissure patients had a greater baseline values of resting anal pressure than the others. Anal fissure patients also had a reduction in resting anal pressure 1 month after sphincterotomy. Moreover, 12 months after surgery, the resting anal pressure values remained significantly lower than the preoperative values.

Ram et al.<sup>25</sup> evaluated 50 patients submitted to sphincterotomy. Mean baseline pressure was 138±28 mmHg. A statistically significant reduction was observed in these values 1 month after the surgery, with subsequent gradual increase up to 12 months after the surgery, but yet still lower than the preoperative values.

In our study, no patient presented complications related to the surgical procedure. But complications have already been described after sphincterotomy, such as bleeding, abscess formation and hematomas<sup>26</sup>. Only one patient had transient incontinence to flatus, recovering complete continence 8 weeks after the procedure. Fecal incontinence has been described in up to 16% of the patients submitted to LIS<sup>9,27</sup>, being more common in the first 5 weeks with the recovery rate varying in the literature<sup>23</sup>. However, its incidence may alter according to the surgical technique, length of sphincterotomy and follow-up period<sup>20,28</sup>.

## CONCLUSION

In this study, LIS provided improved clinical status and reduced resting anal pressure values in women with chronic anal fissure.

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**Correspondence to:**

Silvana Marques e Silva  
SQS 405 bloco B, apto. 205  
CEP: 70239-020 – Brasília (DF), Brazil  
E-mail: silvismarques@yahoo.com.br