# Long term outcomes of fissurectomy and anoplasty for chronic anterior anal fissure without hypertonia: low recurrences and continence conservation.

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**Long term outcomes of fissurectomy and anoplasty for chronic anterior anal fissure without hypertonia: low recurrences and continence conservation.**

INTRODUCTION: *Etiopathogenesis of Chronic Anal Anterior Fissure (CAAF) remains poorly understood. Some anatomical, clinical and functional features suggest that pathophysiology may be linked to a reduced anal canal pressure. LIS appear illogical as a treatment for CAAF and the employ of techniques aiming to save the integrity of the sphincterial system appears more sensible. The aim of this study was to evaluate 5 years results of fissurectomy and anoplasty with cutaneous V-Y advancement flap in patients affected by CAAF without IAS hypertonia.*
METHODS: *We enrolled 20 women, affected by idiopathic and non-recurrent CAAF without hypertonic IAS. All patients were followed up for 5 years after surgery with evaluation of anal continence, short and long term post-operative complications, recurrence rate.*
RESULTS: *At 5 years follow up we did not record any new case of anal incontinence and the pre-existing ones haven't worsened. We observed 2 recurrences, which occurred within 2 years after surgery and healed after medical therapy. The manometric values were similar than those recorded prior to surgery.*
CONCLUSION: *Our study suggests that the procedure performed allows us to preserve anal continence and avoid worsening of its pre-existing alteration.*

KEY WORDS: Anal canal, Anoplasty, Fissure, Fissurectomy, Proctology, Sphincterotomy

## Introduction

Chronic anal fissure (CAF) is defined as a lesion which persist for 6 weeks even after medical treatment. CAF are characterized from a morphologically point of view by the presence of visible transverse internal anal sphincter fibers at the base of the fissure; associated characteristics of a chronic fissure are indurated edges, sentinel pile and hypertrophied anal papilla [1,2].
The most common location for a CAF is the posterior commissure of the anal canal, followed by the anterior commissure localization (CAAF). The abovementioned sites present different features; while in the fissure located in the posterior commissure an internal anal sphincter (IAS) hypertonia is observed in the 69% of the cases [3] in the CAAF the maximum resting pressure (MRP) is similar to that observed in the healthy controls in the 69% of cases [4]. These latter are most frequently observed

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in female patients, especially in those who had lesions of the internal anal sphincter due to natural births. [5]
The characteristics set out above have made surgeons think that the different location of an anal fissure might have different underlying pathophysiology, which might be linked to a reduced anal canal pressure [2,5]. First line therapy for CAF is medical treatment and, CAF refractory to medical treatment was defined as those that did not heal after topical medical therapy and high fiber dietary supplementation.
Concerning the outcomes of the surgical treatment, no distinction has been made between anterior and posterior commissure, until now [6-8]. Undoubtedly, we believe that a surgical sphincterotomy for CAAF, with normotonic or even hypotonic IAS, should be considered as illogical or even as a treat to continence integrity [9,10]. Under the light of the above, in the latter cases is mandatory to perform a surgical procedure, which aims to preserve the structural and functional integrity of the IAS such as fissurectomy. This procedure was performed alone [11,12] or in association with anoplasty, consisting in using an advancement cutaneous or mucosal flap [13], or with pharmacological sphincterotomy for hypertonic IAS [14,15].
The aim of this study was to evaluate long term results, after at least 5 years from the surgical procedure, of fissurectomy and anoplasty with cutaneous V-Y advancement flap in patients affected by CAAF without IAS hypertonia.

## Materials and Methods

For this work we took a sample of 20 female patients affected by idiopathic and non-recurrent CAAF without hypertonic IAS, who underwent fissurectomy and anoplasty with V-Y cutaneous advancement flap, from January 2008 to January 2015, out of a database of 350 patients underwent to surgical procedures for CAF in our proctology division. None of the patients was affected by inflammatory bowel disease or underwent to previous proctology surgical procedure.
All patients were followed up for at least 5 years after the surgical procedure. Informed written consent was obtained from all individuals participants included in this study. All patient outcome data were retrieved by a prospectively maintained database. Preoperative manometric evaluation was performed after a reasonable period of suspension of all medical therapy influencing IAS tone. The manometric evaluation was carried out by a manometric sensor (2.1 mm external diameter) with four circle orifices and a latex microbaloon at its extremity (Marquat C87; Boissy, St-Leger, France). The machine was conn-ected to a polygraph (Narco; Byosystem MMS 200, Houston TX) using the station pull-through method with perfusion of normal saline and the patient lying in the right lateral position. At manometric evaluation, Maximum Resting Pressure (MRP) and maximum squeeze pressure (MSP) were defined as the maximum pressure detected respectively, on resting and after voluntary contraction. Ultraslow wave activity (USWA) was defined as pressure's waves with frequency of less than 2/min and an amplitude greater than 25 cm $H_2O$. Data collected on healthy subjects by our a norectal pathophysiological laboratory showed [16,17] that normal values of MRP and MSP were respectively 68,1±12,3 mmHg and 112 ± 36,l2 mmHg. The normal range of MRP, according to Jones et al. [9], were 45-85 mmHg; so that CAAF without hypertonic IAS were defined as those with MRP values < 85mmHg. USWA was detected only in the 10% healthy subjects.
All patients underwent fissurectomy and anoplasty with V-Y skin flap advancement lying in a gynecological position under spinal or general anesthesia.
The sentinel skin tags and hypertrophied anal papilla located at the dentate line were excised, if present; the tissue at the base of the AF was curetted until clean IAS muscle fibers were reached. Technical details concerning the surgical procedure have already been widely explained in a previous work from our group [18].
In all patients we performed an anorectal manometric evaluation after 12 and 60 months from the surgical procedure and long-term complications such as incontinence, keyhole defect, recurrence or anal stenosis were recorded. Anal incontinence was assessed using the Pescatori grading system [19]: A, incontinence for flatus and mucus; B, liquid stool; C, solid stool; 1 for occasional; 2 for weekly and 3, for daily.

### Statistical Analysis

Data were analyzed by standard statistical methods and the results were expressed as means ± standard deviation. Differences between continuous data were compared using Student t test for paired and unpaired samples, whereas differences between percentages were analyzed using Fisher test. Probability values of <0,05 were considered significant.

## Results

At the time of the surgical procedure the median age of the patients was 38 years (range 18-65). Bowel function was normal in 6 patients, 11 patients suffered from constipation and 3 of diarrhea; bowel function was assessed according to the up-dated Rome IV diagnostic criteria.
Seven women were nulliparous, 7 patients gave natural birth and all of them underwent an episiotomy and 6 patients gave birth throughout a caesarian section. The clinical features of the CAAF are reported in Table I.
We observed a complete wound healing and regression of clinical symptoms in all patients within 40 days after surgery.

### Manometric Findings

Pre-operative MRP values have been found to be 59,3±15,1 mmHg, whereas MSP ones resulted to be 107±26 mmHg; and USWA rate, of the patients under investigation, was 3 of 20 (15%).
We did not record statistically significant differences in the pre-operative and at 12 and 60 months' follow up values of MRP, MSP and USWA with regards to the healthy patients. (Table II)

### Recurrences

At 24 months follow up after the surgical procedure we observed 2 recurrences (10%), they occurred at the posterior anal commissure and they were associated to a normal value of the IAS tone. Both patients underwent conservative pharmacological treatment with complete healing.

### Anal Incontinence

We recorded 4 cases of anal incontinence prior to the surgical procedure in the group of patients subject to study; according to the Pescatori grading system [19] we classified 3 of them as A2 and just one of them as A3. We recorded 1 case of grade A1 anal incontinence after 12 months from the procedure; after 60 months we observed anal incontinence just in those patients who preoperatively suffered from it without any worsening. (Table III)

Table I - *Characteristics of Anal fissure*

| | No. | % |
|---|---|---|
| Hypertrophied anal papilla | 16 | 80 |
| Skin tags | 15 | 75 |
| Symptoms | | |
| Pain | 20 | 100 |
| Bleeding | 16 | 80 |
| Pruritus | 12 | 60 |
| Duration of SymptomsMonths (mean ± standard deviation) | 15,3±9,1 | |

Table II - *MRP and MSP values as mean ± standard deviation in healthy subjects and in 20 patients with CAAF before and after the surgical procedure.*

| | MRP mmHg | MSP mmHg | USWA % |
|---|---|---|---|
| Preoperative values | 59,3 ±15,1 | 107 ±26,4 | 20 |
| 12 months after surgery | 63,5 ±18,6 | 110 ±22,3 | 15 |
| 60 months after surgery | 61,3 ±12,1 | 103 ±17,1 | 15 |

No statistically significant differences vs preoperatively recorded value

Table III - *Anal Incontinence assessed preoperatively and after 12 and 60 months from the surgical procedure according to Pescatori grading system*

| | Pescatori's grading | | |
|---|---|---|---|
| Anal incontinence cases | Preoperatively | 12 months after the procedure | 60 months after the procedure |
| 1 | A2 | A2 | A1 |
| 2 | A2 | A1 | A2 |
| 3 | A2 | A2 | A2 |
| 4 | A3 | A2 | A3 |

### Complications And Follow-Up

We did not observe any anal stenosis nor keyhole deformity. At the same time, we did not record any necrosis of the transposed flap. The post-operative complications we were able to observe were of slight entity and they didn't require, in any case, further surgical procedures; in particular we observed 1 case of infection located at the donor site as well as 1 case of partial break down.

## Discussion

At 5 years follow up after the surgical procedure, our study shows the treatment of CAAF without hypertonic IAS, by fissurectomy and anoplasty with V-Y skin flap advancement, stands apart for a low rate of recurrence and it has not found to interfere with anal continence, even in those patients who already suffered from it without any worsening. Furthermore, post-operative MRP values were similar to those recorded prior to surgery. We observed just 2 recurrences, which occurred within 2 years after the surgery and completely healed after medical therapy.
Despite much research, the etiology and pathogenesis of CAAF remain poorly understood. Some anatomical, clinical and functional features, as well as previous anal surgery or obstetric trauma might favor the occurrence of CAAF. Regadas et al. [20], through a 3-D anal endosonography have demonstrated an asymmetrical configuration of anal canal and a difference between the two genders. In women patients both external anal sphincter and IAS are shorter at the anterior level and they are characterized by a longer gap, which may justify the higher incidence of pelvic disfunction [20]. It is still not known whether some women have slightly different pressure distribution in the distal anal canal predisposing to a higher risk than man for the development of CAAF [21]. Ellis [22] reported that patients affected by CAAF are frequently affected also by rectocele at physical examination with a typical manometric profile

(high pressure zone shortened with low to normal resting pressure) [23].

Great importance for the genesis of CAAF has been attributed to a previous obstetric trauma [5]. Up to a third of woman may develop anal sphincter damage after a first vaginal delivery and a significantly larger proportion is injured after a forceps delivery [24] or episiotomy. Also, after anal surgery such as manual dilatation, internal sphincterotomy, fistulotomy and hemorrhoidectomy, many patients have evidence of IAS injury [5].

Lindsey et al. [25] conducted a study based on the injection of botulinum toxin directly at IAS level and they observe that the 78% of patients affected by CAF associated with IAS low pressure developed a contraction response or no response, whereas only the 30% of patients affected by CAF with IAS high pressure had the same results; this difference in responses was statistically significant. According to other authors, this latter finding suggest that CAF with high pressure IAS and CAF with low pressure IAS have different pathophysiological origin.

Surgical lateral internal sphincterotomy (LIS), even if designed to obtain a lower resting pressure, seems illogical; the risk of anal incontinence is likely to be elevated as the sphincter is already weakened [26]. Chowcat et al. [27] reported that some patients with low sphincter pressure showed a further decrease in time. Nyam et al [28] reported in 21 patients the use of a broad-based V-Y advancement flap to treat CAAF with normal or low MRP; in their series, all fissures healed with no flap necrosis or continence disturbance. Pescatori et al. [29] observed that none of the 13 patients, who underwent to fissurectomy with anoplasty and did not experienced anal spasm at preoperative manometry, complained of incontinence or postoperative recurrence. Kenefick et al [30] reported that 8 patients affected by CAAF, with normal or hypertonic IAS, who were unresponsive to surgical treatment, were successfully healed with a procedure involving the advancement flap. Giordano et al. [31], in their prospective study of 51 consecutive patients with CAF, retains that the advancement flap anoplasty should be considered as a first line therapy, irrespective of anal tone or gender.

Under the light of the positive results reported by those authors, first of all concerning the low incidence of anal incontinence, we suggest that for the surgical treatment of CAAF, sphincter saving procedure are preferable, even if they might have a higher risk of recurrence when compared to the LIS. Anal incontinence has a strong impact on the quality of life [32], as a matter of fact patients tend to bear better the recurrence than the fecal incontinence [33].

## Conclusions

In conclusion, to the best of our knowledge, this represent the only study that evaluates, after 5 years from the surgical procedure, the results of a fissurectomy and anoplasty with V-Y skin flap advancement for the treatment of CAAF. We can conclude so far, that this procedure allows us to preserve the anal continence with a low rate of short and long term post-operative complications and recurrence.

## Riassunto

L'eziopatogenesi delle ragadi anali della commisura anteriore è ancora poco chiara. Alcune caratteristiche cliniche, anatomiche e funzionali suggerirebbero che la patofisiologia di questo disturbo sia strettamente correlata alla riduzione del tono sfinterico anale.

La sfinterotomia laterale interna è un approccio poco appropriato per questa patologia, mentre, le procedure volte a garantire l'integrità del sistema sfinterico sembrerebbero più ragionevoli.

L'obbiettivo del nostro studio è quello di valutare i risultati a 5 anni della fissurectomia ed anoplastica con lembo di avanzamento cutaneo a V-Y per il trattamento delle ragadi anali della commissura anteriore senza ipertono sfinterico.

Al fine di condurre il nostro studio abbiamo considerato 20 pazienti donne affette da ragade anale e sottoposte al suddetto intervento chirurgico dal Gennaio 2008 al Gennaio 2015; tutte le pazienti sono state seguite per 5 anni dopo la procedura chirurgica con valutazione della continenza anale, delle complicanze post-operatorie e breve e lungo termine e del tasso di ricorrenza.

Al follow up a 5 anni non abbiamo riscontrato nessun caso di incontinenza anale di nuova insorgenza, è alcun aggravamento dei casi di incontinenza anale preesistenti. Abbiamo osservato 2 recidive trattate efficacemente con terapia conservativa. Infine, il quadro manometrico a 5 anni era simile a quello pre-operatorio.

In conclusione il nostro studio suggerisce che la procedura chirurgica da noi utilizzata ci permette di conservare la continenza anale in queste pazienti, senza aggravare le preesistenti alterazioni della stessa.

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