

# Comparative Study between Surgical Outcomes of Fistula Tract LASER Closure (FiLaCTM) Versus Fistulotomy with Primary Sphincter Reconstruction in Management of High Trans-Sphincteric Perianal Fistula

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## Abstract

**Background:** Peri-anal fistula is a very common anal condition, its treatment is based on eradication of local sepsis and elimination of the fistula openings and tracts without affection of anal continence. Fistulotomy and primary sphincter reconstruction (lay open of the fistula tract with repair of sphincter muscle at the same session) is a well-known procedure which is widely utilized by surgeons to treat perianal fistula. Fistula Tract Laser Closure (FiLaCTM) is a recent sphincter-preserving procedure that is used in management of peri-anal fistula.

**Aim of Study:** To evaluate LASER closure of fistula tracts in the treatment of a high trans-sphincteric perianal fistula, FiLaCTM was compared to fistulotomy with primary sphincter reconstruction in terms of surgical results for 6-months period of follow-up.

**Patients and Methods:** The present study was comparative prospective research involving 40 patients with high trans-sphincteric (non-branching) fistula from outpatient clinic at Ain Shams University. Study period was 9 months, including 6 months duration for follow-up, study began on 1st April 2021.

**Results:** Six months of follow-up show statistically high substantial variations between groups regarding visual analog scale (VAS) score with high score in group (B) when comparing with group (A) ( $p > 0.001$ ). Operative time in group (A) ranged between 20-44 min. with mean  $\pm$  S.D. 29.25  $\pm$  7.129 min. while in group (B) ranged between 25.48 min. with mean  $\pm$  S.D. 35.80  $\pm$  7.016 min. between groups, there were statistically substantial variations ( $p = 0.006$ ).

Early post-operative complications in group (A) show that 1 (5.0%) had infection while in group (B) 2 (10%) had bleeding and 2 (10%) had infection. No statistically substantial variations existed between the groups. Follow-up after 1 month show highly statistically significant differences between groups.

Correlation between recurrence or delayed healing and each of chronic disease and fistula duration, showed that there was negative statistically substantial variations between recurrence or delayed healing and each of DM ( $r = -0.404$ ,  $p = 0.010$ ) and fistula duration ( $r = -0.640$ ,  $p < 0.001$ ).

**Conclusion:** Both fistula tract LASER closure (FiLaCTM) and sphincterotomy with primary sphincter reconstruction were secure and effective in treating high trans-sphincteric perianal fistula. The fistula tract LASER closure was superior in terms of operative time, post-operative hospital stays, VAS score and Wexner score but in terms of success rate, sphincterotomy with primary sphincter reconstruction had higher success rate and lower recurrence.

**Key Words:** Anorectal canal – Anal fistula – Fistulotomy – Sphincterotomy.

## Introduction

**ANAL** fistula is a diseased contact between the anorectal canal and the perianal skin that causes continuous purulent discharge or periodic perianal swelling and discomfort accompanied by spontaneously leakage, with an incidence rate of 86 instances per million people. When a fistula compromises more than 30% of the sphincter bulk, anterior in a female, recurring, or has several pathways, it is classified as complicated (complex).

For doctors, managing complicated anal fistula (CAF) has always been a challenging and tedious task [1].

Subcutaneous, inter-sphincteric, trans-sphincteric, supra-sphincteric, and extra-sphincteric fistulas are all types of fistulas. Fistulas may also be classified as “simple” or “complicated” in a broader sense. Simple fistulas have a single internal opening, no abscesses, and no secondary tracts. They are subcutaneous, inter-sphincteric, or low

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trans-sphincteric (including less than one-third of the complex of the anal sphincter). If a fistula is high trans-sphincteric, supra-sphincteric, extra-sphincteric, has several external openings, or has signs of a perianal abscess or rectovaginal fistula, it is called difficult [2].

Fistula LASER Closure (FiLaCTM) is a revolutionary sphincter-saving technique that involves “burning” the fistulous tract with a radial laser probe to destroy the fistula walls and granulation tissue, followed by shrinking and sealing the tract. Healing rates of 70-80 percent were reported in early investigations, however most of them were retrospective researches with limited numbers of patients. Furthermore, the elements that predict success are uncertain. Patients selection is critical in order to provide each patient with the best therapy and enhance their possibilities of healing [3].

### Patients and Methods

This was comparative prospective research having 40 patients with high trans-sphincteric (non-branching) fistula from outpatient clinic at Ain Shams University. Study period was 9 months, including 6 months duration for follow-up, study began on 1<sup>st</sup> April 2021.

*Patients were divided into 2 groups:* Group A: 20 patients with high trans-sphincteric fistula who were managed by FiLaC. Group B: At the same time, fistulotomy with primary sphincter repair was done on 20 patients with high trans-sphincteric fistula.

After being properly informed about the method and its conditions, the participants in this clinical trial provided their informed permission.

*Inclusion criteria:* High trans-sphincteric (non-branching) fistula.

*Exclusion criteria:* Branching high trans-sphincteric, supra- or extra-sphincteric, inter-sphincteric, horseshoe fistula, repeated, crohn's disease, occurrence of undrained collections or side passages, and cancer-related fistula.

#### *Preoperative workup:*

History taking, general exam and anorectal evaluation were all performed on all patients in the research (good inspection, DRE examination and proctoscopic evaluation), Magnetic Resonance Imaging (MRI) on ano rectal region, routine lab investigations (Liver function, Renal function, Complete blood count, Random blood sugar) and The Wexner score is used to assess continence.

All patients were encouraged to eat a soft diet and take a mineral laxative the day prior operation. All patients got rectal enema with regular tap water the night before surgery.

*Operative details:* In the lithotomy position, all operations were conducted under spinal anesthetic. At the time of anesthesia induction, all patients received an intravenous single dosage of 1 gram of a 3<sup>rd</sup>-generation cephalosporin.

FiLaC: A FiLaCTM diode LASER (Biolitec AG, Germany) was employed.

At a wavelength of 1470nm, the diode LASER produces 100-120 joules (J)/cm of energy.

This arrangement is thought to result in more effective local tissue shrinking and protein denaturation, as well as the best water absorption curve.

Evaporation effect was noticed as white smoke when no water remained in the tissue.

By use of radial tip LASER at this wavelength, it eliminates granulation and epithelial tissue across a 2-3mm area, resulting in more regulated tissue damage with less power (13w).

The LASER probe is gently withdrawn into the fistula tract at a speed of about 3 seconds per centimeter to close the fistula tract via coagulation.

This procedure was continued until the LASER probe coagulates and closes the external opening of the fistula.

The external opening was excised at the beginning, while the internal opening is curetted using a small curette.

Care was taken during the procedure to avoid excessive burns to the treated and surrounding tissue, and damage to adjacent tissues.

Following anesthesia, patients placed in lithotomy position, then stained and covered.

The surgery has been initiated.

The internal and exterior fistula apertures, as well as the fistula tract, must be identified.

The fistula tract should be cleansed mechanically with a curette and saline rinsed.

The LASER probe was passed via the internal aperture after being placed into the external opening and extended into the fistula tract.

The probe's tip was then retracted only few mm from the interior entrance.

The LASER was used at a 100J energy level. The LASER probe was permitted to proceed into the fistula tract on its own during application and was manually removed when its route was impeded.

Any untreated parts of the fistula tract were eliminated by gently withdrawing the probe a few millimeters and then moving it back toward the internal entrance. The LASER probe was withdrawn after every three shots, and the tip was cleaned using gauze dipped in hydrogen peroxide to avoid carbonization.

When the probe's tip was a few millimeters from the exterior entrance, the LASER was turned off. Excision of the fistula's internal opening is followed by direct closure with 3/0 vicryl sutures [4].

Interrupted, absorbable sutures (vicryl 3/0) were used to seal the wound loosely. Figs. (1-5).

*Fistulotomy with primary sphincter repair:* Hydrogen peroxide was used to recognize the fistula internal opening, then the tract was probed, total lay open of the main tract was done from outer opening towards inner opening, a process which involves cutting of both external and internal sphincters. The peripheral part of tract was excised, granulation tissues within fistula tract traversing the sphincters was removed using a curette. We excised the inner orifice including mucosal surface, after that sphincter muscle repair was accomplished with a series of three to four interrupted 2-0 polydioxanone (PDS) sutures gathering stumps of anal sphincters together and sealing the whole fistula tract gap within the muscles. Eventually we closed submucosa and mucosa of anal canal using 3-0 vicryl sutures, the outer portion of the wound was left open to be well drained [5]. Figs. (6-13).

Post-operative workup and follow-up Urine retention, hemorrhage, abscess development, wound infection, and early incontinence are among early post-operative problems.

Patients received a single dose of intravenous third generation cephalosporin and oral antibiotic for one week. After the procedure, liquid food was continued in the evening, and they were recommended to follow a soft diet for two days and use bulk laxatives for at least two weeks.

All patients had their wounds dressed on the second postoperative day.

Before surgery, all patients were given instructions on how to complete the 0 to 10 visual analog scale (VAS) interview.

All the patients were taught how to clean themselves and how to care for their wounds. Every week for the first two weeks, then every two weeks until full recovery, our patients were followed up, a two (monthly checkups) is then arranged, then every two months for a total of six months of follow-up to discover any late issues. During the follow-up phase, the patients were followed-up to ensure that the fistula did not re-occur. No patients were lost throughout the follow-up time.

*Statistical analysis of the data:* SPSS vs. 25 was used for data administration and statistical analysis (IBM, Armonk, New York, United States). To summarize numerical data, averages and standard deviations were employed. Categorical data were summarized using numbers and proportions. The mann Whitney U test was employed for numeric values; the Chi-square or fisher's exact test was employed for categorical data, if appropriate. All of the *p*-values in this study were two-sided. Substantial *p*-values were defined as those less than 0.05.

## Results

Age in group (A) ranged between 21-65 years with mean  $\pm$  S.D. 39.35 $\pm$ 11.970 years while in group (B) ranged between 18-63 years with mean  $\pm$  S.D. 35.55 $\pm$ 13.300 years. No statistically substantial variations existed between the groups were *p*=0.348. Table (1).

Fistula duration in group (A) ranged between 6-36 months with mean  $\pm$  S.D. 12.14 $\pm$ 8.319 months while in group (B) ranged between 6-24 months with mean  $\pm$  S.D. 13.60 $\pm$ 6.367 months.

No statistically substantial variations existed between the groups where *p*=0.270. Table (2).

Operative time in group (A) ranged between 20-44min. with mean  $\pm$  S.D. 29.25 $\pm$ 7.129min. while in group (B) ranged between 25.48min. with mean  $\pm$  S.D. 35.80 $\pm$ 7.016min. between groups, there were statistically substantial variations where *p*=0.006. Table (3).

Post-operative hospital stay in group (A), All patients stayed in hospital only one day, while in group (B) ranged between 1-3 days with mean  $\pm$  S.D. 1.15 $\pm$ 0.489 days.

No statistically substantial variations existed between the groups where *p*=0.183. Table (4).

Early post-operative complications in group (A) show that 1 (5.0%) had infection while in group (B) 2 (10%) had bleeding and 2 (10%) had

infection. No statistically substantial variations existed between the groups. Table (5).

Follow-up after 1 month show highly statistically significant differences between groups as regard to VAS score with high score in group (B) when compared with group (A) where  $p=0.007$ . Table (6), Graph (1).

Follow-up after 3 months show no statistically substantial variations existed between the groups. Table (7), Graph (2).

Follow-up for 6 months showed statistically high substantial variations between groups as regard to VAS score with high score in group (B) when compared with group (A) where  $p<0.001$ . Table (8), Graph (3).

Correlation between recurrence or delayed healing and each of chronic disease and fistula duration, showed that there was negative statistically substantial variations between recurrence or delayed healing and each of DM ( $r=-0.404$ ,  $p=0.010$ ) and fistula duration ( $r=-0.640$ ,  $p<0.001$ ). Table (9), Graph (4).

Table (1): Comparison between two groups as regard to patient's age.

Age	Group (A) (n=20)	Group (B) (n=20)	t	p-value
Min.-Max.	21-65	18-63	0.950	0.348
Mean±S.D	39.35±11.970	35.55±13.300		

t : t-student test.

p : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

Table (2): Comparison between two groups as regard to patient's fistula duration.

Fistula duration (months)	Group (A) (n=20)	Group (B) (n=20)	U	p-value
Min.-Max.	6-36	6-24	79.50	0.270
Mean±S.D	12.14±8.319	13.60±6.367		

U: Mann-Whitney test.

p : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

Table (3): Comparison between two groups as regard to patient's operative time.

Operative Time (min.)	Group (A) (n=20)	Group (B) (n=20)	t	p-value
Min.-Max.	20-44	25-48	2.929	0.006*
Mean±S.D	29.25±7.129	35.80±7.016		

t : t-student test.

p : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

Table (4): Comparison between two groups as regard to patient's post-operative hospital stay.

Post-Operative Hospital stay (days)	Group (A) (n=20)	Group (B) (n=20)	U	p-value
Min.-Max.	1	1-3	150.00	0.183
Mean±S.D	1.00±0.000	1.30±0.571		

U: Mann-Whitney test.

p : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

Table (5): Comparison between two groups as regard to patient's early post-operative complications.

Early post-operative Complications	Group (A) (n=20)		Group (B) (n=20)		p-value
	No.	%	No.	%	
Bleeding	0	0	2	10.0	0.487
Infection	1	5.0	2	10.0	1.000

p : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

Table (6): Comparison between two groups as regard to patient's Follow-up after 1 month.

Follow-up after 1 month	Group (A) (n=20)		Group (B) (n=20)		Test of Sig.	p-value
	No.	%	No.	%		
Healing	16	80.0	18	90.0	-	0.661
<i>Wexner score:</i>						
Min.-Max.	0		0-4		U=130.00	0.060
Mean± S.D	0		0.95±1.395			
<i>VAS Score:</i>						
Min.-Max.	2-7		4-9		t=2.877	0.007*
Mean± S.D	4.70±1.380		6.10±1.683			

U : Mann-Whitney test.

p\* : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

VAS : Visual analog scale.

Table (7): Comparison between two groups as regard to patient's Follow-up after 3 months.

Follow-up after 3 month	Group (A) (n=20)		Group (B) (n=20)		Test of Sig.	p-value
	No.	%	No.	%		
Recurrent	4	20.0	2	10.0	-	0.661
<i>Wexner score:</i>						
Min.-Max.	0		0-3		U=130.00	0.060
Mean± S.D	0		0.85±1.226			
<i>VAS Score:</i>						
Min.-Max.	0-4		1-4		t=1.332	0.191
Mean± S.D	2.15±1.137		2.60±0.995			

U : Mann-Whitney test.

p\* : p-value for comparing between the two studied groups.

\*: Statistically significant at  $p<0.05$ .

VAS : Visual analog scale.

Table (8): Comparison between two groups as regard to patient's follow-up after 6 months.

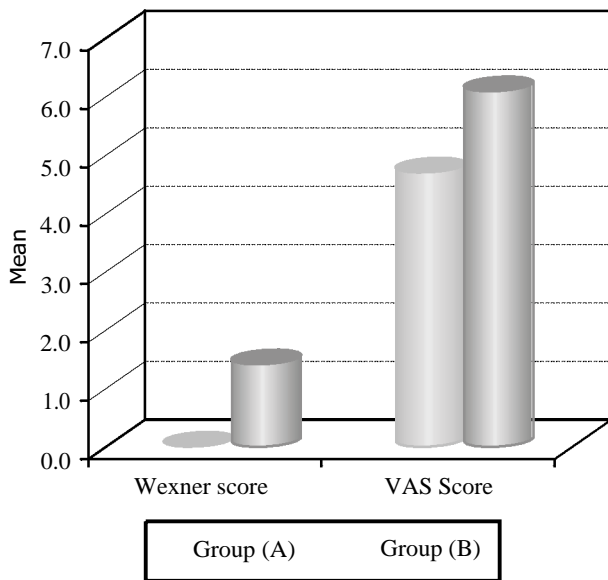
Follow-up after 6 month	Group (A) (n=20)		Group (B) (n=20)		Test of Sig.	p-value
	No.	%	No.	%		
Recurrent	4	20.0	2	10.0	-	0.661
<i>Wexner score:</i>						
Min.-Max.	0		0-3		U=130.00	0.060
Mean ± S.D	0		0.70±1.081			
<i>VAS Score:</i>						
Min.-Max.	0-1		0-1		U=60.00	<0.001*
Mean ± S.D	0.15±0.366		0.85±0.366			

U : Mann-Whitney test.  
 p : p-value for comparing between the two studied groups.  
 \* : Statistically significant at  $p < 0.05$ .  
 VAS : Visual analog scale.

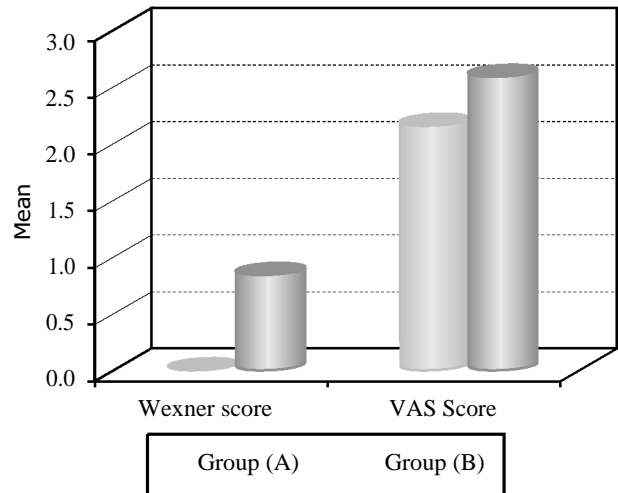
Table (9): Correlation between recurrence or delayed healing and each of chronic disease and Fistula duration.

	Recurrence or delayed healing	
	r	p
<i>Chronic disease:</i>		
DM	-0.404	0.010*
HTN	0.243	0.132
Fistula duration	-0.640	<0.001*

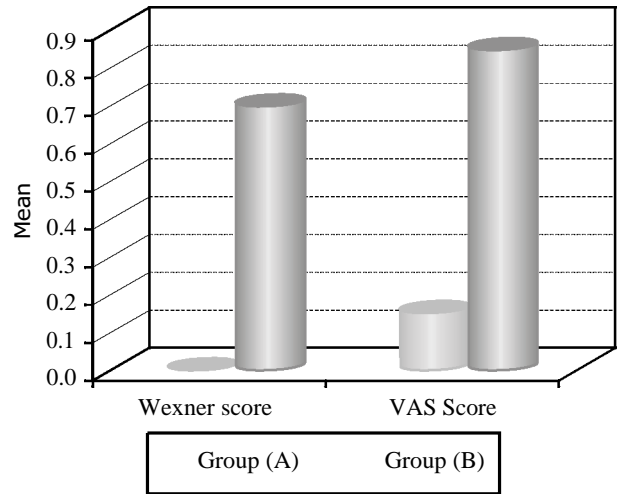
DM : Diabetes mellitus.  
 HTN : Hypertensio.



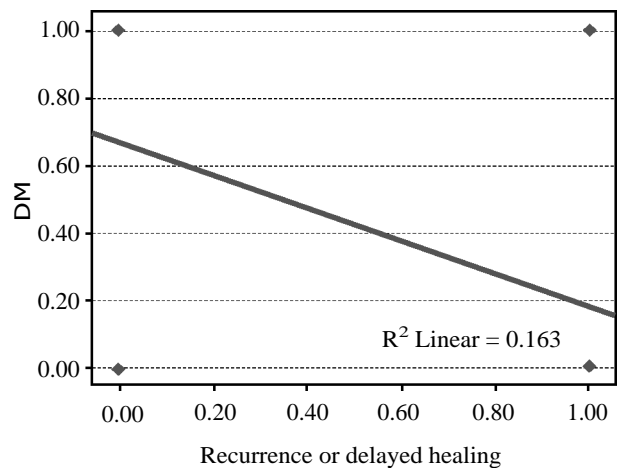
Graph (1): Comparison between two groups as regard to patient's Follow-up after 1 month.



Graph (2): Comparison between two groups as regard to patient's Follow-up after 3 months.



Graph (3): Comparison between two groups as regard to patient's Follow-up after 6 months.



Graph (4): Correlation between recurrence or delayed healing and DM.



Fig. (1): FiLaC, introduction of LASER probe into fistula tract upto the internal opening of fistula.



Fig. (2): FiLaC, application of LASER at level of 100 j, and slowly withdrawing the LASER probe outwards.



Fig. (3): FiLaC, LASER probe as it exists the external opening of fistula.



Fig. (4): FiLaC, application of ice locally at internal opening.



Fig. (5): FiLaC, application of ice locally at internal opening.



Fig. (6): Fistulotomy with primary sphincter repair, probing of fistula tract.



Fig. (7): Fistulotomy with primary sphincter repair, fistulotomy using diathermy.



Fig. (8): Fistulotomy with primary sphincter repair, curettage of granulation tissue after laying the tract open.



Fig. (9): Fistulotomy with primary sphincter repair, curettage of granulation tissue after laying the tract open.



Fig. (10): Fistulotomy with primary sphincter repair, repair of external anal sphincter using Polydioxanone 2/0 sutures.

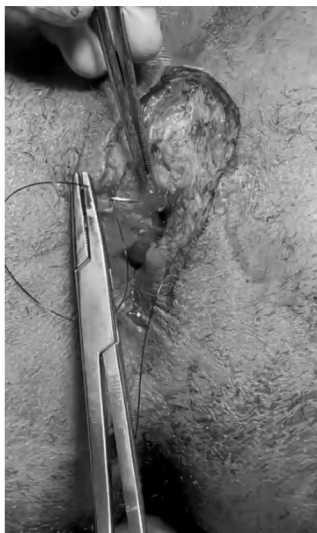


Fig. (11): Fistulotomy with primary sphincter repair, repair of external anal sphincter using Polydioxanone 2/0 sutures.



Fig. (12): Fistulotomy with primary sphincter repair, immediately after repair.





Fig. (13): Fistulotomy with primary sphincter repair, immediately after repair.

### Discussion

Having variable patterns and multiple degrees of complexity, a perianal fistula have always been a challenge for surgical professionals, as it's known for its high rate of complications postoperatively that are usually presented as recurrence and affection of anal sphincter function that could occur with considerable number of operations [6].

FiLaC (Fistula tract Laser closure) was designed mainly to treat complex peri-anal fistula being a novel minimally-invasive procedure characterized by sphincter preservation. The Laser effect on fistula tract is limited to the luminal aspect of the tract without further impact of sphincter mechanism [6].

Fistulotomy and 1ry sphincter reconstruction is one of the procedures applied for treatment of complex peri-anal fistula to eradicate infection and restore anatomical structure of the sphincter muscle [5,7]. Although its healing rates are adequately high, it could be associated with complications as fecal incontinence particularly in high peri-anal fistulas [8,9].

In our study in which we compared between surgical outcomes of these to techniques in management of straight forward non branching high trans-sphincteric peri-anal fistula, The mean age in our study groups was 38 (Range 18 to 65) and among 40 patients, only 11 patients were female, so male patients represented 72.5% of our study sample which is supported by Sahnan et al., 2019 [10] and Sainio et al. [11].

When we compared between the two groups as regards the mean procedural duration and post operative hospital stay, the FiLaC procedure was found to be superior. This was consistent with Giamundo et al., [12] who stated that the mean procedural time of FiLaC operation according to their study was about 20 minutes (Range 6 to 30 minutes), this relatively shorter operative duration in comparison with our study might be the result of the technical difference as they did not close the inner opening of the fistula tract and considered the shrinkage effect of the laser enough to close it and because of the forms of fistulas that they studied. Almahfooz, [13] reported recently 16 that operative duration of FiLaC had a median of 18min (Range 10-32min) and patients stayed at hospital only for one day or less following surgery. On the other hand, our results for fistulotomy and primary repair procedure came a little different from that of the study by Ratto et al., [5] in which the mean time of fistulotomy and primary sphincter repair for peri-anal fistula was 20.9min (Range 12-26min) and the mean period of postoperative hospital stay was 1.3 days (Range 0-4). Also, Yöntem et al., [14] reported that the mean duration of operation of FiLaCTM procedure was  $18.37 \pm 5.27$  minutes.

Regarding early post-operative complications our follow-up revealed that FiLaC operation resulted in very favorable outcomes and very little susceptibility to early post-operative complications and lower pain presented by lower mean VAS score compared to fistulotomy and primary reconstruction, however, by the 3<sup>rd</sup> month of follow-up VAS score gradually decreased with time and finished in very low, insignificant scores in both groups which is consistent with Giamundo et al., [6] who stated that morbidity following FiLaC according to their study presented as temporary pain and animus in eight patients out of 45 patients (18%) and three patients had bleeding (6%), and the median VAS score for post-operative pain recorded 3.0 in early post-operative period (first week). Also, Marref et al., [15] found the post-operative follow up of the patients showed insignificant complications with minimal pain (VAS <3). Ratto et al., [5] results did not involve any kind of systemic or local sepsis with no fever in their patients after FIPS. Only one patient (1.4%) had a sphincter dysfunction five days following surgery and he received a redo of fistulotomy and sphincter repair one month later.

Along the 6 months of follow-up we found that rates of recurrence were less in the group of fistulotomy and primary repair than in FiLaC group, Wilhelm [16] in 2011 was first to describe FiLaC



with the same laser technique, in which 9 patients out of eleven primarily healed representing 81.8% of patients during a mean follow-up period of 7.4 months (range 2 to 11 months), a lower rate of healing was reported in a study by Giamundo et al., [12] as 25 from a total sum of 35 patients were totally healed representing 71.4% of patients, they did another study [6] in 2015 which was performed on 45 patients who were followed-up for a longer period, although no substantial differences were noted.

In their study in which the inner surface of fistula tract was curetted using a plastic brush before introduction of laser probe Ozturk et al., [17] reported that the rate of healing was 82%.

Wilhelm et al., [18] studied in 2017, the long-term results of FiLaC in a larger sample of patients suffering from peri-anal fistula and the primary healing rate was 64.1 %. While the secondary rate of healing was about 88.0%, Marref et al., [15] found that FiLaC is more useful in high trans-sphincteric perianal fistulas as healing rate in their study was 60%.

There is a great variety in recurrence rates after fistulotomy and primary sphincter reconstruction mentioned across years in literature ranging from zero to sixteen percent depending on type and degree of complexity.

According to recurrence rates Arroyo et al., [19] announced a recurrence rate of 8.6% of patients (N=70) suffering from complex perianal fistula in which the mean follow-up period was 81 months, this rate was close to our results in which the recurrence rate of FIPS was 10%. Lately, Litta et al., [20] completed a study involving 203 patients with perianal fistula and the recurrence rates was 7% while the mean time of follow-up was 56 months.

A recent study on a large number of patients (107) was conducted by Aguilar-Martínez et al., [21] the total recurrence rate during 3 months of follow-up was nearly 16% with a slight increase in recurrence rates in high perianal fistulas when compared to low ones (16.2% vs 15.7%).

On evaluation of faecal continence in patients within our study, outcomes were pretty good involving very little impaction in the two groups particularly in the group of FiLaC. This finding was fairly consistent with Wilhelm [16] who mentioned that there were minor incontinences (soiling) following FiLaC procedure which persisted for 6 months before it was finally managed, on the other

hand Marref et al., [15] and Giamundo et al., [12] didn't encounter any new incontinence cases or deterioration of previously existed incontinence during follow-up of their patients.

Regarding the rates of incontinence following fistulotomy and primary repair a great variability within the literature was found (from 3.6% to 21.7%), this variability depends on form and degree of complexity of the treated fistula within these studies [5-13,15,17-23].

Ratto et al., [5,24] performed two studies on a large sample of patients, in which close values of incontinence rates were detected (11.6% and 12.4%). Also, Aguilar-Martínez et al., [21] reported that 11.2% of their patients had some deterioration of anal continence by the end of follow-up period, about 36% of patients showed improvement of continence state and nearly 52% had the same wexner score by the end of follow-up. However, about 37% of cases within this study already had variable grades of anal incontinence before surgery.

In our study we found that cases with D.M. comorbidity were associated with a higher recurrence rate and delayed healing, also there were a correlation between fistula duration and fistula recurrence and long healing period as we noticed that the longer fistula duration the higher rate of recurrence and time to complete recovery was prolonged as well.

It is fair to mention that results of our study might have been affected by some limitations as, its relatively small numbers of patients in the study sample and to a lesser extent the short follow-up period of only 6 months may also be a factor that could limit outcome data, but we also should mention that it's quite challenging to follow-up a large number of patients for a very long period after surgery without losing contact with patients during follow-ups particularly if the patients had a complete recovery, further studies which could overcome these limitations may be of great value and is highly recommended.

#### *Conclusion:*

Both fistula tract LASER closure (FiLaCTM) and sphincterotomy with primary sphincter reconstruction were secure and efficient in the treating of high trans-sphincteric perianalfistula. The fistula tract LASER closure was superior in terms of operative time, postoperative hospital stays, VAS Score and Wexner score but in terms of success rate the sphincterotomy with primary sphincter reconstruction had higher success rate and lower recurrence.

**Declarations:**

- *Consent for Publication:* I certify that all authors agree to submit the work.
- *Availability of data and material:* Available
- *Competing interests:* None.
- *Funding:* No fund.
- *Conflicts of Interest:* The authors state that no competing interests in the publication of this research.

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## دراسة مقارنة بين النتائج الجراحية لكل من اغلاق مسار الناسور بالليزر مقابل شق الناسور وعمل اصلاح أولى لعضلات الشرج في حالات الناسور الشرجى المرتفع المخترق لعضلة الشرج الخارجية

الناصور الشرجى هو مرض شرجى شائع، وتنشأ أكثر من ٩٠٪ من حالات الناسور الشرجى من الغدد الموجودة بين العضلتين العاصرتين بعد حدوث خراج بها. ويعد عدم التحكم في البراز أو ما يعرف بسلس البراز من أكثر المضاعفات التي يخشى حدوثها عند علاج الناسور الشرجى والذي قد ينتج عن تلف العضلة العاصرة الشرجية الخارجية، ومن المضاعفات الهامة أيضاً تكرار الإصابة بالناصور. وينقسم الناسور الشرجى لأربعة أنواع رئيسية تبعاً لعلاقة مساره بالعضلات الشرجية إلى : ناسور بين العضلتين ، ناسور عابر (مخترق) للعضلة، ناسور أعلى العضلات الشرجية، وناصور خارج العضلات الشرجية.

كان الهدف الرئيسى من هذه الدراسة هو المقارنة بين إغلاق قناة الناسور بالليزر FiLaC™ مقابل شق الناسور وعمل إصلاح أولى لعضلات الشرج في حالات الناسور الشرجى المرتفع المخترق لعضلة الشرج الخارجية فيما يتعلق بالنتائج الجراحية خلال فترة متابعة قصيرة المدى مدتها ٦ أشهر.

وقد أجريت هذه الدراسة المقارنة فى قسم الجراحة العامة بمستشفى جامعة عين شمس. حيث شملت هذه الدراسة ٤٠ مريضاً يعانون من ناسور شرجى مرتفع غير متفرع مخترق لعضلة الشرج الخارجية. حيث تم تقسيم المرضى إلى مجموعتين، المجموعة أ الأشخاص الذين عولجوا بواسطة تقنية الليزر FiLaC™ والمجموعة ب : الأشخاص الذين عولجوا بطريقة شق الناسور مع إصلاح أولى لعضلة الشرج الخارجية فى نفس الجلسة.

وقد جاءت النتائج فى صالح تقنية الليزر FiLaC™ من حيث احتفاظ المرضى بقدرتهم على التحكم بالعضلات الشرجية العاصرة وتجنب سلس البراز والمقدر بمقياس (Wexner)، وكذلك تفوقت تقنية اغلاق الناسور الشرجى بالليزر من حيث آلام ما بعد الجراحة حيث كان الألم المقدر بمقياس (VAS) أقل بشكل ملحوظ فى هؤلاء المرضى مقارنة بالمرضى الذين عولجوا بشق الناسور والإصلاح الأولى للعضلات خاصة فى الفترات المبكرة التى تلت العملية الجراحية، بينما أثبتت طريقة شق الناسور مع الإصلاح الأولى للعضلات فعالية أكثر من فعالية الليزر فى عدم ارتداد حدوث الناسور مرة أخرى.