



TREATMENT OF PILONIDAL DISEASE BY LASER ABLATION: A STUDY.

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ABSTRACT

The treatment of pilonidal disease is still challenging. This study aimed to evaluate the efficacy of laser ablation using 1470-nm radial diode laser in treatment.

We retrospectively studied the data of our 30 patients who operated on this technique between August 2024 and November 2024. All patients were treated with laser ablation using 1470-nm radial diode laser fiber. The healing rate and recurrence rate, surgical data, postoperative pain, complications, time of returning to regular work, and the time of wound healing were recorded. Postoperative pain was measured based on the visual Analog scale (VAS) score. Postoperative follow-up was performed in the outpatient clinic every weekly.

Among the 30 patients, 23 males and 7 females, with a mean age of 27.7 years (range 14–42), the healing rate was 100%, and the average healing time was 28.3 ± 5.5 days. Mean operative time was 15.5 ± 3.3 min. The recurrence rate was 3.3%. The median visual analog scale score on the day of operation was 0(0,2). The median VAS score on the first, third, seventh, and fourteenth day after operation was 0(0,2), 0(0,1), 0(0,1), and 0(0,0), respectively. The mean time to normal work/life was 7.1 ± 3.2 days. Ten patients had undergone incision and received drainage of sinus abscess, and 5 patients had undergone PD-related surgery. The sinuses of 3 patients were in the acute stage in the absence of abscess, and the others were in the chronic stage.

INTRODUCTION

Subcutaneous infection that occurs in the gluteal sulcus of the sacrococcyx. Although the cause is not clear, it is believed to be acquired, and it is related to obesity, exuberant hair, and the deep cleft between the buttocks [1].

The incidence among males is higher than that among females [2,3].

The acute phase is characterized by sacral abscess, and during the chronic phase cyst formation or persistent sinus discharge may be observed. At present, no consensus exists for pilonidal sinus. conservative treatment control the symptoms only.[4].

Traditional surgery brings favorable success rates; it requires the removal of all diseased skin and subcutaneous tissue, including wide excision and healing with secondary intention or reconstructive (“flap”) techniques, which lead to a prolonged recovery period and a large wound [5].

Minimally invasive surgical methods for the treatment of PD (endoscopic pilonidal sinus ablation or fibrin glue injection) have improved; wound injury and pain have been reduced, and the time for patients to return to normal life has been shortened [6–8].

LASER IN TREATMENT-

Laser ablation using 1470-nm radial diode laser fiber was first proposed by Wilhelm, which was first used to treat anal fistula with a cure rate of 82% [9].

The energy released by the annular laser at the end of the catheter makes the tissue in the fistula gasify and contract, closing the fistula.

In 2016, Dessily et al. [10] used this technique for the first time in the treatment of pilonidal sinuses, with a success rate of 87.5% and a recurrence rate of only 2.9%, with mild postoperative pain and minor wounds. [10–16].

PD clinical staging system [23] Stage Description

Stage I Single pit in the midline, no lateral extension

Stage II >1 pit in the midline, no lateral extension

Stage IIa 2–3 pits in the midline

Stage IIb >3 pits in the midline

Stage III Midline pit/pits plus lateral extension in one direction

Stage IV Midline pit/pits plus lateral extension in both directions

Stage R Recurrent PD following any type of management

In this study we included patients who received laser treatment in our hospital in order to evaluate the results of the technique.

MATERIALS & METHODS

From August 2024 and November 2024, 30 consecutive patients with PD were operated with laser ablation.

After a detailed explanation of the surgical techniques and potential risks, all patients signed an informed consent form before operation.

All patients were examined by MRI before operation and diagnosed as PD in order to exclude presacral tumors and other perianal diseases. Patients with acute abscess stage were excluded from the study.

TECHNIQUE

All patients were placed in the prone position after anaesthesia; strong tape is placed on the buttock to increase exposure.

a probe was used to evaluate the length and extent of the sinus from the pit (if there were multiple pits, the sinus tracts were evaluated separately) ,also the methylene blue were used to mark the sinus tract.

According to the size of the sinus infection area, a circular or oval incision was made to widen the existing sinus appropriately to ensure sufficient drainage with the help of dermal biopsy punch.

Mosquito clamps were used from the incision to clean the hair in the sinus tract. Then, the sinus tract was cleaned with a curette.

The optical fiber (1470 nm, single radial laser fiber) was probed from the small concave side, along the sinus tract to the end. The laser power was 10 W and the wavelength was 1470 nm. The parcel was ablated between the sinus and pit by pulling the optical fiber at 1 mm/s.

PHOTOGRAPHY



Figure 1



Figure 2



Figure 3



Figure 4

POSTOPERATIVE INSTRUCTIONS

Patients were instructed to clean the wound every day, then press the tract, promote the discharge of secretions, and prevent premature closing of the skin. Topical use of antibiotic ointment. Instructed the patient to take painkillers if necessary. Patient advice to follow up in OPD once a week till wound healed.

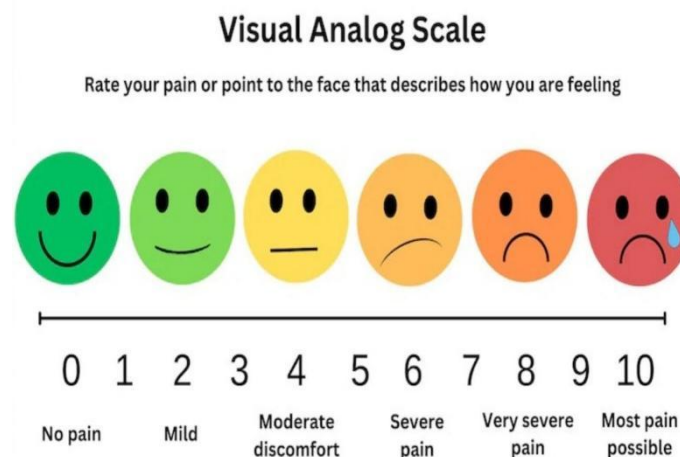
STATISTICS

All statistical analyses were performed with the SPSS 25.0 statistical software. Values are presented as the mean $\pm$ standard deviation for data that were normally distributed or median and inter-quartile range for data that were not normally distributed for continuous variables and number (%) for categorical variables. For all comparisons, $P = .05$ was considered statistically significant.

RESULTS

A total of 23 males and 7 females were treated, with an average age of 27.7 years (range 14–42 years). The median visual analog scale (VAS) score on the day of operation was 0(0,2).

The median VAS score on the first, third, seventh, and fourteenth day after operation was 0(0,2), 0(0,1), 0(0,1), and 0(0,0), respectively.



There was no wound infection or bleeding after operation. The average time of returning to normal work and life after operation was 7.1 ± 3.1 days.

The wound healing rate was 100%, and the average wound healing time was 32.4 ± 5.4 days. The recurrence rate was 3.3%.

Types of SPD [23], n (%) used in our study:

Acute SPD in the absence of abscess 09(35.4)

Chronic SPD 21(64.6)

Stage of SPD, n (%) in our study:

Stage I-3(14.6%), Stage IIa-4(16.7%), Stage IIb-6(20.8%)

Stage III-12(31.2%), Stage II-4(14.6%), Stage R-1(3.3%)

DISCUSSION

Mayo first described the disease of PD in 1830. Surgery is the only radical cure.

Skin flap techniques (Karydakakis flap technique, Limberg flap transfer technique, “V–Y” flap technique, “Z-shaped” flap technique) are usually used in more complex or recurrent cases. The incidence of wound dehiscence in this surgery ranges from 3 to 15%[17–21].

Dessily et al. [21] applied LASER technique to PD. Good results were achieved. Since the introduction of laser technology in 2017, it has been mainly aimed at coloproctology with satisfactory results.

In the present study, we found that laser ablation using 1470-nm radial diode laser fiber in the treatment of PD. Among the 30 patients, all cases were successfully treated, the cure rate was 100%, and the recurrence rate was 3.3%. This may be related to the preoperative MRI of all patients to identify the number and branches of sinuses and we exclude the patients in acute abscess stage.

During the procedure, we should ensure sufficient drainage. After ablation, secretions or necrotic tissue can be discharged normally to prevent the accumulation of new infection lesions.

We evaluated the pain degree of the patients during dressing and found that the overall pain of the patients was mild. The wounds were minor, and drainage was complete, reducing the stimulation of the postoperative wound inflammatory response and pain.

Compared with other treatments of PD, the limitation of laser ablation and closure is that it cannot be operated under direct vision. However, MRI examination before operation and adequate treatment of sinuses during operation can reduce its recurrence.

Papagiannopoulos and Zarogoulidis [22] proposed under the guidance of B-ultrasound during the operation do laser.

The most important advantage of LASER is that it can enable patients to return to routine work and life quickly.

Even if relapse occurs after operation, the success rate of re-operation using this technique is 75–78.3% [10, 12].

CONCLUSION

Our study shows that laser ablation using 1470-nm radial diode laser fiber is effective in the treatment of PD with a low recurrence rate.

AUTHOR'S CONTRIBUTION

S.R.A. conceived and designed the study, drafted the study protocol, and supervised the overall project. A.A.P. and A.V.B. were responsible for data collection, ensuring the accuracy, consistency, and completeness of the data. A.K. performed the statistical analysis and contributed to the interpretation of the results. All authors participated in the discussion of findings, critically revised the manuscript for intellectual content, and approved the final version for publication.

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