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Summary.

Despite centuries of documented history, the treatment of rectal fistulas remains a relevant clinical challenge. Currently, a clear distinction exists between classical and modern techniques, including plastic closures, VAAFIT®, FiLaC®, and other methods. While modern approaches aim to achieve the efficacy of classical operations, they have demonstrated superior safety profiles in preserving sphincter function. This is particularly critical for patients presenting with symptoms of anal incontinence or those at high risk for its development.

Clinical case: A 39-year-old man presented to the surgical department of the AIMS diagnostic clinic in June 2022 with painful discomfort in the perineal region and a small wound with scanty purulent-sanguineous discharge. His medical history began in August 2021 with an incision and drainage (I&D) procedure for acute paraproctitis, after which a rectal fistula developed. Routine examination established a clinical diagnosis of an anterior extraspincteric rectal fistula of grade 1 complexity. Consequently, the first stage of treatment in June 2022 involved placement of a draining latex seton. One month later, the patient underwent laser fistula tract ablation using our modification of the FiLaC® technique. On the tenth postoperative day, symptoms indicative of acute paraproctitis emerged. 3D ultrasound revealed a small collection of heterogeneous contents, located parallel to the projection of the former fistula tract. An emergency I&D was performed, and the subsequent postoperative course was uneventful. The final stage of treatment involved excision of the fistula tract and suturing of the sphincter. The postoperative wound healed over the following 38 days.

Conclusions. Contemporary literature contains limited reports on early postoperative complications following laser ablation for rectal fistulas and offers scant data on their etiology or prevention. Analyzing and publishing such cases is vital both to elucidate the underlying causes of adverse outcomes and to establish evidence-based measures for their prevention.

Keywords: Short Rectal Fistulas; Complex Rectal Fistulas; Laser Ablation of Rectal Fistulas; FiLaC® Technology; Early Postoperative Complications.

Introduction

Initially reported by A. Wilhelm in 2011, laser ablation method for rectal fistulas offers new possibilities for the endofistular closure of fistula tracts of varying diameters without the risk of damaging anal sphincter structures. Since its inception, the technique has demonstrated high efficacy; Limura E. et al. [1] reported an 81% relapse-free postoperative course within seven months. Subsequent technical optimization by Giamundo P. et al. [2] resulted in an 82% relapse-free course within one year. The authors highlighted several advantages of this technology, including minimal impact on anal sphincter function, preservation of rectal retaining function, rapid healing, and mild postoperative pain [3-5]. However, challenges remain, including technical difficulties in treating tracts with irregular diameters or tortuous fistula tracts and an elevated risk of early postoperative purulent complications. Furthermore, no established criteria exist for selecting the optimal energy density of laser exposure for rectal fistulas of varying lengths, diameters, and other parameters to prevent damage to the fibrous capsule of the fistula and surrounding tissue necrosis. Consequently, while the FiLaC® technique is well-established, further refinement is required to mitigate these disadvantages while preserving its proven benefits.

At the surgical department of the AIMS diagnostic care PVT Ltd clinic (Addy city, Maldives), we employed our modified FiLaC technique from February 1, 2022, to February 28, 2023. The study included 31 patients aged ≥ 18 years with primary or recurrent transsphincteric or extraspincteric fistulas of grade 1-2 complexity, where the tract length did not exceed 4 cm. Our modification utilized a power setting of 14 W and a controlled retraction rate of the laser fiber of 1 mm per 3 seconds. All participants provided written informed consent for the anonymous use of their data.

The surgical procedure followed a standardized protocol. Preoperative preparation included an enema (Enema Clean™) administered the day before and on the day of the procedure. Antibiotic prophylaxis with 1 g of Ceftriaxone was administered intravenously 30 minutes preoperatively. As our equipment, we employed the Cherylas-15N laser apparatus, with a wavelength of 1470 nm, manufactured by Wuhan Dimed Laser Technology Co., Ltd. (China). Procedures were performed under spinal anesthesia with the patient in the Lloyd-Davis position; the surgical field was prepared with an antiseptic solution (Betadine). A previously placed seton drainage served as a guide for the insertion of the radial-emitting laser fiber through the external opening of the fistula tract until it

reached the level of the rectal lumen. The device was operated at 14 W in continuous mode. With the device activated, the radial-emitting laser fiber was continuously retracted from the lumen of the fistula tract at a rate of 1mm per 3 seconds. At the final stage, 1-2 cm of the distal part of the fistula was excised, including the external opening, and the internal opening of the fistula tract was closed by means of a 2-0 Vicryl Z-type suture.

All patients were followed regularly from discharge.

Permanent healing was achieved in 23 of the 31 patients (74.1%); one patient (3%) experienced an early postoperative complication manifesting as acute paraproctitis

A case report

A 39-year-old male patient D. presented to the surgical department of the AIMS diagnostic clinic in June 2022 (Case file № A017343), reporting painful discomfort at the site of the external fistula opening, accompanied by scant purulent-sanguineous discharge. His medical history began in August 2021 with an incision and drainage (I&D) procedure for acute paraproctitis. Over the course of the

following several months, the patient developed a rectal fistula. Routine examination revealed the external opening of the fistula located at the 10 o'clock position, 2 cm from the anal verge, with a diameter of approximately 5 mm. The internal opening, approximately 3 mm in diameter, was identified at the 11 o'clock position, with slight cicatricial deformity. Sphincter tone and voluntary contraction were preserved. Preoperative laboratory findings were within normal limits. 3D ultrasound indicated an extrasphincteric fistula with a length of approximately 34 mm and a width of about 8 mm. The internal fistula opening was identified at 11 o'clock in the anal crypt projection, measuring 3 mm in diameter. The fistula tract was drained via the external opening located 2 cm from the anal verge at the 10 o'clock position (Figure 1). Sphincterometry results showed a mean resting anal canal pressure of 47.7 mm Hg and a maximum pressure during voluntary contraction of 163.8 mm Hg. The patient scored 0 on the Wexner scale, indicating normal retention function. The clinical diagnosis was an anterior extrasphincteric rectal fistula of grade 1 complexity. Consequently, on June 3, 2022, a draining latex seton was inserted into the fistula tract as the first stage of treatment.

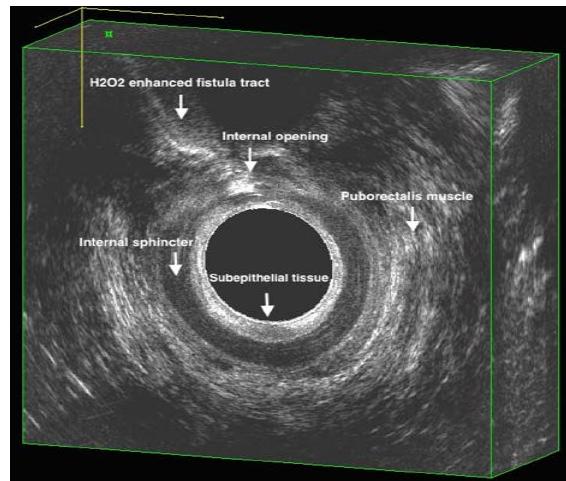


Figure 1. View of the fistula tract after contrast enhancement with hydrogen peroxide solution in a 39-year-old male patient.

The second stage of treatment was performed on July 4, 2022, involving laser ablation of the fistula tract using our modified FiLaC technique. The patient was discharged the following day in satisfactory condition and prescribed symptomatic therapy with NSAIDs (Brufen and Paracetamol at average daily doses) for pain management. However, on day 10, the patient reported onset of pain at the site of the previous external opening, with soft tissue edema evident by day 11. Upon readmission, 3D ultrasonography identified an 18×12 mm fluid collection with heterogeneous contents, located parallel to the projection of the former fistulous tract manifesting as a hypoechoic band. Consequently, the patient underwent incision and drainage of the abscess cavity. The subsequent postoperative course was uneventful. A definitive procedure was subsequently performed, involving excision of the fistula with suturing of the sphincter. The postoperative wound healed over the following 38 days. Final anorectal manometry revealed a mean resting pressure of 34 mmHg and a maximum voluntary contraction pressure of 107 mmHg. These findings were consistent with grade 1 anal

sphincter insufficiency. The Wexner incontinence scale score was 5, confirming clinically symptomatic anal incontinence.

Discussion

Since its introduction, the FiLaC (Fiber Optic Laser Ablation of Rectal Fistulas) technique has demonstrated both safety and considerable efficacy. Reported rates of early postoperative complications following FiLaC average between 2% and 5%, though they can reach up to 15% in some studies [6-8]. Our modified and patented FiLaC technique (Patent IAP 07346. Anal kanalini murakkab oqma yaralarini xirurgik davolash usuli. 2023. Uzbekistan) reduced the incidence of these complications from 13% (observed with the original technique) to 3% in our cohort. Despite this improvement, a residual risk of early complications persists.

We posit that a significant factor contributing to these complications is the undetected presence of secondary fistula tracts or abscess cavities during preoperative assessment. This underscores the critical role of high-quality three-dimensional ultrasonography (3D USG) in patient selection for laser

ablation. Given that 3D USG has proven sensitivity equivalent to endoanal MRI in fistula mapping [9, 10], a meticulously performed ultrasound examination is essential not only for optimizing overall outcomes but also for minimizing the risk of early postoperative septic complications.

Conclusions

Contemporary literature contains numerous reports on early postoperative complications following laser ablation

for rectal fistulas while offering scant data on their etiology or prevention. Analyzing and publishing such cases is vital both to elucidate the underlying causes and to formulate effective preventive strategies.

To improve treatment outcomes, all patients scheduled for this procedure should undergo a thorough and expertly performed 3D USG examination. In cases of diagnostic uncertainty, contrast-enhanced MRI is strongly recommended.

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ВИПАДОК РОЗВИТКУ ГОСТРОГО ПАРАПРОКТИТУ У ХВОРОГО, ЯКИЙ ПІДДАВСЯ МОДИФІКОВАНІЙ МЕТОДИЦІ ЛАЗЕРНОЇ АБЛЯЦІЇ КОРОТКОГО СКЛАДНОГО ПРЯМОКИШЕЧНОГО СВИЩА

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Резюме.

Незважаючи на те, що з моменту першої наукової загадки про прямокишкові свищі минуло багато століть, проблема їх лікування як і раніше залишається актуальною. На даний момент існує чіткий поділ методів їх лікування на класичні та сучасні (пластичні закриття, VAAFIT®, технологія FiLAC® та інші). Звичайно, сучасні методи тільки прагнуть досягти рівня ефективності класичних, але, з точки зору безпеки, вони довели свою ефективність як методи, що зберігають функцію сфинктера, що особливо важливо для пацієнтів із симптомами анального нетримання або високим ризиком його розвитку.

Клінічний випадок: пацієнт 39 років, звернувся до хірургічного відділення лікувально-діагностичної клініки AIMS в червні 2022 року зі скаргами на біль і дискомфорт в анальній області, гнійно-кров'янисті виділення з зовнішнього отвору свищевого ходу, свербіж і печіння шкіри навколо ануса. Хворий із серпня 2021 року, коли йому було виконано розтин і дренування гострого парапроктиту. Протягом наступних кількох місяців у хворого розвинувся прямокишковий свищ. Пацієнт був обстежений у пла-новому порядку. Клінічний діагноз: передній екстрасфінктерний свищ 1-го ступеня складності. У зв'язку з цим у червні 2022 року, в якості першого етапу лікування у свищевий хід була введена дренуюча латексна лігатура. Через місяць була проведена лазерна аблляція свищевого ходу з використанням нашої модифікації технології FiLA C. На 10-й день після операції у пацієнта розвинулися симптоми гострого парапроктиту. При виконаному 3D-УЗД була виявлена невелика за розміром порожнина з не-однорідним вмістом, паралельно розташована до проекції колишнього свищевого ходу. У зв'язку з чим пацієнту було виконано розтин і дренування гострого парапроктиту. Післяопераційний період протікав гладко, без особливостей. Пізніше, в якості заключного етапу лікування було проведено висічення свищевого ходу з ушиванням сфинктера.

Висновки. У сучасній літературі описано достатню кількість випадків розвитку гострого парапроктиту у пацієнтів, які перенесли лазерну аблляцію прямокишкових свищів. Однак, практично відсутні дані про можливі причини таких ускладнень

і способи їх профілактики. Ми вважаємо важливим представляти випадок таких післяопераційних ускладнень не тільки з точки зору аналізу причин їх виникнення, але і для розробки оптимальних способів їх профілактики.

Ключові слова: короткі прямокишкові свищі; складні прямокишкові свищі; лазерна аблляція прямокишкових свищів; технологія FiLAC®; ранні післяопераційні ускладнення.

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