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Treating peristomal irritant dermatitis with low-level laser therapy: a case report

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ABSTRACT

Objective: To report the clinical case of a patient with an ileostomy who underwent Low-Level Laser Therapy (LLLT) for the treatment of peristomal dermatitis. **Method:** This is a case study conducted in an ostomy care service in southern Brazil in 2025, following the Case Report (CARE) guidelines of the Enhancing the Quality and Transparency of Health Research. Data were collected during 11 outpatient consultations, including clinical assessment of the peristomal lesion, measurement with a ruler, serial photographic records, and analysis of the electronic medical record. **Results:** A 28-year-old female patient, diagnosed with cervical cancer in 2024, was treated with radiotherapy and brachytherapy. She subsequently developed actinic colitis, rectal stenosis, and a rectovaginal fistula, requiring an ileostomy. The patient presented with peristomal dermatitis, pain, weakness, and difficulty in securing the ostomy appliance. Treatment with LLLT was initiated, resulting in progressive improvement of the skin condition and better adhesion of the ostomy appliance. Throughout follow-up, cutaneous recovery was observed, with reduction of dermatitis and improvement in overall condition. **Conclusion:** LLLT proved effective in the treatment of peristomal dermatitis in a patient with an ileostomy, promoting rapid skin recovery, improved adhesion of the ostomy appliance, and relief of symptoms. The intervention significantly contributed to the patient's rehabilitation and quality of life, highlighting its importance as a complementary resource in ostomy care.

KEYWORDS: Radiation effects. Radiotherapy. Low-level light therapy. Enterostomal therapy. Case reports.

Tratando a dermatite irritativa periestomal com terapia a laser de baixa potência: relato de caso

RESUMO

Objetivo: Relatar o caso clínico de paciente com ileostomia submetida à Terapia com Laser de Baixa Potência (TLBP) para o tratamento de dermatite periestomal. **Método:** Estudo de caso realizado num serviço de estomaterapia do Sul do Brasil, em 2025, conduzido conforme as diretrizes *Case Report* (*CARE*) da rede *Enhancing the Quality and Transparency of Health Research* (*EQUATOR*). A coleta de dados ocorreu em 11 consultas ambulatoriais, incluindo avaliação clínica da lesão periestomal, mensuração com régua, registros fotográficos seriados e análise de prontuário eletrônico. **Resultados:** Paciente de 28 anos, do sexo feminino, diagnosticada com neoplasia de colo uterino em 2024, tratada com radioterapia e braquiterapia. Evoluiu com colite actínica, estenose retal e fístula retovaginal, necessitando de ileostomia. Apresentou dermatite periestomal, dor,

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fraqueza e dificuldade para fixação do equipamento coletor. Iniciou tratamento com TLBP, observando-se melhora progressiva da pele e da aderência do equipamento coletor. Ao longo do acompanhamento, houve recuperação cutânea, com redução da dermatite e melhora do estado geral. **Conclusão:** A TLBP mostrou-se eficaz no tratamento da dermatite periestomal em paciente com ileostomia, promovendo rápida recuperação cutânea, melhor adesão do equipamento coletor e alívio dos sintomas. A intervenção contribuiu significativamente para a reabilitação e qualidade de vida da paciente, evidenciando sua importância como recurso complementar na estomaterapia.

DESCRITORES: Efeitos da radiação. Radioterapia. Terapia com luz de baixa intensidade. Estomaterapia. Relato de caso.

Tratamiento de la dermatitis irritativa periestomal con terapia com láser de baja potencia: reporte de caso

RESUMEN

Objetivo: Informar el caso clínico de una paciente con ileostomía sometida a terapia con láser de baja potencia (TLBP) para el tratamiento de la dermatitis periestomal. **Método:** Estudio de caso realizado en un servicio de estomaterapia del sur de Brasil, en 2025, llevado a cabo conforme a las directrices CARE (Case Report) de la red Enhancing the Quality and Transparency of Health Research (EQUATOR). La recolección de datos se efectuó en 11 consultas ambulatorias, incluyendo evaluación clínica de la lesión periestomal, medición con regla, registros fotográficos seriados y análisis de la historia clínica electrónica. **Resultados:** Paciente de 28 años, sexo femenino, diagnosticada con neoplasia de cuello uterino en 2024, tratada con radioterapia y braquiterapia. Evolucionó con colitis actínica, estenosis rectal y fístula rectovaginal, requiriendo ileostomía. Presentó dermatitis periestomal, dolor, debilidad y dificultad para la fijación del dispositivo colector. Inició tratamiento con TLBP, observándose mejoría progresiva de la piel y de la adherencia del dispositivo colector. A lo largo del seguimiento, se evidenció recuperación cutánea, con reducción de la dermatitis y mejoría del estado general. **Conclusión:** La TLBP se mostró eficaz en el tratamiento de la dermatitis periestomal en paciente con ileostomía, promoviendo una rápida recuperación cutánea, mejor adhesión del dispositivo colector y alivio de los síntomas. La intervención contribuyó significativamente a la rehabilitación y a la calidad de vida de la paciente, evidenciando su importancia como recurso complementario en la estomaterapia

DESCRIPTORES: Efectos de la radiación. Radioterapia. Terapia por luz de baja intensidad. Estomaterapia. Informes de casos.

INTRODUCTION

Cervical cancer is the third most common type of cancer among women in Brazil. Between 2020 and 2022, more than 625,000 new cases of this disease were estimated to have occurred[1]. One of the main therapeutic options for this neoplasm is radiotherapy, which uses ionizing radiation as a treatment strategy, capable of removing electrons from atoms and thereby destroying tumor cells. This modality can be delivered through two main approaches: brachytherapy and teletherapy, also known as external beam radiotherapy[1,2].

With advances in oncological treatment, an increasing number of patients have achieved longer survival following a cancer diagnosis. However, this progress has also brought challenges, such as the rising incidence of radiotherapy-associated side effects, which significantly impact individuals' quality of life[3,4]. Among these effects, gastrointestinal toxicity stands out as an acute complication resulting from radiation exposure to the small and large intestines, manifesting as nausea, vomiting, diarrhea, and abdominal cramps[5].

Actinic colitis, also known as radiation colitis, is an inflammation of the colon caused by exposure to radiotherapy, typically associated with the treatment of cancers in the pelvic or abdominal regions. This condition may lead to symptoms

such as diarrhea, abdominal pain, blood in the stool, and discomfort[6]. One of the most severe complications of actinic colitis is intestinal perforation, which occurs when radiation progressively damages the intestinal layers, weakening the bowel wall and leading to rupture. This results in the leakage of intestinal contents into the abdominal cavity, potentially causing peritonitis, a severe acute inflammatory complication that requires immediate medical intervention due to its high risk of morbidity and mortality[7].

Some studies have indicated that, in cases of radiation-induced intestinal injury, fecal diversion is considered the most effective and safe therapeutic approach[8–10]. In parallel, patients with an ileostomy frequently develop Irritant Contact Dermatitis (ICD), which represents the most common cutaneous complication among individuals with ostomies[11]. In this population, this condition primarily occurs because the intestinal effluent is liquid, highly alkaline, and rich in proteolytic enzymes, which promote continuous irritation of the peristomal skin[12]. This inflammatory process compromises the integrity of the skin surrounding the stoma, leading to clinical manifestations such as pain, pruritus, and a burning sensation. Continuous leakage of effluent further contributes to the progression of peristomal skin lesions, intensifying irritation and discomfort. This situation may impair proper adhesion of the ostomy appliance, thereby perpetuating a cycle of dermatitis that tends to progressively worsen[13].

In this context, photobiomodulation, particularly with low-level laser therapy, is an effective adjuvant treatment for cutaneous wounds. This therapeutic modality operates through the emission of light that stimulates cellular activity, promoting tissue regeneration, cell proliferation, and acceleration of the healing process. Its effects include anti-inflammatory, analgesic, and antimicrobial actions, as well as the promotion of angiogenesis, nerve regeneration, and edema reduction[14,15].

To ensure treatment safety and efficacy, it is essential that the application technique is continuously updated and refined. This involves mastery of parameters such as power (W or mW), pulse frequency (Hz), pulse duration (in nanoseconds), emission mode (continuous or pulsed), wavelength (λ), as well as proper device calibration and appropriate selection of the probe. It is also crucial to consider exposure time (s), energy density (J/cm^2), power density (W/cm^2), and the total treatment area (cm^2 or mm^2). The definition of the number of application points, energy per point (J), and total energy delivered should be based on specific clinical protocols, tailored to the patient's condition, ensuring a precise and individualized therapeutic intervention[16].

OBJECTIVES

To report the clinical case of a patient with an ileostomy who underwent Low-Level Laser Therapy (LLLT) for the treatment of peristomal dermatitis.

METHODS

This is a descriptive case study, guided by the Case Report (CARE) tool of the Enhancing the Quality and Transparency of Health Research, addressing the application of Low-Level Laser Therapy (LLLT) in the treatment of peristomal dermatitis in a patient with an ileostomy. The study was conducted at a Reference Center for Ostomy Care located in southern Brazil, from May to June 2025.

The sample consisted of a single patient treated at the aforementioned center who, after receiving explanations about the study objectives and her rights as a participant, agreed to participate by signing the Informed Consent Form. In addition, she formally authorized the recording and use of images through a specific consent form for this purpose.

Data collection was carried out on an outpatient basis during 11 clinical consultations conducted by a stomatherapy nurse, each lasting an average of 60 minutes. These consultations included participant observation, clinical assessment, photographic documentation, monitoring of lesion progression through ruler-based measurement, and recording in the patient's medical chart. Complementary information was obtained from the patient's electronic medical record.

It is necessary to detail the follow-up outcomes, the instruments used for data collection, and the procedures adopted for data analysis.

This study was conducted in accordance with the Regulatory Guidelines and Standards for Research Involving Human Subjects, as established by Resolution No. 466/2012 of the National Health Council, as well as with the General Data Protection Law, dated August 14, 2018. The study was approved by the institution's Research Ethics Committee, under the Certificate of Presentation for Ethical Consideration No. 87180825.5.0000.5338 and opinion No. 7,508,613.

RESULTS

The clinical case that served as the basis for the development of this study is described below.

CASE REPORT

A 28-year-old female patient, previously healthy, with no known allergies, no history of medication use, and no comorbidities, with a history of one pregnancy and vaginal delivery in 2022. One year after delivery, she presented with vaginal bleeding and, following diagnostic investigation, was diagnosed with cervical cancer in 2024. She underwent external beam radiotherapy and brachytherapy, subsequently developing actinic colitis with rectal stenosis, colonic ischemia, and a rectovaginal fistula with contained perforation. She later underwent rectosigmoidectomy with ileostomy creation on April 16, 2025. The postoperative course was complicated by an abscess at the site of the support rod, which was drained, requiring ileostomy reconstruction on April 25 of the same year.

On May 13, she was referred by her attending physician for evaluation at a public outpatient ostomy care clinic. On examination, the stoma was located on the right side, retracted, with a groove on the left, measuring 19 mm, with surgical sutures and an area of mucocutaneous separation on the left. There was also an extensive area of Irritant Contact Dermatitis extending beyond the iliac crest, with abundant exudate, which impaired the adhesion of the ostomy appliance. She was using only a towel to contain the effluent and reported loss of appetite, insomnia, as well as "marked weakness, dizziness, nausea, and intense pain in the peristomal region." The peristomal skin was cleansed, followed by the application of a skin protective powder, barrier spray, protective paste, and a convex ostomy appliance.

On May 14, 2025, she returned presenting detachment of the ostomy appliance, with the presence of liquid effluent, pallor, malaise, and a sensation of fainting. Given this condition, Low-Level Laser Therapy was initiated, using wavelengths of 808 nm ± 10 nm in the infrared spectrum and 660 nm ± 10 nm in the red spectrum, both with an output power of 100 mW ± 20%. To protect the probe, a non-lubricated condom was used. Irradiation was performed at six peristomal points with 1.5 J of infrared and 1.5 J of red per point, and at 18 points in the dermatitis area, with 1 J of infrared and 1 J of red per point, maintaining a distance of 1 cm between them. After the procedure, skin protective powder, barrier spray, protective paste, a convex ring, and a convex ostomy appliance were applied. A follow-up visit was scheduled for 48 hours later.

Figure 1 shows the irritant dermatitis and the stoma prior to the first application of Low-Level Laser Therapy.

On May 16, 2025, she returned for reassessment, presenting adequate adhesion of the ostomy appliance, with significant improvement in skin integrity, absence of exudate, and complete recovery of the skin near the iliac crest. Dermatitis persisted only in the region adjacent to the stoma, associated with the enlarged cut of the ostomy appliance, required due to stoma retraction. Improvement in general condition was observed, with reports of better food intake and effluent of a more pasty consistency. A new laser application was performed at five points, with 1 J of red and 1 J of infrared per point, in the affected area.

On May 19, 2025, maintenance of the ostomy appliance used in the previous consultation was observed, with initial detachment, but with evident improvement of the peristomal skin. Surgical sutures were removed with medical authorization, and laser was applied at three points, with 1 J of red and 1 J of infrared at each wavelength.

On May 23, 2025, reassessment revealed slight stoma protrusion compared to the beginning of follow-up, with adequate adhesion of the ostomy appliance and reduced depth of the mucocutaneous separation area.

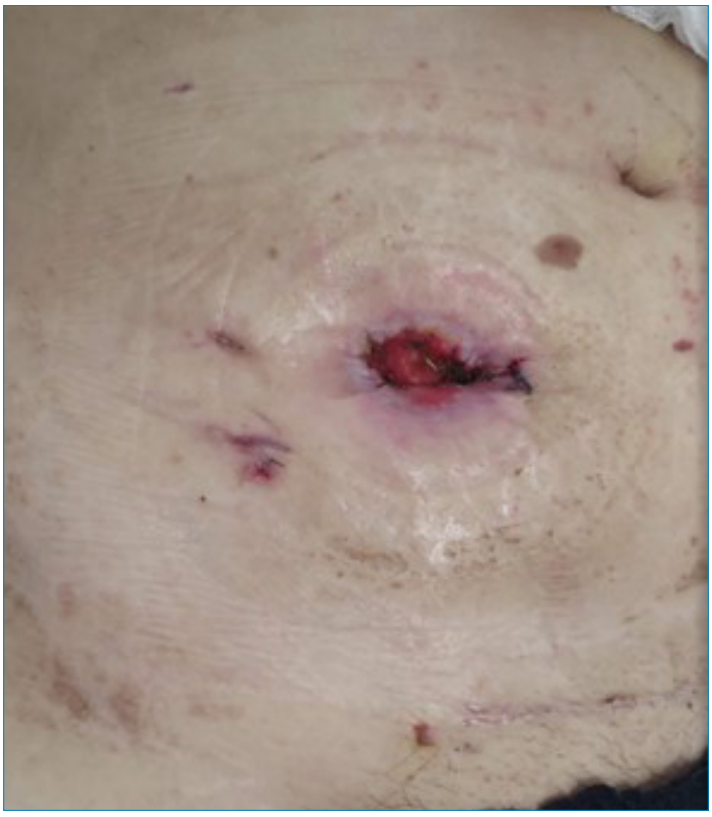
On May 26, 2025, progression of stoma protrusion was observed, still with the presence of a groove on the left side, and significant improvement in peristomal dermatitis. Laser was applied at three points adjacent to the stoma, with 1 J

Source: Authors' collection; 2025.

Figure 1. Photographic record prior to the first session of Low-Level Laser Therapy. Porto Alegre (RS), Brazil, May 2025.

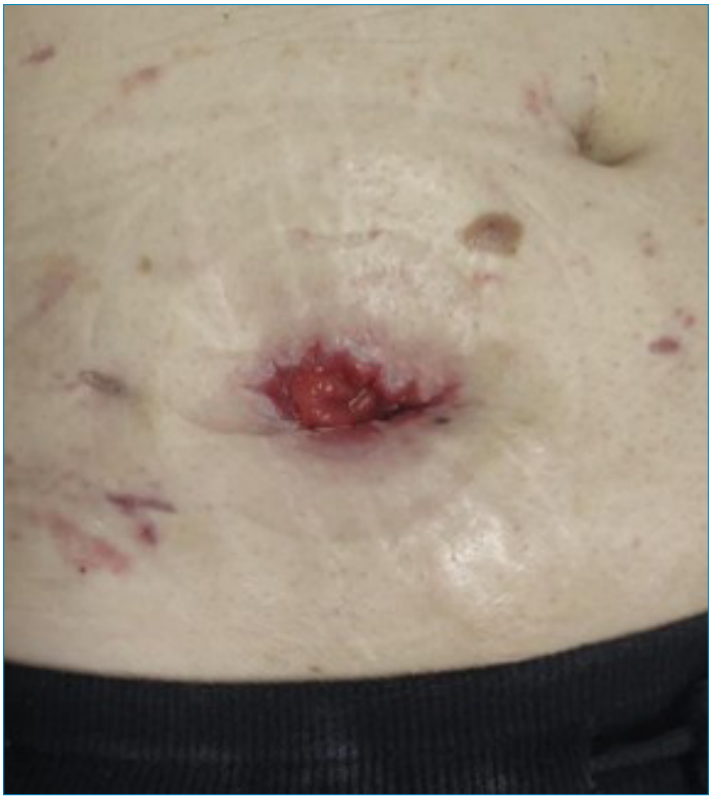
Source: Authors' collection; 2025.

Figure 2. Photographic record prior to the second session of Low-Level Laser Therapy. Porto Alegre (RS), Brazil, May 2025.



Source: Authors' collection; 2025.

Figure 3. Photographic record prior to the third session of Low-Level Laser Therapy. Porto Alegre (RS), Brazil, May 2025.



Source: Authors' collection; 2025.

Figure 4. Photographic record prior to the fifth session of Low-Level Laser Therapy. Porto Alegre (RS), Brazil, May 2025.

of infrared and 1 J of red per point. Skin cleansing was performed, followed by the application of skin protective powder, barrier spray, protective paste, a convex ring, and a cut-to-fit convex ostomy appliance.

Figures 2, 3, and 4 illustrate the clinical evolution, demonstrating progressive improvement in peristomal skin integrity after the use of Low-Level Laser Therapy and the effectiveness of the treatment in the reported case.

At the visit on June 2, 2025, after 11 sessions, the patient presented significant skin recovery, with near-complete resolution of peristomal dermatitis, with only a small residual area remaining. The ostomy appliance showed an average wear time of three days. In addition, she reported complete pain relief, as assessed by the verbal rating scale, improvement in nutritional status, and increased energy levels. She also reported that restoration of intestinal continuity was scheduled for June of the same year.

DISCUSSION

Patients with an ostomy frequently face dermatological complications in the peristomal region, with irritant dermatitis being one of the most prevalent, significantly impacting quality of life[17]. This condition is directly related to prolonged contact of the skin with effluents from the stoma, such as feces or urine, which have chemical and enzymatic characteristics capable of causing skin damage. Such exposure promotes the development of local inflammation due to the action of digestive enzymes and the irritant nature of these secretions. Among the main predisposing factors are improper positioning of the ostomy appliance, which favors leakage, insufficient skin protection around the stoma, and high effluent volume, especially in ostomies with liquid or semi-liquid output[18].

It is estimated that between 21% and 70% of individuals with an ostomy develop some type of stoma-related complication. Although a significant proportion can adapt adequately to their new condition, these complications are often associated with factors such as improper stoma function, inadequate location during the surgical procedure, and insufficient performance of self-care practices. These conditions may lead to various clinical alterations, including dermatitis, bleeding, prolapse, necrosis, hernias, edema, leakage, stenosis, and retraction[19].

Additionally, a multicenter study conducted in countries in North America and Europe demonstrated that peristomal complications occur more frequently in individuals with local anatomical irregularities, such as skin folds or grooves, as well as in those who have undergone ileostomy[20], possibly due to the greater aggressiveness, volume, and enzymatic composition of the intestinal effluent characteristic of this type of diversion.

In the case described, the introduction of Low-Level Laser Therapy represented a turning point in the patient's cutaneous rehabilitation process. Progressive improvement in peristomal skin integrity was observed, along with a reduction in inflammatory exudate, increased durability and adhesion of the ostomy appliance, and a decrease in local symptoms, including pain and discomfort. In addition, the favorable clinical response had positive systemic repercussions, such as improvement in nutritional status, sleep pattern, and overall energy levels.

Caring for patients who experience difficulties in wound healing is an increasing challenge, requiring the development of innovative strategies. One technique that has stood out in the treatment of such lesions is Low-Level Laser Therapy, characterized by its ease of application and low cost, and which can be used as a complement to traditional therapies or, in some cases, as an independent therapeutic alternative. Its therapeutic effects include anti-inflammatory action, pain relief, and stimulation of tissue regeneration. Interest in Low-Level Laser Therapy has grown considerably, driven by the various positive outcomes reported[21].

In this context, the role of the nurse becomes even more relevant, as this professional plays a central role in comprehensive patient care and in the implementation of complementary therapies. The expansion and consolidation of scientific knowledge regarding laser therapy are essential to strengthen its use as an effective therapeutic technology in tissue repair processes. Recognizing this relevance, the Regional Nursing Councils of São Paulo and the Federal District, as well as the Federal Nursing Council, have already issued favorable opinions regarding the use of low-level laser therapy by nurses in the treatment of wounds, oral mucositis, and nipple lesions. For this purpose, it is essential that nurses are properly trained, ensuring the appropriate, safe, and effective application of the technique[22].

Study Limitations

Despite the promising findings, this study has some limitations. It is a single case report, which restricts the generalizability of the results to larger populations. Furthermore, no validated or standardized instruments were used for the objective assessment of tissue healing or quality of life, which limits the methodological robustness and reproducibility of the data presented.

Recommendations

In light of these limitations, it is recommended that controlled clinical studies be conducted with representative samples and a longitudinal design, incorporating standardized and validated instruments for the measurement of clinical outcomes. Such investigations are essential to confirm the effectiveness of Low-Level Laser Therapy in the treatment of peristomal complications and to support the development of evidence-based clinical care protocols.

CONCLUSION

This case highlights the relevance of using adjuvant therapeutic technologies in the care of patients with an ostomy, particularly in the presence of severe cutaneous complications. Low-Level Laser Therapy proved to be an effective, safe, and accessible strategy, promoting significant improvement in peristomal skin integrity and contributing to clinical rehabilitation and the patient's quality of life. Throughout follow-up, a progressive improvement in dermatitis was observed, with increased durability of the ostomy appliance, complete pain relief, as well as improvements in appetite and emotional status. The gradual reduction in the number of laser application points reflected the positive evolution of the treatment, as evidenced by appropriate adaptation and greater durability of the ostomy appliance.

Despite the promising results, there is a clear need for further studies with more robust methodological designs to confirm and consolidate the effectiveness of Low-Level Laser Therapy in the management of peristomal dermatitis across different clinical contexts.

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Data Availability: All data were generated or analyzed in the present study.

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