

Use of laser therapy in pilonidal cyst

Uso de la terapia con láser en el quiste pilonidal

Uso de laserterapia em cisto pilonidal

Anelvira de Oliveira Florentino¹

ORCID: 0000-0003-3835-2784

Laís Fernanda da Silva²

ORCID: 0000-0003-3835-2784

Andrea Cibele Roque³

ORCID: 0000-0003-4546-7061

Adriane Lopes²

ORCID: 0000-0001-7221-7012

Gercilene Cristiane Silveira²

ORCID: 0000-0002-1642-6917

Flávio Ademilson Corradini

Junior²

ORCID: 0000-0002-9593-437X

Mariana Baptistella Salvador²

ORCID: 0000-0002-1518-8910

¹Universidade Estadual Paulista
Júlio de Mesquita Filho. São
Paulo, Brazil.

²Faculdades Integradas de Jaú.
São Paulo, Brazil.

³Hospital Unimed Jaú. São Paulo,
Brazil.

How to cite this article:

Florentino AO, Silva LF, Roque AC,
Lopes A, Silveira GC, Corradini Junior
FA, Salvador MB. Use of laser therapy
in pilonidal cyst. Glob Acad Nurs.
2020;1(3):e53.

<https://dx.doi.org/10.5935/2675-5602.20200053>

Corresponding author:

Anelvira de Oliveira Florentino

E-mail:

anelviraflorentino@yahoo.com.br

Chief Editor: Carolyn dos Santos

Guimarães da Fonseca

Executive Editor: Kátia dos Santos

Armada de Oliveira

Submission: 08-18-2020

Approval: 11-10-2020

Abstract

Considering that laser therapy has been a favorable modality for wound healing, as it controls signs and symptoms of the inflammatory process, increases the proliferation of fibroblasts and collagen synthesis, this study aimed to analyze the contribution of low intensity laser in the treatment for the healing of wound after pilonidal cyst surgery as a therapeutic possibility, by conducting a case study. This research had a satisfactory result and allowed us to confirm the effectiveness of the resource used in the wound healing process, which allows us to conclude the importance of biomodulation in dehiscence after conventional surgical removal of pilonidal cyst, by laser therapy, signaling that it is a new non-invasive for effective and safe treatment, due to its efficient anti-inflammatory and analgesic action, helping in the tissue repair process.

Descriptors: Low Intensity Laser Therapy; Operative Wound Dehiscence; Pilonidal Cyst.

Resumén

Considerando que la terapia con láser ha sido una modalidad favorable para la cicatrización de heridas, ya que controla los signos y síntomas del proceso inflamatorio, aumenta la proliferación de fibroblastos y la síntesis de colágeno, este estudio tuvo como objetivo analizar la contribución del láser de baja intensidad en el tratamiento para la cicatrización de herida tras cirugía de quiste pilonidal como posibilidad terapéutica, mediante la realización de un estudio de caso. Esta investigación tuvo un resultado satisfactorio y permitió constatar la efectividad del recurso utilizado en el proceso de cicatrización de heridas, lo que nos permite concluir la importancia de la biomodulación en la dehiscencia posterior a la extirpación quirúrgica convencional de quiste pilonidal, mediante terapia láser, señalando que se trata de una nueva no-invasiva para un tratamiento eficaz y seguro, por su eficaz acción antiinflamatoria y analgésica, ayudando en el proceso de reparación de los tejidos.

Descriptores: Terapia con Láser de Baja Intensidad; Dehiscencia Operativa de la Herida; Quiste Pilonidal.

Resumo

Considerando que a Laserterapia tem sido uma modalidade favorável à cicatrização de feridas, por controlar sinais e sintomas do processo inflamatório, incrementar a proliferação de fibroblastos e a síntese de colágeno, este trabalho objetivou analisar a contribuição do laser de baixa intensidade no tratamento para cicatrização de ferida pós cirurgia de cisto pilonidal como possibilidade terapêutica, por meio da realização de um estudo de caso. Esta pesquisa teve um resultado satisfatório e nos permitiu confirmar a efetividade do recurso utilizado no processo de cicatrização da ferida, o que permite concluir a importância da biomodulação em deiscência pós remoção cirúrgica convencional de cisto pilonidal, pela laserterapia, sinalizando ser uma nova proposta não-invasiva de tratamento eficaz e seguro, devido a sua eficiente ação antiinflamatória e analgésica, ajudando no processo de reparação tecidual.

Descritores: Terapia a Laser de Baixa Intensidade; Deiscência da Ferida Operatória; Cisto Pilonidal.

Introduction

The pilonidal cyst is a chronic inflammation of the post-sacral sinuses that affects the area of the skin posterior to the anus, covering the sacrum in the region of the intergluteal cleft. Usually, this problem is associated with congenital characteristics and hormonal changes at puberty, leading to the growth of hairs that enter the skin of the region, forming the cyst. Pilonidal cyst occurs, in most cases, in men aged between 15 and 30 years. Women account for only 20% of cases^{1,2}.

The first symptoms of a pilonidal cyst involve the formation of an abscess, with a lot of swelling and pain. It can cause fever due to the acute inflammatory condition and therefore it may be necessary to drain the material accumulated in the cyst as a palliative solution, since the use of antibiotics can be indicated to control the process, but it also does not solve the problem. In the chronic phase, the orifices of the pilonidal cyst can eliminate secretion persistently³.

Therefore, the best treatment option is predominantly surgical and aims to achieve a cure. Until a few years ago, the only effective way to treat a pilonidal cyst was through conventional surgical removal. However, this technique requires a long and laborious postoperative period, in which patients must perform deep dressings daily, for approximately 60 days, with nursing professionals, to prevent the problem from reappearing^{4,5}.

Although the treatment is mainly surgical, there are several surgical techniques described in the literature that include cyst excision, minimally invasive techniques, such as laser treatment. This technique offers results as positive as conventional surgery, but with more comfort to patients. The healing process is faster, can last up to 10 days and with treatment at home^{3,6}.

The laser has been characterized as a powerful anti-inflammatory, whose advantages over conventional drugs are numerous, mainly due to the absence of side effects, specific local action, and great acceptability on the part of patients. Treatment is a quick and effective method, which is carried out by a professional lasertherapist.

Thus, this study aims to analyze the contribution of low-level laser in the treatment for wound healing after pilonidal cyst surgery as a therapeutic possibility, through an experience report.

Methodology

This is an account of the experience of a specific case of a patient with a pilonidal cyst undergoing laser therapy, in which it occurred in 2019, from July to December. The present study was authorized by the appropriate hospital institution, through the Letter of Consent signed by the Board, and the therapy was started after the signing of the Informed Consent Form by the patient.

Female patient, E. M., 35 years old, without comorbidities, underwent removal of a pilonidal cyst in the sacrococcygeal region, on 08/17/2017, through conventional surgical removal. She was discharged from the hospital and left with a topical dressing (hydrogel) with daily changes for two years (cleaning with 0.9% saline (SF) and local use of calcium alginate, 2x / day, with unsatisfactory results.

On 07/02/2019, due to the amount of secretion and phlogistic signs, material for culture with growth of *Pseudomonas aeruginosa* was collected, being treated because of the antibiogram, with ciprofloxacin and cephalexin, however, without satisfactory results.

On 12/01/2019, the patient underwent a consultation at the Emergency Department of a private hospital and started a topical dressing with hydrogel and gauze, with exchange and cleaning with daily saline. Due to little regression of the lesion and unsatisfactory result, it was suggested to start with low intensity photobiomodulation therapy with 1 cm from the lesion and with the application of 4 cages per point. The application was carried out at the residence, twice a week with the association of kerlix (gauze impregnated with PHMB) daily. In the first sessions, size x depth regression was observed.

After the patient's permission and authorization, LBI applications were administered in a timely manner around the edge of the surgical wound, keeping an interval of 2 cm from each point, along the entire length of the dehiscence, keeping 0.5 cm of distance of the skin. The Laser Diode (DMC, Brazil) was used with the following parameters: $\lambda = 685 \text{ nm}$, Fluency = 4.5 J/cm^2 , P=20mW and, before the applications, IM measurements (cirtometry) were performed, following the evolution of the wound area and depth. For pain assessment, the Visual Analogue Scale (VAS) was used (in which zero indicated total absence of pain, and 10 represented unbearable pain).

The points to be observed in the therapy used: quick, painless therapy and without adverse reaction; improvement in appearance and color around the wound; good cost x benefit in relation to the time spent previously with other therapies, including antibiotics; promoting quality of life, since being a young patient with an open lesion, her normal routine was impossible, such as going to the pool, riding a bicycle, etc; was instructed to be cautious when bathing so as not to wet the lesion site, avoiding infecting the lesion with dirty bath.

Regarding the treatment schedule, there is: 08/17/2017 there was conventional surgical removal of the pilonidal cyst; 07/02/2019 collected culture with pseudomonas; 12/01/2019 started photobiomodulation therapy, with the presence of opaque pink tissue with secretion (1st session); 12/06/2019 went through the 2nd session, with the presence of opaque pink fabric and reduced secretion; 12/11/2019 went through the 3rd session with reduction of wound measurements; and on 12/17/2019 he went through the 4th session with regression of the injury. Given steps can be seen in Figure 1.



Figure 1. Action and effects of low intensity laser radiation. Itapetininga, SP, Brazil, 2019

Source: Personal archive.

There was no need for debridement at any time during treatment with LBI, only being covered with gauze before the patient returned to her home, requesting daily asepsis with only 0.9% SF. The laser was applied until complete closure, without the administration of any medication. During the treatment with LBI, the wound showed an increase in the granulation tissue in all its extension and delimitation of the edges, as well as a decrease in fibrin. The application of photobiomodulation therapy, as well as the intervention of the nursing team, resulted in infection control and injury reduction.

Discussion

In the past, the only effective way to treat a pilonidal cyst was through conventional surgical removal. However, this technique requires a long and laborious postoperative period. In it, patients must perform daily, for approximately 60 days, deep dressings, with nursing professionals, to avoid the reappearance of the problem³.

Pilonidal cyst is an inflammation that affects the skin and subcutaneous tissue secondary to chronic inflammation, most frequently in the sacrococcygeal region, and associated with the presence of hair in this region¹. "Only after the reduction of the acute inflammatory process, the pilonidal cyst can be treated with surgery. This is the only effective form of treatment"³.

Laser treatment to remove pilonidal cyst is a minimally invasive technique that offers results as positive as conventional surgery, but with much more comfort to patients. Laser surgery to remove the pilonidal cyst usually lasts about 30 minutes, being performed with spinal anesthesia and the patient returns home on the same day. The procedure is performed through a fiber (catheter) inserted into the openings of the pilonidal cyst. The coloproctologist doctor cleans the area thoroughly, removing hair and tissues. Then, with the circular laser fiber, it cauterizes and coagulates the cyst inside, promoting its closure^{2,3,7}.

Laser surgery is especially indicated for small and medium sized pilonidal cysts. In exceptionally large cysts, a

combination of conventional technique with weekly laser application can be performed to accelerate the healing process in the postoperative period³.

The laser has great value in medicine thanks to the unique properties of its type of light emitted: the monochromaticity, the coherence, the directionality, and the high brightness, forming a narrow beam that concentrates all the emitted radiation. Its use is especially important not only in diagnostics, but also in therapeutic treatments. The effects of low-level laser irradiation are to promote chemical reduction reactions that alter the metabolism and spread^{8,9}.

The laser is characterized by being a coherent, collimated, monochromatic and uniformly polarized light emitting source, its behaviors being explained by the physical nature of the light, sometimes wave characteristics, sometimes energy transfer characteristics, called wave-particle duality¹⁰.

Medical practice is based on the interaction of laser radiation with biological tissues, which can have two purposes: diagnostic or therapeutic. The fundamental factors that determine the medical performance performed are wavelength that determines the absorption capacity; power density; exposure time. The interactions, based on the characteristics of the laser, can be of the type: a) Photomechanical or photodisruptive when there is tissue ionization; b) Ablative when the tissue breaks down into molecules; c) Photothermal, causing heating and even carbonization of the tissues; d) Photochemistry, when it changes the chemical processes of cells, especially those related to oxidative processes; e) Biostimulation and tissue regeneration, accelerating the multiplication processes of certain cells^{8,11}.

The ILIB (Intravascular Laser Irradiation of Blood) is a method of chemical and biological stimulation based on laser irradiation on blood cells, providing benefits such as: strengthening the immune system, improving blood microcirculation and relief of pain and inflammation. There is equipment in the Brazilian market that perform ILIB therapy topically¹².

Often, conventional treatments end up prolonging the healing time of these types of injuries, which causes high costs for treatments, in addition, the quality of life of patients affected by this injury is extremely compromised by pain, difficulty in walking, process chronic infectious disease, prolonged medication use and psychological condition¹³.

While Laser Therapy (Low Intensity Laser) is a painless technique that consists of donating light energy to the injured tissue, it has been used in various areas of health and has the action of accelerating tissue healing, modulating inflammation, promoting analgesia and recurrent complications throughout the tissue repair process. The effects are associated with the stimulation of the microcirculation, antioxidant effect and reactivation of the cellular respiratory potential promoted by low intensity laser radiation^{12,13}.

Due to these specific actions, the laser has been characterized as a powerful anti-inflammatory, whose advantages over conventional drugs are numerous, mainly due to the absence of side effects, specific local action, low cost, and great acceptability on the part of patients. The treatment is a fast and effective method, which is performed

by a professional specialist in injuries and laser therapist, after, necessarily, a specialized clinical evaluation, an individualized therapeutic plan is determined for the treatment with dressings and laser. Laser therapy can be associated with any other treatment method. The number of sessions is variable according to the type and size of the wound and the sessions can be performed daily or frequently two to three times a week¹³.

Conclusion

In this study, it was found the importance of photobiomodulation in dehiscence after conventional surgical removal of pilonidal cyst, by laser therapy, signaling to be a new non-invasive proposal for effective and safe treatment, due to its efficient anti-inflammatory and analgesic action, helping in the process of tissue repair. Thus, it is suggested to apply this procedure to other individuals, to support the treatment technique, enabling nurses to acquire new knowledge and incorporate it in practice, to promote health and subsidize care.

References

1. Mendes CRS, Ferreira LSM, Salim L. Estudo multicêntrico brasileiro e argentino no tratamento cirúrgico do cisto pilonidal por técnica minimamente invasiva. *Arq. Bras. C. Dig* [Internet]. 2019 [acesso em 26 jun 2020];32(3). Disponível em: https://www.scielo.br/scielo.php?pid=S0102-67202019000300400&script=sci_arttext&tIng=pt
2. Tien T, Athem R, Arulampalam T. Outcomes of endoscopic pilonidal sinus treatment (EPSiT): a systematic review. *Tech Coloproctol* 2018;22:325-331. DOI: 10.1007/s10151-018-1803-4
3. Braun M. Tratamento Efetivo a Laser. *Medicina, Proctologia, Saúde* [Internet]. 2018 [acesso em 03 jun 2020]. Disponível em: <https://soscardio.com.br/cirurgia-laser-cisto-pilonidal>
4. Aires FT, Bernardo WM. Tratamento do cisto pilonidal: cicatrização por segunda intenção ou sutura primária em linha média? *Rev. Assoc. Med. Bras.* [Internet]. 2009 [acesso em 03 jun 2020];55(5). Disponível em: http://www.scielo.br/scielo.php?pid=S0104-42302009000500007&script=sci_arttext
5. Ardelt M, et al. Limberg flap procedure is na simple operation for treatment of sacrococcygeal pilonidal sinus disease. *Zentralbl Chir.* 2015;140(5):473-5. DOI: 10.1055/s-0035-1557760
6. Pappas A, Christodoulou D. A new minimally invasive treatment of pilonidal sinus disease with the use of a diode laser: a prospective large series of patients. *Colorectal Dis.* 2018;587-591. DOI: 10.1111/codi.14285
7. Jelínková H. *Lasers for Medical Applications: Diagnostics, Therapy and Surgery.* Philadelphia: Woodhead Publishing; 2013.
8. Lizarelli RFZ. *Protocolos Clínicos Odontológicos: Uso do Laser de Baixa Intensidade.* 4 ed. São Carlos: MMO Optics; 2010.
9. Haley D, Pratt O. *Basic Principles of Lasers.* Anaesthesia & Intensive Care Medicine. 2017;18(12):648-650. DOI: 10.1016/j.mpaic.2017.10.001
10. Peng Q, Juzeniene A, Chen J, Svaasand LO, Warloe T, Giercksky KE, Moan J. *Lasers in Medicine.* Reino Unido: IOP Publishing; 2008.
11. Weber MH. *The Intravenous Laser Blood Irradiation – Introduction of a New Therapy.* Medical Center [Internet]. 2009 [acesso em 05 jul 2020]. Disponível em: <http://www.medicinabiomolecular.com.br/biblioteca/pdfs/Biomolecular/laser-irradiacao-intravenosa-weber.pdf>
12. Lopes, A. Laserterapia para tratamento de feridas. *Revista Saúde. Portal Brasil* [Internet]. 2019 [acesso em 05 jul 2019]. Disponível em: <http://rsaude.com.br/jundiai/materia/laserterapia-para-tratamento-de-feridas/20330>
13. Petz FC. *Terapia a laser na cicatrização da úlcera por pressão em adultos e idosos: revisão sistemática.* Curitiba, 2015. 140 f. Pós-Graduação em Enfermagem, Setor de Ciências da Saúde, Universidade Federal do Paraná, (Dissertação) Mestre. Área de concentração: Prática Profissional de Enfermagem, 2015.

