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Case Report

Treatment of Leg Venous Congestion Using Iranian Leech Therapy after Orthopedic Surgery in a 12-year Adolescent with Double and Open Fracture of Distal of Right Leg and Ankle Dislocation

Hassan Hajtalebi[1§], Hassan Khani Iurigh[2§*], Hamid Reza Hajtalebi[3§]

[1]Department of Health, Hajtaleb Medical Complex of Alternative and Complementary Medicine, Bojnurd, Iran.
[2]Mazandaran University of Medical Sciences, Sari, Iran.
[3]Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran.

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Abstract

Distal fractures of tibia along with fibula and ankle dislocation is one of the orthopedic problems seen in the area of fracture treatment. These fractures and dislocations can cause various complications such as non-union, bad union, ischemia caused by vascular damage, skin necrosis, and soft tissue damage of fracture, in addition to compartment syndrome, and venous congestion. The patient in this case study is a 12-year boy who suffered from right lower limb trauma due to a motorcycle accident. The patient underwent orthopedic surgery for internal fixation of bones and right ankle stability. After the surgery, the patient's right leg was swollen with severe venous congestion. The patient did not respond to conventional treatments, and so, the physician ordered leech therapy- according to a letter written by the physician to the traditional medicine clinic. The leech therapy was for the treatment of venous congestion in the patient's right leg. Due to a severe trauma, major surgery, and post-operative venous congestion, the patient suffered from the melancholy in the surgical area, and the bottom of foot, and consequently, the whole body. The patient's venous congestion and severe swelling were significantly decreased after four stages of leech therapy on the basis of Iranian Traditional Medicine in two weeks with 10 leeches, and significant recovery was recorded. After two months of treatment by his physician, the patient underwent a successful surgery for a skin graft on anterior leg, and then was fully recovered. According to the process of patient's recovery and significant treatment of patient's leg edema and congestion after leech therapy, it seems that combining the Iranian modern and traditional medicines can be a solution to such diseases.

Keywords: Double Distal Fracture of Tibia and Fibula, Ankle Dislocation, Iranian Traditional Medicine, Iranian Leech Therapy

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*Corresponding Author:
Hassan Khani Iurigh
Mazandaran University of Medical Sciences, Sari, Iran.
Zip Code: 9413934178
Phone Numbers: +985832243077
Fax Numbers: +985832232493
E-mail address: dr.h.khani@gmail.com

§These authors contributed equally to this work
Email addresses:
Hassan Hajtalebi: hajtalebihasan@gmail.com
Hassan Khani Iurigh: dr.h.khani@gmail.com
Hamid Reza Hajtalebi: hamidtelebi1373@gmail.com

Introduction

The tibia is the most common long bone which can undergo open fracture, due to the damage to skin and soft tissue surrounding the fracture [1]. Tibia bone fracture is among the most common fractures caused by urban trauma, and often occurs after an accident with a motor vehicle [2-3]. According to the data from the National Center for Health Statistic, in the US, 490000 fracture of tibia is reported annually. The annual incidence of this fracture translates to one case per two thousand people. Tibia fracture has been considered as the second-most common cause of complaints, with loss of over thirty million dollars, according to recent study on causes of orthopedic complaints by American Academy of Orthopaedic Surgeons [4-5]. The anterior surface of the tibia is subcutaneous, and justifies the prevalence of its open fractures compared to other long bones [1]. Tibial shaft fractures are seen more in younger ages; the side effects of fracture may lead to the loss of job, failure in economic activities, and significant damages to the healthcare system of any country [4]. Due to factors like wasted labor and economic costs, it is very important to use the appropriate methods of treatment to speed up the union process [6].

Compared to any other bone, treatment of tibial fractures is open to disagreement [1], though these fractures are relatively common and often treated effectively [7]. Until recently, the orthopedists tended to treat these fractures non-surgically, which led to high incidence of side effects like non-union, bad union, and joint stiffness. Nowadays, the tendency is toward the surgical treatment of tibial fracture, and that includes the surgical fixation procedures by plaque and screw, intra-channel nailing with or without trimming the channel walls, and external fixators [4-7]. Since the damages causing the tibial shaft fractures are usually due to high-energy accidents, there is severe damage to soft tissues of the leg, and blood supply disorder of bone fragments. Under these circumstances, the open replacement disrupts the blood supply of bone fragments and it leads to relevant complications. The simultaneous fracture of fibula and dislocated ankle are among the most common complications that can worsen the conditions outlined above [8-9].

We can argue that the distal tibia fractures along with fibula and ankle dislocation are problems inhibiting treatment of the fracture [7]. These fractures and dislocations can cause various complications such as non-union, bad union, ischemia caused by vascular damage, skin necrosis, and soft tissue damage of fracture, in addition to compartment syndrome, and venous congestion. Each of these can have a huge impact on individual and social life of a person. The related side effects can be classified as the following way: a) Intraoperative complications like fracture of upper surface of tibia while entering the intramedullary nail, nail entry into the ankle joint, soft tissue damage during trimming the tibia bone, the intraoperative arterial and nerve damage, and fragmentation in fracture. b) Early post-operative complications like compartment syndrome, infection, hematoma, and poor bone fixation. c) Late post-operative complications that include anterior knee pain, patellar tendonitis, delayed union (more than six months), non-union (changed bone axis or over nine months), broken nail, loose screws, late surgical site infection, limited knee motion, and limited ankle motion [10-13]. Despite the several proposed methods of treatment of these fractures, the preferred method is a way that will lead to the patient's faster mobility and return to his/her normal life, with lower costs [14]. Nowadays, the use of traditional and complementary medicine, such as leech therapy, is one of the new ways to reduce inflammation, hematoma and post-operative venous congestion especially in orthopedic surgeries [15]. Therefore, the

proper identification and use of leech therapy along with other traditional medicine treatments can address the complications of orthopedic surgery in some cases. In other words, most of the orthopedic surgeries, which are used to treat a double fracture of leg, will have various side effects; so it is essential to evaluate and scientifically report the new combined methods and drugs, which have the maximum effect in the shortest time. This is based on combined Iranian modern and traditional medicine, in other words, the Iranian Effective Medicine (IEM).

Case Presentation

Medical History and Examination according to Modern Medicine

The patient is a 12-year boy, who suffered from the right lower extremity trauma due to a motorcycle accident. As an emergency case in Ashkhaneh city, he was brought to Imam Ali Hospital in Bojnurd, in September, 2010. He underwent the initial emergency measures to stabilize the vital symptoms and general conditions. The patient was re-examined by the surgery sub-speciality team on duty that night, in terms of clinical and radiographic examinations, and he was then transferred to the orthopedic ward of hospital. The patient was diagnosed with double and open fracture of the lower end of the right leg, including the tibia and fibula bones, and dislocation and deviation of bones, in addition to dislocation of the right ankle. The patient had stable vital symptoms, without any nausea, vomiting, or respiratory distress. The distal pulse of lower end of right leg was not felt. Therefore, the patient underwent the orthopedic surgery for internal bone fixation and stability of right ankle. After surgery, the patient experienced severe swelling, hematoma and venous congestion in the right leg. All protective measures were performed on the patient at the hospital, but his recovery was not recorded in his clinical documentation. The surgeon treating the patient asked for leech therapy, according to a letter of permission to the head physician in the traditional medicine clinic, for treatment of the venous congestion in patient's right tibia. Figures 1 and 2 show the status of the patient's right leg after surgery and before starting the leech therapy.

Medical History and Examinations according to Iranian Traditional Medicine

The patient had no knowledge of traditional medicine therapies, and did not follow the daily eating practices and health protection principles recommended in traditional Iranian medicine. The patient was admitted at the hospital for treatment of the open and double fracture of lower end of right leg, including tibia and fibula bones, with bone deviation and dislocation, in addition to right ankle dislocation. The leech therapy was requested by the physician/surgeon practicing modern medicine at the Imam Ali hospital, and it was done under the Iranian Leech Therapy (ILT) protocol developed in IEM. All medical aspects including food, medication, and orthopedic surgeries were taken care of by modern medicine, and only the leech therapy was done under the supervision of a practitioner of Iranian traditional medicine. Based on the developed protocol in IEM, leech therapy should be performed along with reformed temperament and nutrition, and herbal therapy for patients; but in this case, these were absent. The patient only underwent leech therapy based on the surgeon's request. According to the patient's initial examination, the patient looked pale and slightly yellow and bruised, with weak physical strength, weak pulse and was cold to touch. Due to a severe trauma, major surgery, and postoperative venous congestion, the patient had feeling of melancholy in surgical site and the bottom of

foot and consequently the whole body. Furthermore, the patient was mentally ill and suffered from serious anxiety.

Treatment

Measures to Protect Health and Nutrition

The patient and his family were first counselled about the method of leech therapy and the steps involved, to reduce their fear. Being admitted at the Imam Ali Hospital in Bojnurd, his symptoms were controlled by serum therapy and the clinical tests and regular clinical examinations being under the supervision of surgery team. There was no concern about the patient's weakness and lack of blood during the leech therapy. This patient lost much blood at each stage of the leech therapy that treated his venous congestion, and there was a need for above-mentioned healthcare measures to compensate for the reduced volume of body fluid.

Pharmaceutical measures

The patient underwent orthopedic surgery for internal fixation of bone and right ankle stability and antibiotic treatment, and analgesic and fluid treatment of modern medicine instructed by orthopedic surgery team.

Manual Measures

Leech therapy: The leech therapy was done with 10 leeches in the first session. It was repeated with 10 leeches every three days, and two more times according to re-examination of patient's body. The patient's leg edema and congestion were recovered gradually at each stage, and the venous congestion was significantly reduced. After discharge from the hospital, the patient underwent another stage of leech therapy with 10 leeches at another traditional medicine clinic he was referred to.

Treatment Results

The patient's venous congestion and severe swelling were significantly decreased after four stages of leech therapy during a period of two weeks, and a significant recovery was recorded. Figures 2 and 3 show the patient's leg venous congestion, and swelling, during the process of leech therapy. After two months, the patient underwent a successful surgery for skin repair, by an anterior skin graft, according to his orthopedic surgeon and was fully recovered. Figures 4 and 5 show the patient's leg swelling, and venous congestion after the leech therapy and the reconstructive surgery.

Discussion

The tibial shaft fracture is one of the common fractures of long bones, and can occur in proximal metaphyseal, shaft, and distal metaphyseal tibia. Most of the open fractures of tibia bone are seen in the shaft, and may have associated fibula bone fracture alongside. The fracture can have complications such as infection, compartment syndrome, nerve and vascular damage, venous congestion, non-union, delayed union, bad union, bone axis change after union, the knee or ankle joint stiffness, muscle or skin atrophy, namely, Sudeck's atrophy. The non-surgical treatment of this fracture includes the plaster and brace; and the surgical treatments include the external fixator, intramedullary nailing in locking and static forms, and a variety of non-locking, locking, and bridge plaques [7-13]. The venous congestion or hematoma is among the most common early complications after orthopaedic surgery in open and double fractures of distal tibia along with ankle dislocation, and can worsen the patient's condition. Morbidity and high cost of treating this condition impose a high burden on the individual and social health systems [1-5]. On the other hand, due to the high incidence of motorcycle accidents in Iran, we need low-cost

and more effective superior treatments to reduce the post-operative orthopedic complications in leg fractures. Due to the high cost of treatment, hospitalization, repeated surgeries, and possible complications of surgery, various methods have been used to treat this disease around the world, and new therapies are under investigation [7]; this article can be evaluated in this regard.

The patient was a 12-year adolescent with venous congestion of leg after orthopedic surgery and a double fracture of distal tibia and dislocated right ankle, and did not respond to common treatments. Therefore, the leech therapy and surgical treatments were used jointly as suggested in IEM to retain the patient's health. The medical leech therapy is one of the oldest methods of treatment. Nowadays, leech therapy is being widely used in medical treatments. The fact that the history of leech therapy dates back to two thousand years ago and still is being used in traditional medicine depicts its effectiveness.

The venous disease or congestion is one of the best traditional and proven uses of leech therapy [15]. Today, leech therapy is known as a standard procedure in treatment of venous congestion or full closure of venous outflow path. Also, it has been proven that leech therapy is very valuable in treatment of venous congestion in traumas. In any connection to human body, each leech can suck blood eight to nine times higher than its body weight, which translates to approximately 20ml human blood each. This plays an important role in reducing the swelling and congestion [16-17]. In this case, leech therapy was done with respect to temperament, melancholy and according to principles of Iranian effective medicine. Since the patient was an adolescent and physically weakened due to the major surgery, he was too weak for the leech therapy and had serious anxiety. On the other hand, the hospitalization and venous congestion caused the feeling of melancholy in his body and feet. The leech therapy focuses on two important points: First, blood-letting and disposal of melancholy, and second, the use of leech saliva to increase blood flow, wound healing, and disclosing the vessels. Unfortunately, there has not been any study conducted on leech therapy in Iran. In this case, we could not have much blood-letting due to major surgery and its complications, medications, and poor physical and mental strength. However, since the patient was undergoing the serum therapy and regular clinical tests and clinical examinations under the supervision of the orthopedic surgeon round the clock, there was less concern about weakness and blood-letting during each stage of the leech therapy. Fortunately, the patient's venous congestion and severe swelling were significantly decreased after 10 stages of leech therapy with 10 leeches in each session, over a period of two weeks that led to significant recovery. Given the history of medicine over the last century, it can be concluded that none of the medical therapies are perfect in the world of medicine. All schools of medicine, like modern medicine, Iranian traditional medicine, Ayurveda in India, Chinese medicine, etc all have numerous strengths and weaknesses. They should be studied and applied comprehensively for protecting human health, which is the real purpose of medicine.

Conclusion

According to the patient's process of treatment and significant recovery in leg edema and congestion after leech therapy, it seems that combining the modern and traditional medicine can be a solution to most of the common diseases. In other words, IEM can have effective clinical findings in treating some diseases such as inflation and congestion after the orthopedic surgeries. The use of IEM in treating this patient with venous tibial congestion after orthopedic surgery for treatment of double distal fracture of tibia and dislocated right ankle was successful in reducing cost and retaining patient's health. Therefore, the combination of Iranian modern and traditional medicines can be studied and evaluated as a new

non-invasive treatment, which has the best therapeutic effect in the shortest term.

List of Abbreviations

ILT: Iranian Leech Therapy
IEM: Iranian Effective Medicine
CD: Compact Disk
%: Percentage

Conflicts of Interests

The authors have no conflict of interest in publication of this article.

Contributing Authors

Dr. Hassan Hajtalebi, Dr. Hassan Khani and Hamid Hajtalebi contributed in documenting and writing the article.

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Figure 1. The Patient's Right Leg Picture after Surgery and before Iranian Leech Therapy in September 2015

Figure 2 and 3. The Patient's Right Leg Picture during Iranian Leech Therapy in September and October 2015

Figure 4. The Patient's Right Leg Picture after Iranian Leech Therapy in October 2015

Figure 5. The Patient's Right Leg Picture after Reconstructive Surgery in December 2015

Reference

[1] Olson Steven A. Instructional Course Lectures, the American Academy of Orthopaedic Surgeons - Open Fractures of the Tibial Shaft. Current Treatment. J Bone Joint Surg Am 1996;78:1428-1437.

[2] Suk-Hun K, Seung-Hwan C, Ho-Joong J. The finite element analysis of a fractured tibia applied by composite bone plates considering contact conditions and time-varying properties of curing tissues. Compos Struct 2010;92:1993-2338.

[3] Sepehri B, Ashofteh-Yazdi AR, Rouhi GA, Bahari-Kashani M. Analysis of the Effect of Mechanical Properties on Stress Induced in Tibia. 5th Kuala Lumpur International Conference on Biomedical Engineering, IFMBE, 2001;35:130-133.

[4] Bhandari M, Guyatt GH, Swiontkowski MF, Schemitsch EH. Review: Unreamed Intramedullary Nailing Reduces Reoperation Rates More Than External Fixation in Open Tibial Fracture. J Bone Joint Surg Am 2001;83:1281-1290.

[5] Milner SA, Davis TRC, Muir KR, Greenwood DC, Doherty M. Long-Term Outcome After Tibial Shaft Fracture: Is Malunion Important? J Bone Joint Surg Am 2002;84:971-980.

[6] Terry C, Daugherty K, Jones L. Compbell's Operative Orthopaedics, Volume 1. 3rd ed. The USA: Mosby Company 1998.

[7] Frankie L, Hau YK, Tze Shing P, Shew PC. imited open reduction and Ilizarov external fixation in the treatment of distal tibial fractures. Injury 2004;35:278-283.

[8] Lau TW, Leung F, Chan CF, Chow SP. Wound complication of minimally invasive plate osteosynthesis in distal tibia fractures. Int Orthop 2008;32:697-703.

[9] Nork SE, Schwartz AK, Agel J, Holt SK, Schrick JL, Winquist RA. Nork SE, Schwartz AK, Agel J. Intramedullary nailing of distal metaphyseal tibial fractures. J Bone Joint Surg Am 2005;87:1213-1221.

[10] Solooki S, Mesbahi SA. Complex fractures of the tibia and femur treated with static interlocking intramedullary nail. Iran Red Crescent Med J 2011;13:178-80.

[11] Theriault B, Turgeon AF, Pelet S. Functional impact of tibial malrotation following intramedullary nailing of tibial shaft fractures. J Bone Joint Surg Am 2012;94:2033-2039.

[12] Bonnevialle P, Bellumore Y, Foucras L, Hézard L, Mansat M. Tibial fracture with intact fibula treated by reamed nailing. Rev Chir Orthop Reparatrice Appar Mot 2000;86:29-37.

[13] Forster MC, Bruce AS, Aster AS. Should the tibia be reamed when nailing. Injury 2005; 36:439-444.

[14] Meena S, Trikha V, Sankineani SR, Kumar R, Saini P. Has the role of tibial interlocking nailing in closed tibial-shaft fractures diminished. Int Orthop 2012;36:2397-2398.

[15] Andreas M, Manfred R. Dobos G. Medicinal Leech Therapy. Georg Thieme Verlag. New York 2007.

[16] Smoot EC, Debs N, Banducci D, Poole M, Roth A. Leech therapy and bleeding wound techniques to relieve venous congestion. J Reconstr Microsurg 1990;6:245-250.

[17] Ibn Sina H. Al-Qanon fi Al-Tibb. Alaalami Library. Beirut 2005.