A case report of Severte lymphedema of lower limb: Surgical management Department of Surgery, Bamrasnaradura Infectious Disease Institute, Ministry of Public Health

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บทคัดย่อ

ความสำคัญ สภาวะการบวมของอวัยวะจากท่อน้ำเหลืองอุดตันเกิดจากการบาดเจ็บของท่อทางเดินน้ำเหลือง ซึ่งสาเหตุส่วนใหญเกิดจากการผ่าตัด อุบัติเหตุ การฉายแสงในบริเวณอวัยวะที่มีอาการบวม ซึ่งการรักษาในปัจจุบันเป็นการรักษาแบบประคับประครองหรือการรักษาเพื่อให้อวัยวะนั้น ๆกลับมาทำงานได้ตามปกติเท่านั้น การศึกษานี้เป็นการรายงานการผ่าตัดผู้ป่วยที่มีขาซ้ายบวมจากท่อน้ำเหลืองอุดตันเพื่อให้สามารถกลับมาเดินได้อีกครั้ง

วัตถุประสงค์ เพื่อรายงานวิธีการผ่าตัดผู้ป่วยที่มีขาซ้ายบวมจากท่อน้ำเหลืองอุดตันโดยการตัดเนื้อเยื่อ

วิธีการศึกษา รายงานกรณีศึกษาผู้ป่วย

ผลการศึกษา ผู้ป่วยเท้าซ้ายแบบทุติยภูมิคือเกิดจากการติดเชื้อเรื้อรังและไม่สามารถเดินได้เนื่องจากขาที่บวมโต ได้รับการรักษาแบบประคับประครอง เช่น การป้องกันการติดเชื้อ การฝึกเดิน ร่วมกับการผ่าตัดตัดเนื้อเยื่อส่วนที่บวมน้ำเหลืองใต้ชั้นผิวหนังออก โดยการแบ่งการผ่าตัดเป็นขั้นตอนและทำหลายครั้ง พบว่าผู้ป่วยสามารถกลับมาเดินได้และปราศจากสภาวะแทรกซ้อน

Abstract

Background: Secondary lymphedema usually resulted from damage of the lymphatic system. Common causes include surgery, trauma, radiation, or infection. One obvious example is arm edema after breast surgery or radiation treatment of some cancers. Currently, there was no definite treatment for lymphedema. Treatment goal is to restore function, reduce physical and psychological suffering, and prevent the development of complications. There are two alternatives approach for surgery: reconstructive surgery and destructive surgery.

Objective: To report a successful lymphedema case treated with debulking surgery of lower limb lymphedema.

Method: a case report

Result and conclusion: Elephantiasis can divide into two types; primary and secondary. Both pathogenesis were end up with persistence edema of the tissue. Conservative measures usually not a curative for elephantiasis, while the surgery will help to restore patient's function. There are to types of surgery for elephantiasis; reconstructive of lymphatic structure and destructive debulking surgery. In this case report, debulking surgery can be an adjuvant technique for elephantiasis.

Key words: Lymphedema, elephantiasis, debulking, stage surgery

Introduction

The extensive network of lymph vessels drain out lymphatic fluid from any region of the body. Lymphedema is an abnormal collection of this high-protein fluid under the skin. This symptom usually occurs in the arm or leg. The pathogenesis of lymphedema is damaged of the lymphatic vessels or destruction of lymph nodes (secondary lymphedema)[1]. Occasionally this condition occurs from impaired of lymphatic vessels or primary lymphedema.

The condition has to differentiate from other type of edema such as cellulitis or water edema in volume overload[2, 3].

Secondary lymphedema usually resulted from damage of the lymphatic system. Common causes include surgery, trauma, radiation, or infection. One obvious example is arm edema after breast surgery or radiation treatment of some cancers. Lymphedema has a number of stages, from mild to severe: stage 0 (non-visible, latency), stage 1 (spontaneously reversible), stage 2 (spontaneously irreversible), and stage 3 (lymphostatic elephantiasis)[2, 3].

Compromised of the lymphatic drainage can caused many complications such as skin problem, infections, discomfortability, and may be severe as elephantiasis which may cause immobilization of the patient[2, 4].

Currently, there was no definite treatment for lymphedema. Treatment goal is to restore function, reduce physical and psychological suffering, and prevent the development of complications. General recommendations for tretment are hygiene and skin care, physical therapy and compression. The last choice of treatment is surgery. There are two alternatives approach for surgery: reconstructive surgery and destructive surgery[5, 6].

This paper reported a lymphedema case treated with debulking surgery of lower limb lymphedema. The study reviewed the cause of the lymphedema in this patient and how to do the destructive surgery in this patient.

Material and method

A case report by review the patient's chart and operative record in one patient with elephantiasis left leg from chronic infection and left leg surgery who transferred to Bamrasnaradura Infectious Diseases Institute. The eight months hospital history was reported. Patient was consented to report of this paper.

A Case report

A Thai obese 43 years old woman referred to Bamrasnaradura Infectious Diseases Institute (BIDI) from Songkhla province with lymphedema of left leg (Figure 1).

Figure 1a, b. Elephantiasis of patients' left l**ower limb**

She went to hospital with chronic venous ulcer on her left leg. She has underlying of obesity and hypertension. She has been treated for superficial varicose veins for a half year. After she had got the venous ulcer of her gaiter area, her doctor designed to do surgery. High ligation with venous stripping was

done. Her left leg had infection off and on after the surgery. Her left leg started to get bigger and was diagnosed as lymphedema grade III.

During her course in BIDI, she had undergone many investigations for lymphedema. Microfilaliasis was negative. Her physical check up was done. Her laboratory studies were as followed;

CBC: Hct 31% Hgb 10.1mg% WBC 4,400 cumm (N 74%, Lym 15%)

Bun 18 mg/dl, Cr 0.84 mg/dl Na^+ 136 mmol/l, K^+ 3.6 mmol/l, Cl^- 97 mmol/l, CO_2 29 mmol/l

Urine exam: no cells, WNL

EKG: HR 82/min, Normal sinus rhythm

CXR: WNL

Conclusion for her diagnosis were

1. Elephantiasis (Lymphedema) from chronic infection and surgery with acute infection on top
2. Obesity
3. Hypertension

She had been treated for infection and supportive measures such as compressive dressing, passive exercise, and warm compression.

Stages debulking of subcuticular connective tissues were done for several times. Finally she started to walk as figure 2.

Figure 2a. Operating picture of patients' leg

Figure 2b. Debulking soft tissue from patient's leg

Figure 2c. Patients' leg flap wound after excised soft tissue

Figure 2d. Patients' figure after stage debulking procedures.

Surgical technique for stage debulking procedure

1. Pre-operative planning

Preoperative planning, patient's physical status check up and medical consultation were done. Patient is fit for stage operation. Physiotherapist designed to improve the texture and consistency of patient's soft tissue in the lower extremity. We designed to do rehabilitation prior to surgery, because the

soft tissue of lymphatic mass was firm to hard consistency with multiple skin nodule will cause post-operative complications such as wound dehiscence, bleeding, and infection. The physiotherapy consisted massage of internal iliac, groin and popliteal lymph nodes included the soft tissue of lower extremities, after the massage, the warm compression was done. This preparatory period was about one month.

2. Operative procedure

Surgical planning was done in stage operation for safety of circulation of lower limb and avoidance of lymphatic drainage system compromised problems. The surgeries were done along the compartment of the leg.

First stage was planned for resection of lymphatic mass on the dorsum of the foot and coverage by spilt-thickness skin graft that harvested from lateral aspect of affected left thigh.The resected mass weight was 0.5kgs.

Second stage and third stage was done to the lateral aspect of leg and thigh respectively in primary closure. The resected mass weight was5.7 and 4.7kgs, respectively.

Forth stage and fifth stage was done to the medial aspect of thigh in primary closure, in order to reduce the huge lymphatic mass of the leg. The leg which is so heavy to rise, now patient can start to walk. The resected mass weight was1.5 and 2.7kgs, respectively.

The sixth (last) stage was done to the biggest lymphatic mass in this elephantiasis of lower limb of this case. The primary closure and coverage by split-thickness skin graft from normal right thigh was performed. The resected mass weight was 22kgs.

The total resected mass weight was 37.1 kg

Surgical technique

The patient was in supine position under general anesthesia with orotrachea intubation. Aseptic and antiseptic technique was prepared to the affected lower extremity. Resection area was designed for closure in W-plasty technique and done to the lateral aspect of leg and thigh and medial aspect of thigh with insertion of Radivac drain number 12. Only area on the dorsum of foot was resected and coverage by spilt-thickness skin graft that harvested from medial aspect of affected thigh. The biggest lymphatic mass of medial aspect of leg was done in primary closure and coverage by spilt-thickness skin graft that harvested from right thigh

3. Post-operative care

The wound and drainage system checked everyday. After 2 weeks of each surgery, stitch off was done. The Radivace drainage system was taken off after minimal fluid was detected.

4. Complication

Patient was safe after each surgery and the result is good. Patient starts to walk. Yet there were some complication, the wound dehiscence and disruption was detected from gravity mass and secondary wound closure was done later. Some area was used the Vacuum wound dressing system. (Fig.2a,2b)

Figure 2a. Left leg wound dehiscence And disruption before treatment

Figure 2b. Left leg wound after Vacuum wound dressing and coverage by split-thickness skin graft that harvested from affected thigh treatment

Discussion

Lymph nodes tissue transfer was report to have success reduction about 47.6%[5] of edema volume and relatively significantly risk for long duration of surgery, which may not fit for this patient. The debulking procedure was selected in order to save the time and effective reduction of the edema volume. There was a report that up to 91.1% of volume reduction of edema voulme by debulking procedure[5, 7]. The ultimate goal of elephantiasis limb treatment is to restore the function of the affected limb. An important component of determining whether surgical treatment is indicated is to examine the risk-benefit ratio[8]. The surgical risks or morbidity associated with an individual procedure in terms of the likelihood or frequency of a complication (such as postoperative infection) versus a rarely occurring complication that may be life threatening (such as a stroke). Due to the extensive and multi-stage surgery, surgeon's expertise and experience are required to perform the surgery[5, 8].

Conclusion

Elephantiasis can divide into two types; primary and secondary. Both pathogenesis were end up with persistence edema of the tissue. Conservative measures usually not a curative for elephantiasis, while the surgery will help to restore patient's function. There are to types of surgery for elephantiasis; reconstructive of lymphatic structure and destructive debulking surgery. In this case report, debulking surgery can be an adjuvant technique for elephantiasis. Although delayed postoperative wound healing problems were observed, necrectomy and vacuum assisted closure achieved a complete heal of patients' elephantiasis leg.

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