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## **Original Research Article**

### **Surgery for Elephantiasis of the lower limbs**

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**Abstract:** Untreated acute lymphedema leads to elephantiasis. Anatomical deformities cause disability and psychological issues. Several types of treatment have been used by practitioners since the Antiquity. The aim of this study is to assess the indications and results of surgery for Elephantiasis of the lower limb. This is a retrospective study conducted at Fann University Hospital in Dakar, from February 2008 to August 2015. Ten patients underwent surgery for elephantiasis. Patients benefited first from preparation of surgery with pre-operative management of lymphedema. The Servelle's surgical method was used for nine patients. It is a surgical technique in which total surface lymphangectomy is done. One patient underwent reconstructive surgery of the lymphatic drainage system, with lymph nodes shave and epiploic patching using the abdominal epiploic tissue. In results Early complications were observed: an infected hematoma in 4 patients (40%), inducing skin flap necrosis in 3 patients (30%). The long term follow up showed normalization in 2 patients (20%), more than 50% of volume decrease in 6 patients (60%), less than 50% of volume decrease in 2 patients (20%). In conclusion excisional method such Servelle's surgical method used in this series gives cosmetic benefit and allows compression stockings, despite frequent post-operative complication. It could improve the quality of life for patients with dysmorphic elephantiasis.

**Keywords:** elephantiasis, lower limbs, surgery.

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#### **INTRODUCTION:**

Lymphedema is an accumulation of lymph fluid in one part of the body, more often on the limbs. Untreated acute lymphedema leads to chronic lymphedema. At end-stage the leg is subject of skin changes and deformities under the name of elephantiasis [1]. Beside conservative management, surgery is indicated in some cases of elephantiasis: Anatomical deformities cause disability and psychological issues. Also recurrent tissue infection induces pain and social isolation. Several types of treatment have been used by practitioners since the Antiquity [1]. The aim of this study is to assess the indications and results of surgery for Elephantiasis of the lower limb.

#### **PATIENTS AND METHODS:**

This is a retrospective study conducted at Fann University Hospital in Dakar, from February 2008 to August 2015. All the patients who underwent surgery for elephantiasis were included in this study. Ten patients were involved; 4 males and 6 females. The mean time of evolution of the symptoms was 10 years, and the mean age was 34 years old [18 years; 55 years].

All patients were diagnosed with Elephantiasis Nostras Verrucosa, which is a secondary lymphedema developed after recurrent bacterial infection of the lymphatic system. There is no patient treated with bilateral elephantiasis. The lymphedema was clinically localized in all the segments of the lower limb; from feet to thigh (**figures 1, 2**). Dermatologic lesions were observed: verrucosa in 44%, ulcers in 33%, interdigital mycosis in 88% of limbs (**figures 1, 2**). Also, venous insufficiency was present in 11% of patients.

All patients benefited first from preparation of surgery with pre-operative management of lymphedema for 10 days: postural drainage of lymphedema, elastic compression using bandages and stockings, antibiotics for lymphangitis and local care for dermatologic lesions.

Then, the Servelle's surgical method was used for nine patients. It is a surgical technique in which total surface lymphangectomy is done, with excision of subcutaneous tissue until fascia, on one or two steps (**figure 3**). Such method is often followed by the use of recurrent skin grafts (**figure 4**). One patient underwent reconstructive surgery of the lymphatic drainage system, with lymph nodes shave and epiploic

patching using the abdominal epiploic tissue laid on the

lymph nodes in the groin.



**Fig-1: Image of Elephantiasis deforming the foot with ulcers**



**Fig-2: Image of elephantiasis deforming the whole leg with dermatologic lesions**



**Fig-3: Image of excision of the elephantiasis using Servelle's method**



**Fig- 4: Image of leg after lymphangectomy and skin grafting at 30days**



**Fig- 5: Image of leg after excision of elephantiasis at 45 days, allowed stockings**

**RESULTS:**

The surgical indications were: cosmetic deformities, social handicap, and failure of stockings compression. Ten (10) limbs were surgically treated for secondary lymphedema at elephantiasis stage. Mean hospital stay time was 55 days [15 days; 90 days]. The mean healing time was 120 days [20 days; 190 days].

Early complications were observed: an infected hematoma in 4 patients (40%), inducing skin flap necrosis in 3 patients (30%). Such complications were treated by necrosectomy, debridement, and then skin grafting. The patient with reconstructive lymphatic

pathway by epiploic drainage did well with more than 50% of volume decrease of the leg.

All limbs of patients allowed stockings garments after surgery (**figure 5**). The total patients had socio-professional reinsertion, with easy walking, better cosmetic appearance, and no recurrent lymphangitis. The mean follow up time was 5 years [4months; 7 years].

Recurrence of the elephantiasis was observed in 2 patients (20%), at 2 and 3 years follow up. Both patients did not follow instructions and did not wear regularly compression stockings after surgery. The long

term follow up showed normalization in 2 patients(20%) , more than 50% of volume decrease in 6 patients(60%), less than 50% of volume decrease in 2 patients(20%).

#### **DISCUSSION:**

The most common cause of secondary acquired lymphedema used to be parasitic infection by filariasis. In developed countries, the cause is nowadays iatrogenic, due to surgical injury or radiation induced lymph node [2, 3].

In this study the main cause is chronic evolution of bacterial lymphangitis, and elephantiasis is its late stage of evolution. Elephantiasis is still a disease in Africa and others developing countries. The progression of lymphedema to elephantiasis associated to an increased incidence of adeno lymphangitis is a big issue, as it causes pain and physical suffering. The inoculation can result from insignificant trauma or poor hygiene [4].

Elephantiasis nostrasverrucosa is a chronic infection-induced complication of lymphedema [5]; characterized by hyperkeratotic lesions, verrucous papules, plaques, and nodules with underlying fibrosis of the dermis and subcutaneous tissue. The indications for surgery in literature are impaired limb function, recurrent episodes of cellulitis and lymphangitis, intractable pain, lymphangio sarcoma and cosmetic [6]. For us main indication for surgery is disability with difficulty to walk properly and social isolation.

Primary treatment is centered on the reduction of lymphedema, including postural drainage, compression, and manual lymphedema drainage [7, 8]. As surgery for lymphedema is often a final option, it should be integrated in a full lymphedema service which includes early diagnosis, conservative treatment and effective follow- up [9].

Despite well-done decongestive treatment, many patients do not get an accurate evolution, because of the persistence of adipose tissue, but also hypertrophied muscle tissue and the deformities that have been present for a while. Intensive treatment of lymphedema should be immediately followed by surgery [10].

Several categories of surgical procedures have been proposed for the treatment for lymphedema: excisional procedures, liposuction, lymphatic reconstruction, tissue transfer procedures. Liposuction is commonly performed as excisional procedure for the treatment of lymphedema. It is a less invasive method of removing subcutaneous fat and associated with fewer complications [9].

For lymphatic reconstruction, microsurgical procedures have been proposed to improve or to restore lymphatic flow in regions in which lymphatic pathways have been damaged. Excisional operations, such as Charles total resection of subcutaneous tissue, Thompson's sub fascial drainage of a scarified skin flap, and Servelle's total surface lymphangectomy, aimed at removing excess tissue to decrease the volume of the extremity [11, 12].

Servelle's method is the surgical technique used for all the patients in this series. "The treatment of elephantiasis is, at best, very unsatisfactory" [13]. The chief complication has been the occurrence of localized areas of necrosis, chiefly at the edges of the flaps [14].

Such complications are reported also from Mayo Clinic [15]. Besides that, poor wound healing, long surgical scars, sensory nerve loss and residual edema of the foot and ankle are complications that limit the surgical success. Skin grafts are often used after a period of local care to reduce the healing time.

Excisional surgical therapy can be effective for chronic advanced lymphedema, but appropriate postoperative lymphatic compression is essential to ensure that the improvement last [11]. Excisional surgery at the end stage of lymphedema seems to provide substantial improvement of clinical condition and Quality Of Life only when mandated postoperative CDT/compression therapy is well kept [16].

#### **CONCLUSION:**

Failure to compression stockings and cosmetic issue are top indications of surgery for elephantiasis. Excisional method such Servelle's surgical method used in this series gives cosmetic benefit and allows compression stockings, despite frequent post-operative complication. It could improve the quality of life for patients with dysmorphic elephantiasis.

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