

## SURGICAL MANIFESTATION OF FILARIASIS

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### Introduction ;

Filariasis is caused by the bite of the mosquito *Culex fatigans* ( intermediate host ). The larva, on entering the lymphatic system reaches the lymphnodes, where it is arrested and attains its sexual maturity. The mature parasite, hatch out microfilaria in the circulation. The microfilaria has no effect by itself: but the patient develops sensitivity to the filarial larva or their proteins. Reinfection by the larva produces local and systemic changes. The nematode *Wuchereria bancrofti* dwells in the lymphnodes at the various regions of the body. While alive, the worm causes little disability to its host, but after death it stimulates the inflammatory reaction, ending in lymphatic obstruction. This lymphatic obstruction results in the various manifestations of filariasis e.g. hydrocele or chylocele, chyluria, elephantiasis of the various parts of the body. Epididymitis is the commonest form of presentation of filariasis; hydrocele or chylocele is the sequeli, of the filarial epididymitis. In patients with hydrocele, the para-aortic group of lymphnodes are obstructed. In patients with filarial scrotum, penis, vulva and leg the superficial and deep of inguinal lymphnodes and the external iliac group of lymphnodes are blocked. In cases with filariasis of the arm and breast, the axillary lymphnodes are blocked. The obstruction to the flow of cisterna chyli results in dilatation and tortuosity of the lymphatics in the retroperitoneal space, especially around the pelvis of the kidneys. The rupture of the dilated lymphatics results in chyluria.

The precise mechanism of elephantiasis has not been understood. The classical view that the lymphatic obstruction produces lymphoedema has not received universal acceptance. The high protein of the odema fluid stimulates the overgrowth of fibrous tissue and also exerts an osmotic pressure to retain more fluid in the part. In due course, the fibrous tissue and epithelial overgrowth is so marked that a non pitting oedema results. The swelling is brownny in consistency and is termed elephantiasis.

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## Method & Materials

During the last 10 years (Baishak 2019 to Chaitra 2028) 1,432 cases with different manifestations of filariasis were admitted in the Surgical Dept. of Bir Hospital. Though, a correct statistics of the out patient department is lacking, I feel that many more must have come for the similar conditions. These patients either did not need hospitalisation, or did not want to be admitted or were not admitted because of lack of accomodation in the hospital. These conditions include, filarial epididymitis, epididymoorchitis, secondary infection of the filarial scrotum, vulva or elephantiasis of the leg. They were prescribed a course of diethyl carbamazine citrate, antibiotics, rest and hot fomentation. Sometimes they needed incision and drainage of the abscess cavity. The cases of chyluria were mostly referred to the medical department. Only cases of haematuria and chyluria, presenting with clot colics were admitted in the surgical department. The cases that were admitted are grouped under the following heads:

Total number of cases ... ..	1,432
1. Hydroceles ... ..	1,016
2. Epididymoorchitis ... ..	224
3. Filarial Scrotum, penis or both ... ..	86
4. Filarial vulva ... ..	8
5. Filarial elephantiasis leg ... ..	37
6. Filarial elephantiasis arm ... ..	7
7. Filarial elephantiasis breast ... ..	4
8. Filarial elephantiasis of thigh ... ..	1
9. Chyluria and or haematuria ... ..	49

Almost all the cases of hydrocele of filarial origin will be preceded by attacks of filarial epididymitis. They will have history of painful swelling of epididymus and spermatic cord fever and the swelling will be warm and tender. The swelling will subside with rest, antibiotics and diethyl carbamazine citrate and will end with painless swelling of the tunica vaginalis testes. The transillumination test may be positive (hydrocele) or negative (Chylocele). The elephantiasis of the scrotum, penis, vulva, lower limb, breast or any part of the body will have long history of gradual swelling of the part, with repeated episodes of lymphangitis and lymphadenitis. This inflammation may lead to abscess formation needing incision and drainage. The size of the filarial scrotum varies from a small cricket ball to big pumpkin (35 inches in diameter—weighing 58 lb. operative specimen). The penis lies deep into the sulcus through which the urine trickles out. The size of the filariasis vulva also varies from just proliferation of the vulval pads to balloons (measuring 12" in diameter) hanging on either side of introitus. The case of filarial elephantiasis of the upper extremity present with brownish non pitting oedema of the whole limb from finger tips to neck. The cases of filarial elephantiasis of the leg will present at the various stages of the diseases from slight puffiness of the legs to well developed elephantiasis (diameter 24"). The cases of elephantiasis of the breast present with bro-

very swelling of the breast. The carcinoma of the breast must be excluded before confirming the diagnosis.

A peculiar case of elephantiasis of the medical aspect of the thigh was present in the series. This was a lady of 36 years old who came with a non-fitting localised oedema over the medical aspect of the right thigh (measuring 12" x 15")

The cases of chyluria and or haematuria found their place in the surgical department for the treatment of renal colic. These patients will pass bucketfull of clotted chyle and blood in the urine. Sometimes they will come for the treatment of retention of urine. Passage of large sized catheter will drain clotted chyle blood and urine.

### Investigations

Thorough recording of the history of the disease process, endemicity of the filariasis in this part of the world, routine clinical examination of the established cases were sufficient to reach at the diagnosis. However, routine total and differential count of the leucocytes will show slight eosinophilia. If one is lucky, microfilaria may be seen in the routine blood smear. We have tried night blood samples for microfilaria in established cases of elephantiasis but very rarely it was detected. Routine Hb estimation will give an idea of fitness for surgery. Routine examination of urine will exclude the possibility of diabetes. In case of chyluria and haematuria, examination of urine will confirm the presence of chyle and microfilaria.

The hydrocele fluid will show high cholesterol content and occasional microfilaria. In case of chylocele, chyle and cholesterol will be present in the tunica vaginalis. Plenty of microfilaria are seen in the centrifuse deposit in these cases. The histological examination of the tissues removed in elephantiasis will show fibroadenomatous changes in the subcutaneous tissue. The lymphnodes showed dead worm coiled together.

Plain X-Ray of the abdomen and pelvis and I. V. P. was done in cases of haematuria and chyluria to exclude calculi. Sometime, Cystoscopy and retragrade pyelography was done. The findings were inconclusive.

### Treatment

In most of the cases of hydrocele, Jabouley's operation of eversion of the sac has been our routine. In cases with very big sac, excessive skin and sac was excised. The 86 cases of filarial elephantiasis of scrotum and penis needed wide excision of the involved tissues, mobilization of the testicles and putting them in artificially made pockets on either side of thighs. The raw area of the penis is covered over by Thiersch' split skin graft. An indwelling catheter for a few days prevents soiling of the dressings. 8 cases needed second skin graft. All the 8 cases of filariasis of vulva were operated. The involved tissues were removed and skin closed. No case needed skin graft. The cases of elephantiasis of the leg are very difficult to treat. During the early stage of the disease, the patients will respond to elevation of the foot end of bed, crape bandage, diethyl carbamazine (300 mgm daily), salt and fluid restricted diet. The

swelling will subside slightly to reappear again once the upright position is maintained. Various methods have been tried to treat established cases of filarial elephantiasis. Total excision of the filarial tissue from knee to toes were tried in 8 patients. The deep fascia was covered over by split skin graft. The size of the limb will reduce no doubt, but the appearance of the limb is so horrible that the patients will never advocate this procedure to be carried out on his friends (Fortunately our patients can easily hide out their deformity under the garments—Sari or Surwal). Very rarely, they need second skin grafting (the first one being spoiled by infection). The results have been satisfactory. A modified Kondelein operation was tried on 12 patients with gratifying results. Instead of making an incision on the lateral aspect of the leg, the author preferred to make two linear cuts through skin, subcutaneous tissues and deep fascia on either side of leg and foot. As much as of fibroadenomatous tissues were removed as possible. Haemostasis was completed. Skin was closed with interrupted suture with thread or nylon. During the postoperative periods, crape bandage was applied, patient received diethyl carbamazine. The results have been encouraging. By now, we have patients operated about 8 years back. The size of the limb is definitely less than the preoperative size and the patients are happy. The cases of chyluria were treated with bed rest, elevation of the foot end of the bed, fat free diet, plenty of fluid orally, 300 mgm of diethyl carbamazine citrate daily and Adrenochrome monosemicarboxone (haemostatic) injections. The chyluria will stop spontaneously to reappear again after a few months or years. Some of the patients were so emaciated that they needed blood transfusions. No case of filarial elephantiasis of the arm has been operated upon. Elevation of the arm during rest increased the lymphatic drainage, making operation less urgent. Only one case of elephantiasis of the breast with secondary infection needed, amputation of the breast (local mastectomy to eradicate infection and exclude the possibility of carcinoma).

### Discussion

The filariasis is a group of condition in which various tissues are affected. The surgical manifestation is due to blockage of lymphatics. In cases of filariasis the lymphoedema (secondary) develops more rapidly than the primary lymphoedema (Taylor and Kimmonth). The cases of hydrocele and chylocele will give history of epididymitis few months prior its development. R. G. Mahaffy has demonstrated by Lymphangiography that in cases of hydrocele the lymphnodes at the para-aortic region were blocked. These cases of epididymitis are best treated with rest, antibiotics and diethyl carbamazine. Usually epididymitis is followed by development of hydrocele or chylocele. Jabouleys operation of eversion of sac has been accepted as a standard surgical procedure for its cure.

The elephantoid condition may be the result of lymphatic obstruction, spasm of the lymphatics vessels, recurrent infections (Jan Aird). The high protein contents of the oedema fluid exerts high osmotic pressure. Charles Bowemann considers that the lymphoedema is due to some local element interfering with the hydrodynamic of the limb. The resulting non pitting oedema is brownish in consistency. Histologically, there is proliferation of the fibroblasts and endothelial cells. Once the condition is established, very

little is achieved at either the medical treatment or the surgical procedures. In early cases, bed rest, elevation of foot end of bed, crepe bandage, salt free diet and diethyl-carbamazine seem to reduce to swelling a little: to reappear again once the upright position is maintained. For the established cases various methods of treatment have been advocated. Establishment of the anastomosis between the superficial and deep lymphatics have been tried by Sampson Handly, Lanz, Rosenov and Kondoleon with little success. Bowman Stressed that the temporary benefit obtained following Kondoleon is short lasting.

My experience has been different with modified Kondoleons operation. I feel that in early cases, the incisions on either side of the leg down to the deep fascia has really been very useful. For the very advanced cases with gross infection of the skin, complete excision followed by split skin graft gives a functionally good result. One case of elephantiasis of the breast needed local mastectomy to irradiate infection and exclude the possibility of carcinoma. No case of elephantiasis of the arm has been personally operated upon. Elevation of the arm during rest, greatly encourages the drainage, making the operation unnecessary. In a solitary case of elephantiasis of the thigh, the involved tissue was removed and the skin margins sutured. The wound healed up completely. All the cases of elephantiasis are given 300 mgm. of diethyl carbamazine daily during their preoperative periods and for 3 weeks after the operation. The cases of filarial scrotum, penis and vulva are best treated by wide excision of involved tissue. The raw area is covered over by skin graft.

The cases of chyluria are due to rupture of the dilated lymphatics in the urinary tract, following obstruction to the flow of lymphatics in the cysterna chyli. Lymphangiographic studies performed by R. G. Mahffy suggested that there is blockage of thoracic duct resulting in retrograde flow of contrast media from the para-aortic lymphatics. He also demonstrated pyelolymphatic reflux in the presence of chyluria. Rupture of the dilated lymphatics results in chyluria and haematuria. Most of the cases of haematuria and chyluria were treated with bed rest, elevation of the foot end of the bed, high protein and low fat containing diet. All the cases received diethyl carbamazine (300 mgm daily). The cases of chyluria and haematuria respond to injections of Adrenochrome monosemicarbazone. How it happens cannot be explained. On the basis of lymphangiographic findings few people tried to ligate the lymphatics in the perirenal area to control chyluria. Out of 11 cases operated upon, they claimed complete cure in 3 cases, remission in 7 cases and failure in one. We must wait longer to get the result of this difficult surgical procedures

### Summary

Filariasis is endemic in our country. The surgical manifestations of filariasis is due to obstruction to the lymphatic flow by the dead adult parasites, stationed in the lymphnodes in the various parts of the body. The hydrocele or the chylocele of tunica vaginalis testes is the commonest mode of presentation. The treatment of elephantiasis of the lower limb is not satisfactory. The chyluria has been the most difficult condition to manage. The ligation of the dilated lymphatics in the perirenal space, may be the answer in future.

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