

## LYMPHŒDEMA OF PENIS AND SCROTUM <sup>1</sup>

By C. KETTERINGS

*Plastic Surgical Unit, Surgical Department, Utrecht University Hospital,  
The Netherlands*

GENITAL elephantiasis may be due to some obvious cause—as in tropical filariasis—but it may arise without any previous symptoms as in the 40-year-old patient described.

For five months he had a swelling of penis and scrotum. There had been no venereal disease, no injury or operation and no infection or erysipelas. He had never visited a tropical country.

Initially the swelling was intermittent, but later it persisted and steadily increased. Impotence resulted.

Examination showed an œdematous penis and scrotum. The skin was indurated and showed papillomatous excrescences in the scrotal fundus (Fig. 1).

The inguinal glands were slightly enlarged, but without any signs of inflammation.

Further examination was negative as were extensive laboratory investigations.

Wassermann test, V.D.R.L., Reiter-antigen: negative; Frei test: negative; complement-fixation test for Nicolas Favre: negative; A.S.T.: 1:125; Mantoux 1:1000: negative; urological examination: negative.

Though there was no involvement of the legs a lymphangiogram was done with Lipiodol U.F. and the X-rays showed normal lymphatics. After 24 hours further X-rays showed normal lymph nodes, thus excluding latent primary and secondary lymphœdema of the legs.

Lymphangiography of the penis was also performed. The P.B.V. injected on the dorsum of the penis soon spread and within five minutes the warts on the scrotal fundus were coloured. A midline incision on the dorsum of the penis was made. One of the dilated lymphatics was easily cannulated and 6 ml. Lipiodol U.F. were injected. On the X-rays dilated lymphatics were seen on the penile base and reflux into the tortuous scrotal lymphatics. In the left groin somewhat tortuous lymphatic vessels were seen, whereas in the right groin a lymphatic block seemed to be present, as the contrast did not extend beyond (Fig. 2). Because of the assumption of a block, a lymph gland of the right groin was removed for histological examination but this showed no abnormalities.

During the same session a venography of the penis was done to exclude a thrombosis of the venous plexus of the bladder neck. The contrast medium moved retrograde into the femoral and great saphenous vein of the left leg and into the great saphenous vein of the right leg. This suggested a proximal obstruction of the great vessels but was not substantiated by later cavography, which showed no signs of abnormalities. Some of the contrast medium moved into the bladder-neck plexus which showed no signs of a thrombosis (Fig. 3).

Laugier *et al.* (1963) described a patient with lymphœdema of the penis and scrotum. He performed lymphangiography in the dorsal midline and found varicose lymphatics in the right groin. No dye was seen in the left groin. Separate lymphatic drainage of the left and right side of the penis was suggested, and he felt—though he made a midline incision—that he had cannulated a lymphatic of the right side. He stated, that by cannulation on the left side, the same picture would appear as on the right, but proof was omitted. As there is no unanimity in the anatomical literature

<sup>1</sup> Paper presented at a meeting of the Dutch Association of Plastic Surgeons at Nijmegen, 1967.

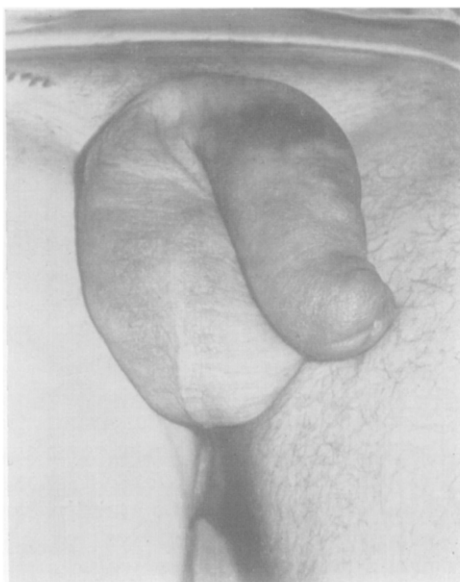


FIG. 1  
Showing extent of œdema.



FIG. 2

Fig. 2.—Lymphangiogram to show tortuous vessels in left groin, with a block on the right side.



FIG. 3

Fig. 3.—Venogram of penis.

regarding the lymphatic drainage of the penis, a further lymphangiography was performed in our patient on the right side of the penis to exclude that by unilateral lymphatic drainage the right penile system was not filled with contrast medium. The



FIG. 4

Lymphangiogram to show block on the right side.

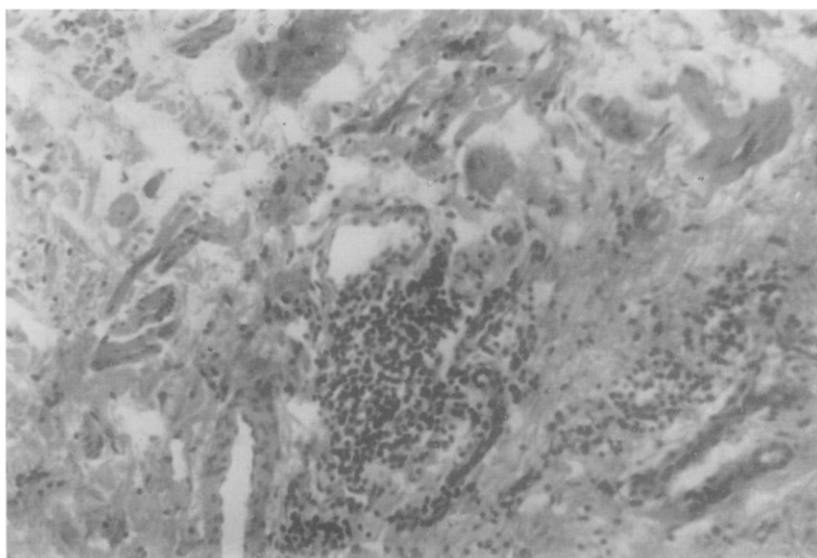


FIG. 5

Section showing round cell infiltration.

contrast stopped at the same place as in the previous lymphangiogram, while filling occurred on the other side (Fig. 4). This seemed to prove that in our patient the lymphatic drainage of the penis was bilateral and that there was a lymphatic block in the right groin.

According to the New York Heart Association (1953), lymphœdema can be divided into :

- A. Primary lymphœdema, and
- B. Secondary lymphœdema due to :
  1. Trauma (surgery included).
  2. Malignancy.
  3. Lymphadenitis—lymphangitis by
    - (a) Irradiation.
    - (b) Granulomatous infections (filariasis, syphilis, tuberculosis, lympho-granuloma venereum, etc.).
    - (c) Pyogenic infections.

In the patient described, primary lymphœdema can be rejected on account of the lymphangiography, which showed a total block. This is not seen in primary lymphœdema.

Of the secondary lymphœdemas the possibilities B.1, B.2, B.3 (a) and B.3 (b) have been excluded by history, examination and laboratory investigations.

Only pyogenic infection remains as a cause of the genital œdema of this patient. As far as can be traced there has been no clinically manifest infection. The remaining possibility is a subclinical or low-grade infection, which might be substantiated by histological examination of the diseased tissue. Multiple round cell infiltrations were found around the cutaneous and subcutaneous vessels (Fig. 5).

#### TREATMENT

There are two main principles in the operative treatment of lymphœdema. The first is the lymphangioplasty, where the object is to drain the lymph of the diseased areas to areas of normal lymphatic drainage.

The second is the lymphangiectomy, which is based on the opinion that improvement can be expected only by removal of the diseased tissue, a procedure advocated by Charles.

A lymphangioplasty was done by Krogius (1911), who everted the tunica vaginalis to drain the lymph from the scrotum via the spermatic cord.

Draudt (1910) used the Handley procedure, but the silk was extruded.

Jansen (1914) inserted metal tubes. As the genital œdema lessened, he removed these after a fortnight and transplanted a piece of the great saphenous vein (which he removed from another patient with varicose veins) between the glans and mons pubis. The œdema diminished and the erysipeloid attacks stopped.

Ziemann (1962) modified the Handley procedure by using monofilament nylon. This showed no perifilamentary fibrosis as the silk material did. He thus treated a patient with genital œdema and obtained a satisfying result during seven years.

Truc and Guillaume (1954) used polythene tubes to drain the lymph from the male genitals to the iliac fossa, with a good result. Stenberg and Hogeman (1955) also used polythene tubes with success.

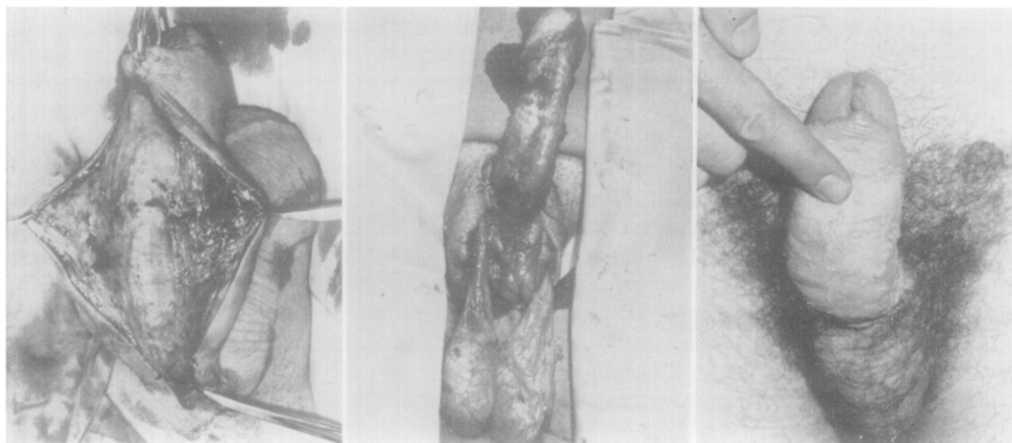
McDonald and Huggins (1950) described a variation in which they did a wedge excision on both sides of the scrotum and made a bilateral anastomosis with the thighs. The œdema of the scrotum disappeared, while the penile œdema persisted and the erysipeloid attacks recurred.

Of the lymphangioplasties those of Ziemann and Stenberg and Hogemann seem to have had the best results, but experience is still limited and the follow-up rather short.

The fact that the Charles operation is practised by many surgeons demonstrates

that the results are fairly reasonable and constant. The penis is denuded of the altered tissues until Buck's fascia is reached and a split thickness skin graft is applied (Palletta, 1952 ; Morales *et al.*, 1954 ; Gelbke, 1955 ; Fogh Anderson and Sørensen, 1962).

There is some advantage to be obtained by inserting a catheter. As regards the scrotum the following procedure is advised : if the total scrotum is affected removal of all the diseased tissue is necessary. The scrotum can be reconstructed by raising flaps from thigh or abdomen with temporary implantation of the testicles in pockets of the thigh (König, 1928 ; Whelan, 1944 ; Padgett, 1947 ; May, 1950 ; Douglas, 1951 ; Kubacek, 1958).



FIGS. 6 and 7  
Showing steps in reconstructive procedure.

FIG. 8  
Post-operative state.

Split thickness skin grafts provide also a good covering (Ferris, 1949 ; Gibson, 1954 ; Morales *et al.*, 1954 ; Watson, 1956 ; Balakrishnan, 1956 ; Farina *et al.*, 1958 ; McGregor Alton, 1963).

Usually the cranio-dorsal part of the scrotum is not affected and it is of the utmost importance to save this flap to reconstruct a new scrotum, if necessary with undermining of surrounding skin. Reports of cases of avulsion of scrotum where reconstruction is performed from the remnant tags imply that the " bag " gradually expands to a nearly normal volume (Wetherell, 1945 ; Ferris, 1949 ; Baxter *et al.* 1949 ; Bruner, 1950 ; Manchanda *et al.*, 1967).

In the patient described the Charles procedure was followed. As the dorsum of the scrotum did not show lymphoedematous changes (Fig. 6), this was used for reconstruction of the scrotum after resection of the diseased tissue (Fig. 7), while the penis was covered with a split thickness skin graft.

The result was very satisfactory (Fig. 8).

At last a type of operation is described which is a combination of a lymphangioplasty and a lymphangiectomy. Gohrbandt (1926) performed a wedge excision with fenestration of the spermatic fascia ; the result was limited by the remaining lymphoedematous tissue and the scar contractures.

Oestrogens directed against possible post-operative erections are contra-indicated, because of the danger of castration. In case of emergency ethyl chloride can be sprayed on the lower abdomen and thighs.

The potency of the patient returned.

## REFERENCES

- BALAKRISHNAN, C. (1956). *Br. J. plast. Surg.*, **9**, 38.
- BAXTER, H., HOFFMAN, M., SMITH, K., and STERN, K. (1949). *Plastic reconstr. Surg.*, **4**, 508.
- BRUNER, J. M. (1950). *Plastic reconstr. Surg.*, **6**, 334.
- CRITERIA COMMITTEE OF THE NEW YORK HEART ASSOCIATION, INC. (1953). "Nomenclature and Criteria for Diagnosis of the Diseases of Heart and Blood-vessels", 5th ed. New York: New York Heart Ass.
- DOUGLAS, B. (1951). *Ann. Surg.*, **133**, 889.
- DRAUDT, M. (1910). *Arch. Derm. Syph.*, **100**, 203.
- FARINA, R., DE CAMPOS FREIRE, G., and ARRUNDO MACEDO, O. (1958). *Urol. int.*, **6**, 50.
- FERRIS, D. O. (1949). *J. Urol.*, **62**, 523.
- FOGH ANDERSON, P., and SÖRENSEN, B. (1962). *Acta chir. scand.*, **124**, 539.
- GELBEKE, H. (1955). *Trans. First Congr. int. Soc. plast. Surg.*, Stockholm.
- GIBSON, T. (1954). *Br. J. plast. Surg.*, **6**, 283.
- GOHRBANDT, P. (1926). *Arch. klin. Chir.*, **141**, 44.
- JANSEN, P. (1914). *Beitr. klin. Chir.*, **90**, 111.
- KÖNIG, E. (1928). *Arch. klin. Chir.*, **150**, 244.
- KROGIUS, E. (1911). *Zentbl. Chir.*, **2**, 1344.
- KUBACEK, V. (1958). *Br. J. plast. Surg.*, **10**, 25.
- LAUGIER, P., GILLE, P., and GONDY, G. (1963). *Bull. Soc. fr. Derm. Syph.*, **70**, 490.
- MCDONALD, M. F., and HUGGINS, C. (1950). *J. Urol.*, **63**, 187.
- MCGREGOR ALTON, J. D. (1963). *Trans. Third Congr. int. Soc. plast. Surg.*, Washington.
- MANCHANDA, R. L., SING, R., KESWANI, R. K., and SHARMA, C. G. (1967). *Br. J. plast. Surg.*, **20**, 97.
- MAY, H. (1950). *Plastic reconstr. Surg.*, **6**, 134.
- MORALES, P. A., O'CONNOR, J. J., and GORDON, S. G. (1954). *J. Urol.*, **72**, 880.
- PADGETT, E. C. (1947). *Plastic reconstr. Surg.*, **2**, 378.
- PALLETTA, F. X. (1952). *Plastic reconstr. Surg.*, **10**, 195.
- STENBERG, T. G., and HOGEMAN, K. E. (1955). *Trans. First Congr. int. Soc. plast. Surg.*, Stockholm.
- TRUC, M. M., and GUILLAUME, RAPP (1954). *J. Urol. méd. chir.*, **60**, 696.
- WATSON, J. (1956). *Br. J. plast. Surg.*, **8**, 333.
- WETHERELL, F. (1945). *Surgery*, **18**, 525.
- WHELAN, E. P. (1944). *Surgery Gynec. Obstet.*, **78**, 649.
- ZIEMANN, S. A. (1962). "Lymphedema." New York: Grune & Stratton.