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LYMPHOGRAPHIA

EXCISION OF SUBCUTANEOUS TISSUE AND DEEP MUSCLE FASCIA FOR ADVANCED LYMPHEDEMA

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ABSTRACT

In advanced peripheral lymphedema particularly involving the legs, complex physical therapy (massage/bandage-wrapping compression, remedial exercises, and maintenance use of a low stretch elastic compression garment), is not uniformly successful. In six patients with morbid lymphedema of the legs, we described our positive experience using a modified Auchincloss/Homans excisional operation.

Non-operative therapy is the initial treatment for peripheral lymphedema. Such treatment usually entails use of pneumatic external compression or labor-intensive physical therapy characterized by manual massage, bandage compression, remedial exercises and long-term edema reduction maintenance by wearing of a low stretch elastic garment. Restricted limb mobility for morbid extremity enlargement and repeated infections (lymphangitis/cellulitis) are, however, indications for operation. Whereas none of these therapies is a panacea, operation is primarily designed to improve limb function and appearance while decreasing the episodes of lymphangitis/cellulitis. We now report our short-term experience in six such patients with advanced lower extremity lymphedema using a modified Auchincloss/ Homans excisional operation (1,2).

CLINICAL MATERIAL

Between August 1997 and January 1998, 8 legs of 6 patients with advanced lymphedema underwent excision of redundant skin, subcutaneous fat and underlying skeletal muscle fascia. Five of 6 patients had little or no improvement of leg edema after complex physical therapy. Each had morbid enlargement of the leg(s), and the one without prior non-operative therapy had sustained life-threatening sepsis secondary to leg infection. Demographic findings of these 6 patients are summarized in *Table 1*. Patient 1 had each leg operated upon after a 2-month interval whereas patient 3 had one leg operated upon on two occasions with a 3-month interval. Each operation was carried out by the senior author (DIK).

OPERATIVE PROCEDURE

Similar to previous descriptions, a vertical incision was made from the upper inner thigh to just above the medial malleolus. Anterior and posterior flaps of 1-2 cm thickness were raised to the mid-sagittal plane. Subcutaneous tissue with underlying deep fascia (40-50% of leg circumference) was excised thereby exposing the skeletal muscle compartment (*Fig. 1*). Redundant skin was removed and saline containing

TABLE 1
Patient Demographics

Patient	Sex (M/F)	Age (Yrs.)	Lymphedema (Type)	Affected Leg
1	F	26	P	R
				L
2	M	15	P	R
3	F	56	S	R
4	F	52	S	L
5	F	42	S	R
6	F	65	S	R

M/F=Male/Female; P=Primary; S=Secondary; R=Right; L=Left

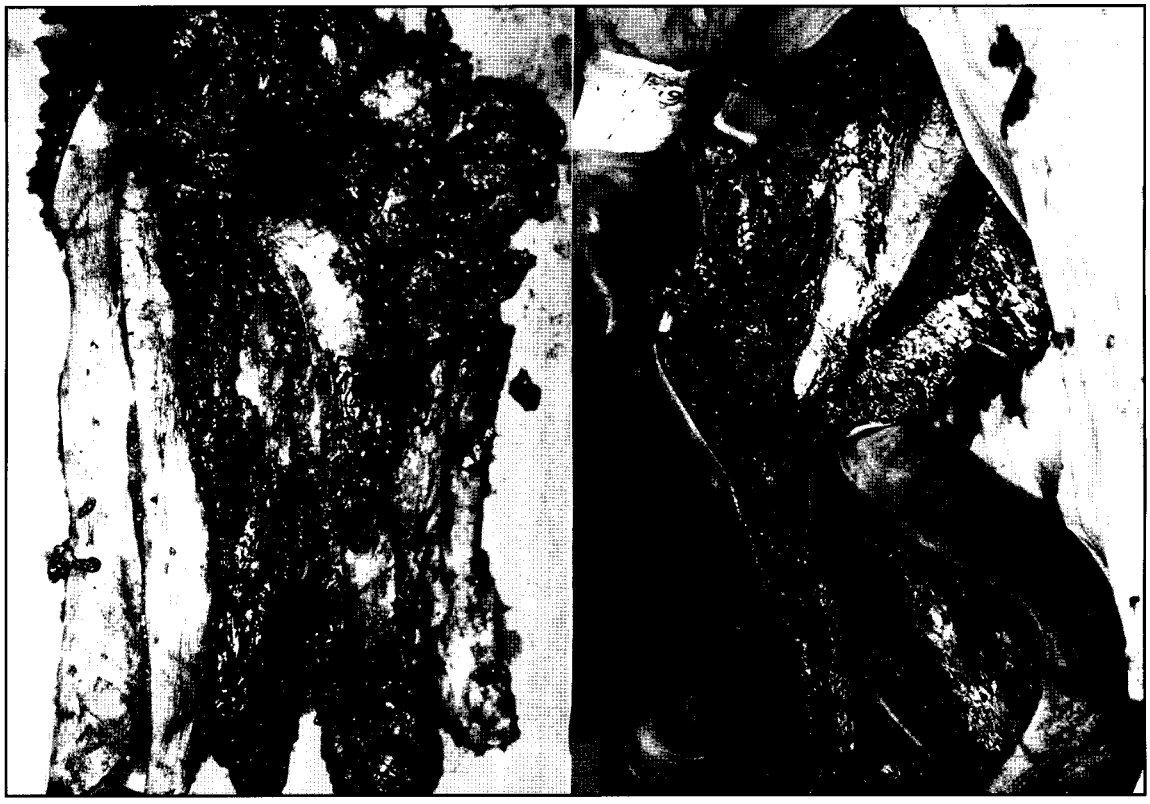

Fig. 1. Intraoperative photograph showing the excised specimen consisting of redundant skin, subcutaneous tissue and underlying fascia (left) with exposure of the skeletal muscle (right).

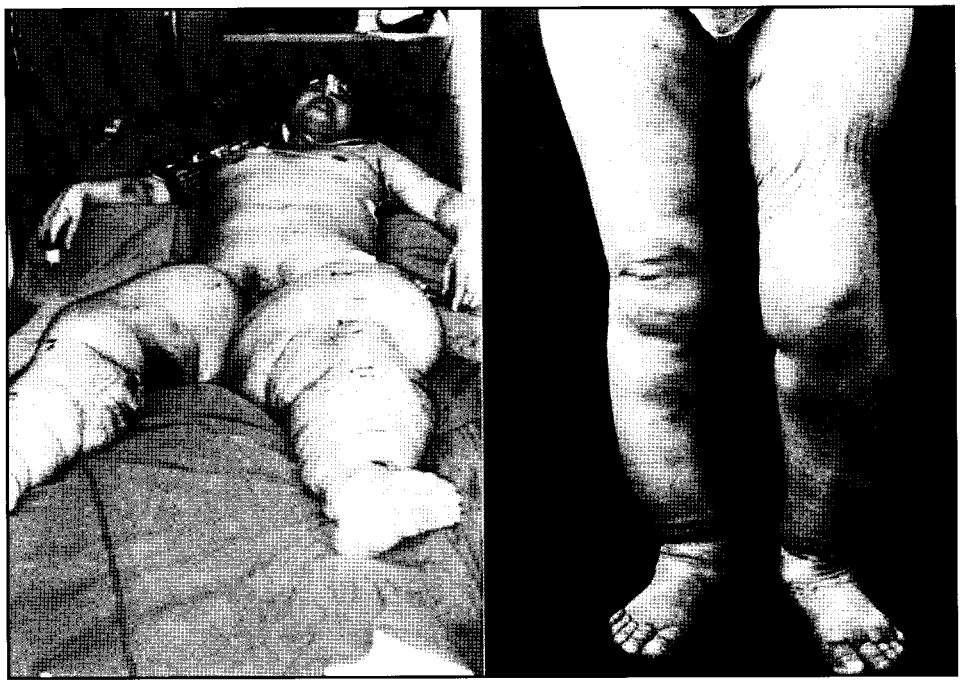

Fig. 2. 36-year-old woman (patient 1) initially admitted in profound septic shock. Management first focused on control of sepsis and thereafter both legs were elevated and external pneumatic compression was applied. Left — preoperative appearance. Right — one month after second excisional operation.

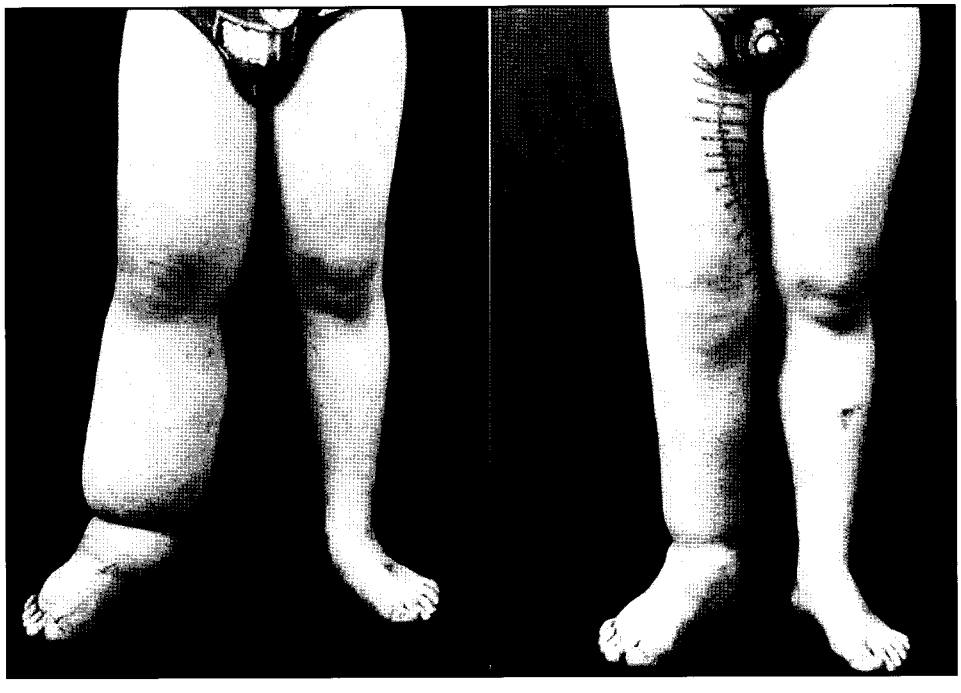

Fig. 3. Photograph of patient 2 before (left) and after (right) excisional operation for lymphedema.

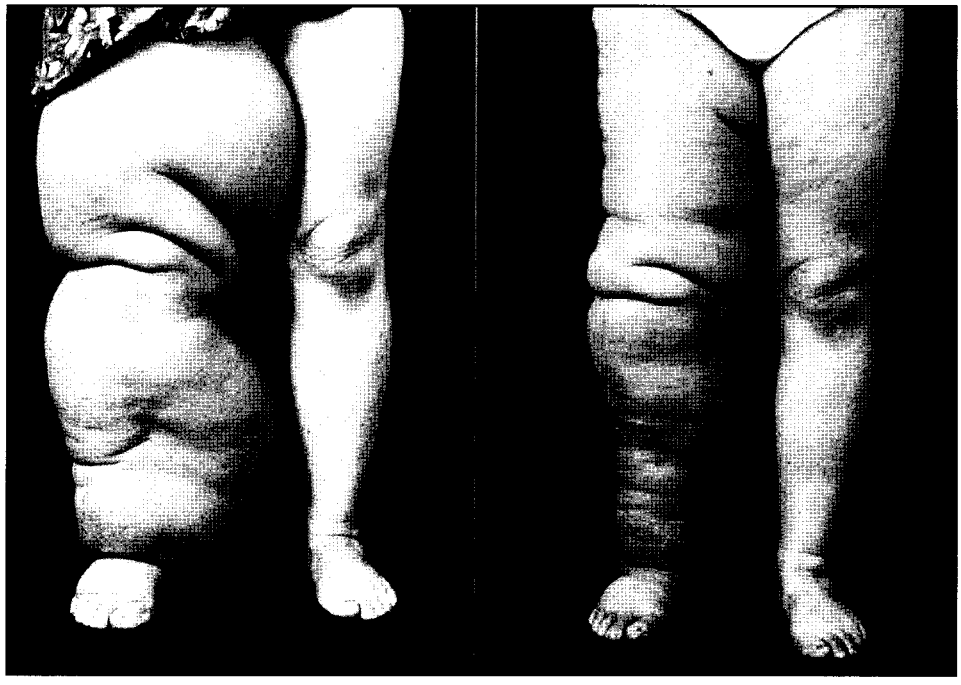

Fig. 4. Photograph of patient 3 before (left) and one month after (right) excisional operation for lymphedema.

antibiotics was used for irrigation. Two drains were placed beneath the flap proximally and distally and left *in situ* for 3-5 days. Skin approximation was done using interrupted 3-0 nylon sutures. No dermal sutures were inserted. The leg was immobilized with a long splint and left elevated. Ambulation was begun on the 7 post-operative day.

RESULTS

Overall body weight decreased after operation on an average of 6.0 ± 1.4 kg whereas the mean weight of the excised tissue was 1022 ± 31 gm. Operative complications were minimal and each patient was discharged from the hospital within 2 weeks after the procedure. *Figs. 2-5* show the short-term outcomes.

COMMENT

Advanced lymphedema is a disabling and debilitating condition often accompanied by recurrent infection and on rare occasions a superimposed skin malignancy (angio-sarcoma). Accordingly, treatment to decrease limb edema is desirable. When non-operative therapy proves ineffective particularly with a morbidly distorted extremity and functional impairment or life-threatening lymphangitis/ cellulitis, operative reconstruction is appropriate. Although many operations have been advocated (3,4), the procedure as originally outlined by Sistrunk (5) and later modified by Auchincloss (2) and Homans (1) was used by us to manage patients with morbidly grotesque leg lymphedema. Although our follow-up is short, the marked structural and functional improvement as illustrated by the

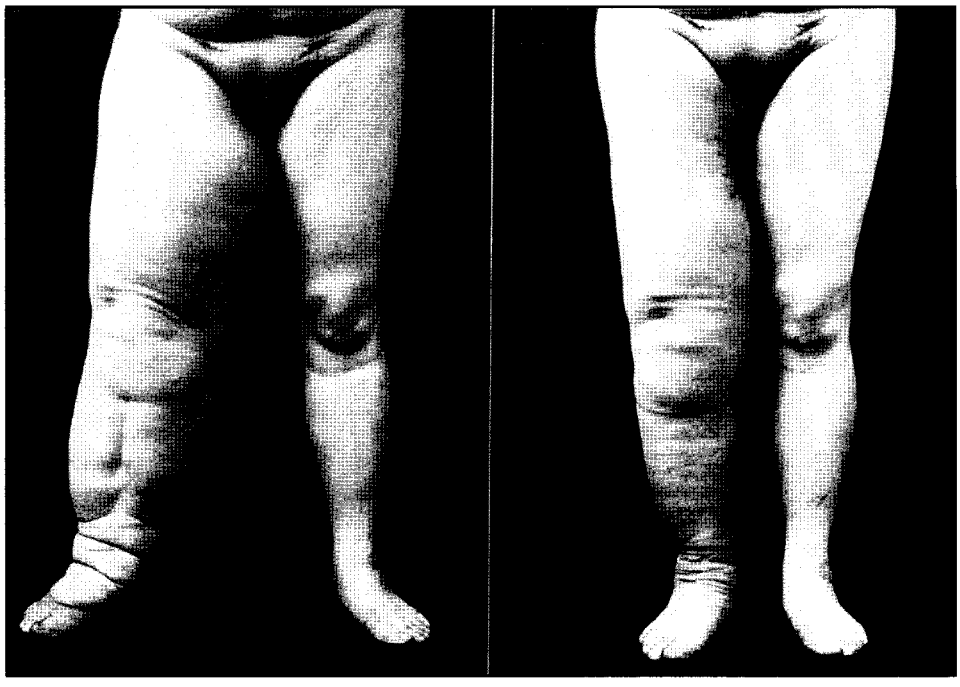

Fig. 5. Patient 5 before (left) and one month after (right) excisional operation for lymphedema.

photographs *(Fig. 2-5)* suggest that the operation is useful for patients with similar presentation. Perioperative complications were minimal and long-term follow-up by others suggest that later hyperkeratotic weeping of lymph and hyperpigmentation of the skin characteristic of more radical operations (6) are uncommon.

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