Discussion

Dr. James A. Kirtley, Jr. (Nashville): There are many points in Dr. Dale's beautifully presented paper that are worthy of comment. Time, will permit the discussion of just a few of those.

I had the opportunity of reading his manuscript on the way up here and was really amazed by the high incidence of poor wound healing as well as a fairly high mortality rate. I am sure that when his paper is published, all of us will profit greatly by reading in detail his meticulous description of handling wound tissue and how to avoid some of these complications.

The answer to the question of the pulmonary emboli is uncertain. We have been disappointed in one or two cases in which we did ligate the femoral vein at the time of amputation. One might make the point that frequently a toe can be amputated instead of a transmetatarsal or at a higher level.

We have had two patients who had an arterial graft that thrombosed, leading to amputation and we removed the graft but did not remove the fibrous wall that surrounded the graft and later had to go back and do that. If that occurs again, we will excise the fibrous wall so as to have a good fresh tissue approximation.

Dr. F. C. Spencer (Lexington, Ky.): We are indebted to Dr. Dale for collecting this data on what is not an inspiring group of patients. One is often led to forget them rather than tabulate and study them.

My main point of emphasis is that I have been encouraged in a small group of patients in the last two years with reconsidering arterial reconstruction in the presence of extensive gangrene limited to the distal half of the foot. If the gangrene has extended into the ankle joint or the leg, such consideration is futile, but if gangrene involves only the metatarsals, the possibility of arterial reconstruction should not be excluded.

The key point, I believe, in locating where the arterial reconstruction has to be done is appreciating that almost never does arteriosclerosis involving only the superficial femoral artery lead to gangrene. When one sees gangrene it means occlusion at one of three sites: the iliac, the profunda femoral, or the brances of the popliteal artery.

It has been unfortunate and discouraging that reconstruction only of the superficial femoral seldom prevents extension of gangrene, and one seldom finds a patient in whom merely reconstruction of the superficial femoral artery is adequate. As Dr. Dale has indicated, a number of the patients requiring amputation have had previous attempts at reconstruction.

The encouraging experiences that I want to describe are that in several patients the disease in the distal popliteal artery below the knee was in the branches but only within the first centimeter beyond the origin. In this area reconstruction with a long graft from the common femoral to the branches of the popliteal artery below the knee can be done. This is tedious surgery, as the vessels are 3.0 to 4.0 mm. in diameter, but nevertheless frequently one can successfully graft, amputate the gangrenous toes or metatarsals, and salvage an extremity for at least a year. Longer periods of observaiton are not yet available on this group of patients.

Dr. W. Andrew Dale (Closing): Dr. Kirtley is particularly qualified to discuss this experience because of his interest in and personal knowledge of the series presented. In regard to superficial vein ligation I would like to recall the 27 of these reported * when I was in Rochester, New York. These vein ligations were done at the time of extremity amputation to prevent pulmonary embolism. Unfortunately, four of the patients later died of such embolism which was so discouraging that the simultaneous vein ligation was abandoned.

Continuation of embolic and thrombotic complications has been noted and I am now making a trial of anticoagulation therapy and would like to encourage others to evaluate this prophylaxis. Coumadin is begun 48 hours after amputation and continued during the entire hospitalization. If the patient can be managed properly it is later continued at home for a period of 8 weeks. It is hoped that this presentation will interest all of us in improving our results in this common procedure whose associated mortality and morbidity is still much too great for complacency.

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* Dale, W. A. and W. Capps: Major Leg and Thigh Amputations, Surg., **46**, 333, 1959.