The Management of Traumatic Amputations

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Surgical Replantation of amputated extremities has recently received widespread newspaper publicity. For years such attempts have occasionally been successful, however with the development of improved surgical technique and care, replantation operations are of considerable practical as well as scientific interest and can be applied to patients with major traumatic amputations.

The purpose of this communication is to call attention to the small but important group of patients with traumatic amputation of an extremity and to point out the presently recommended initial management of such patients.

Selection of Patients

The possibility of surgical replantation of a traumatically amputated extremity should be considered in every patient in whom this entity is encountered. It is obvious that surgical success will not be achieved in all such patients and equally obvious that if the procedure is not considered it will not be performed. If the patient is in reasonably good general condition, if the amputated extremity is available and not too badly damaged, and if facilities and personnel are available within a reasonable period of time, it seems likely that surgical success can be achieved in a significant number of patients. Contraindications to any surgical attempt at replantation would include poor general condition of the patient for either intercurrent reasons or because of the presence of major, multiple injuries. If the surgical attempt cannot be carried out within eight hours, it is probable that significant risk to the patient's life will be incurred without reasonable chance of limb survival. If tissue injury at the site of replantation is too extensive, the procedure cannot be carried out in a technically satisfactory manner.

Management of the Patient

The general condition of the patient is the physician's first concern. Hemorrhage from the site of amputation may be massive or surprisingly small. Massive hemorrhage can be controlled by pressure over the vessels until suitable clamps become available. It is obvious that if replantation is to be considered further damage to the exposed vessel ends is to be avoided or minimized. Nevertheless, these vessels should be ligated as close to the severed end as possible, particularly if the patient is to be transported a great distance. The ends of such sutures should be left long to permit easy identifi-
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tication. Treatment of the blood volume deficit is second only to control of massive hemorrhage. Although blood transfusion is the method of choice, blood plasma or dextran can and should be used if shock is present before whole blood is available. It might be well to mention that associated injuries should be looked for and considered while dealing with the more obvious amputation.

The amputation wound should be disturbed as little as possible after hemorrhage is controlled. When hemorrhage is controlled and shock is treated, the major consideration is transport of the patient to a center where facilities and personnel are available for multi-discipline evaluation and treatment. No time should be lost in debriding the wound or in any other form of preparation. Grossly dirty wounds may be irrigated with sterile normal saline, but transport of the patient should not be delayed for this step. The wound should be covered with moist sterile dressings protected by heavy dry dressing or polyethylene film. A large dose of broad spectrum antibiotic should be given early in the course of treatment.

THE AMPUTATED MEMBER

The amputated part should be recovered promptly and evaluated. As little as possible should be done to the amputated part, but if a major vessel is readily accessible, 20 mgs. of heparin can be instilled. It is preferable to omit this if any dissection is necessary to expose a vessel. The open wound in the amputated extremity should be covered with a sterile, saline-moistened dressing, protected by dry dressing. The extremity should be kept cool preferably in iced sterile saline.

TRANSPORT OF THE PATIENT

Transport of the patient to a center where definitive treatment can be carried out is mandatory at the earliest possible time. The center should be notified by telephone as soon as this can be done, in order to make preparations for rapid handling of the patient. Information should be sent with the patient covering the following points:
1. Time, location, and nature of injury.
2. Initial evaluation of extent of injury.
3. A list of all drugs and fluids administered.
4. A note giving details of initial management of the wound in both the patient and the amputated part.
5. The patient's blood type if this has been determined.

SURGICAL REPLANTATION

Definitive replantation of the traumatically amputated extremity depends upon evaluation of the factors outlined above. The attempt consists of debridement of both the wound of amputation and the amputated part, massive irrigation of both areas, intramedullary fixation of the involved bone, vascular suture of both artery and vein, and metallic marking of nerve ends for future procedures. It seems clear that a successful result can be attained in many such instances and in properly selected cases, the risk should not be excessive.

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