Manual of Emergency and Outpatient Techniques

Washington University Department of Surgery

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Preface

This manual is designed to familiarize medical students, house officers, physicians, and other medical personnel who work in emergency areas with many of the techniques required for emergency and outpatient surgical management. Primarily, basic procedures are covered, but since some more sophisticated techniques are presented, it must not be construed that all the procedures can be performed by less than trained surgeons. However, surgical technicians, medical students, and house officers should be familiar with the operations and procedures at which they are expected to assist.

Surgical diagnosis and treatment must always be kept paramount, but there are important technical aspects to surgery and emergency medicine that cannot be ignored. Carrying out a procedure improperly is often worse than not attempting it at all. The patient who suffers a pneumothorax as a result of a misplaced central venous catheter now has an additional obstacle to survival. It is the expectation of the contributors to this manual that they may impart some of the skills they have learned during the complex technical management of today's surgical patient, in the hope that certain pitfalls may be avoided.

This manual has been prepared by members of the Washington University School of Medicine, St. Louis, Missouri. We are especially grateful for the advice and guidance of Dr. Walter F. Ballinger, Professor of Surgery and formerly Chairman of the Department of Surgery. The editors appreciate the assistance and direction provided by Mr. Fred Belliveau and his staff at Little, Brown and Company, and recognize the untiring efforts of Ms. Bernice Flynn and Ms. Lynell Conley, who quietly and uncomplainingly typed and retyped the manuscript.

A. P. K.
C. B. A.

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Notice

The indications and dosages of all drugs in this book have been recommended in the medical literature and conform to practices of the general medical community at Washington University. The medications described do not necessarily have specific approval by the Food and Drug Administration for use in the diseases and dosages for which they are recommended. The package insert for each drug should be consulted for use and dosage as approved by the FDA. Because standards for usage change, it is advisable to keep abreast of revised recommendations, particularly those concerning new drugs.

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Patient Handling

Allen P. Klippel

It is appropriate to begin a book on the technical aspects of outpatient surgery with a discussion of some of the most important techniques used on our patients. For too long it has been considered that professional medical management begins at the entrance to the emergency department. Only recently has it become obvious that inept initial handling of the patient on the scene of the accident or illness can frustrate the later application of the best skills of the medical profession. This chapter therefore is designed not only to help the in-house personnel in patient handling but also to encourage them to involve themselves in what transpires before the patient arrives, including the teaching of paramedical personnel. Training in the fundamentals of first aid and rescue should be mandatory for all medical students, nurses, and other medical personnel. The emergency manual, prepared by the American Academy of Orthopedic Surgeons, is an excellent text for such training. Hospital personnel need to be familiar with the techniques used in patient handling on the accident scene to make the patient comfortable and avoid increased injury, since these techniques are also needed in the hospital environment for the same reasons. If hospital personnel understand the work of rescue personnel, they will learn *not* to remove splints or backboards before the indicated examinations and roentgenograms have been made.

Every emergency department should stock the same equipment that is used by the local ambulance or rescue services, so that equipment can be immediately exchanged and there is no need for the service to wait for its return. This concept was promulgated by Letterman in 1863, during the Civil War, but to date has had little use despite its obvious merit. The essential equipment list for ambulances drawn up by the American College of Surgeons is an excellent starting point. Many physicians and ambulance personnel will add other items of equipment they find useful in handling their patients.

Initial Procedures

AIRWAY CONTROL

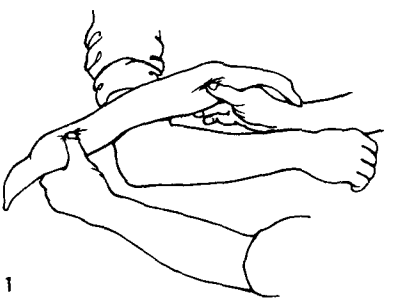
Establishment and maintenance of an adequate airway is the most important step in handling any patient who is not breathing normally.

WOUNDS AND HEMORRHAGE

Every open wound should be covered by a sterile dry gauze dressing. Larger wounds may be covered with multilayered gauze dressings. These dressings are held in place with triangular bandages or conforming gauze roller bandage. This direct pressure will control almost all types of hemorrhage except that from a severed major artery.

If a dressing becomes soaked with blood, more pads should be applied and wrapped snugly with a conforming gauze roller bandage or air splint. An air splint not only will splint an extremity but also is an excellent method of controlling hemorrhage. The initial bandage must not be removed.

A tourniquet should be used only as a last resort when bleeding can be stopped in no other way. Loss of an extremity must be anticipated if a tourniquet is applied. The tourniquet should be wide enough so that it applies pressure as a wide band and does not damage underlying nerves and vessels. A stick or pencil is inserted in the tourniquet and twisted until the wound is absolutely dry. *Do not loosen the tourniquet until definitive wound management is available.*



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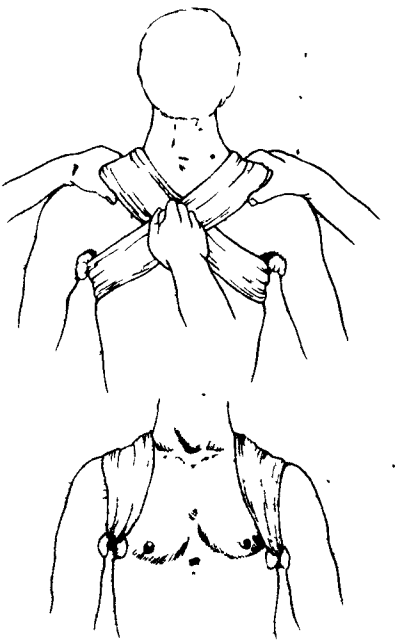
EMERGENCY SPLINTING

Any suspected fracture site must be splinted as soon as possible and before transport to the hospital, even if the hospital is close by. The general principle that must be followed is that the joints proximal and distal to the fracture site must be included in the splinting. Hospital personnel are all too familiar with the delays that some fracture patients must undergo in the x-ray department or waiting for a cast to be applied, especially when more seriously ill or injured patients arrive. The neurologic and vascular state of the extremity must be evaluated before and after a splint has been applied, to rule out any deleterious effects of the splint.

Shoulder Girdle and Upper Arm

A fractured clavicle is splinted by pulling back the shoulders and holding the position with two triangular bandages tied together or a 4-inch conforming gauze roll applied to the patient in a figure-eight technique. The patient will be more comfortable if the anterior axillary fold is padded with a multilayered gauze pad on each side.



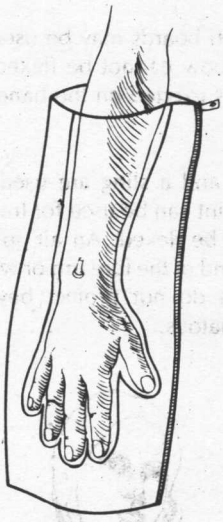
Fractures of the shoulder area are best managed by placing the arm in a sling and tying a second triangular bandage around the body.

Two long, well-padded boards may be used for fractures of the humerus when the elbow cannot be flexed. These are applied while gentle traction is exerted on the hand.

Forearm

Padded board splints and a sling are used for fractures of the forearm. A long air splint can be used for fractures of the forearm or elbow that cannot be flexed. An air splint can be used for fractures at the distal end of the forearm or wrist, but care must be taken that the fingers do not project beyond the splint and thereby become edematous.

Only those air splints that open along their length should be used because they are most easily applied.

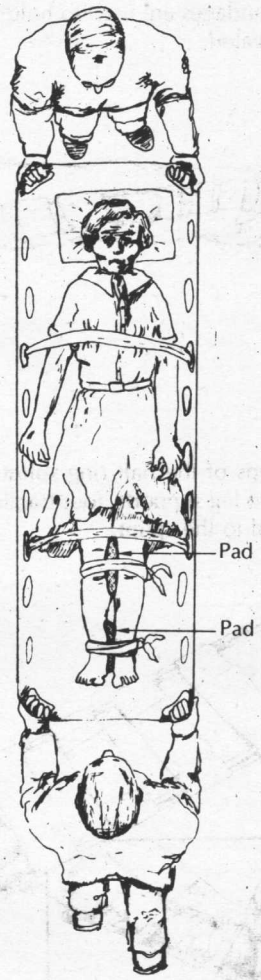


Hands

All fractures of the bones of the hand must be splinted in the anatomic position. A roller bandage is placed in the palm and the fingers fitted around it. The extremity is then placed on a padded board splint or short air splint.

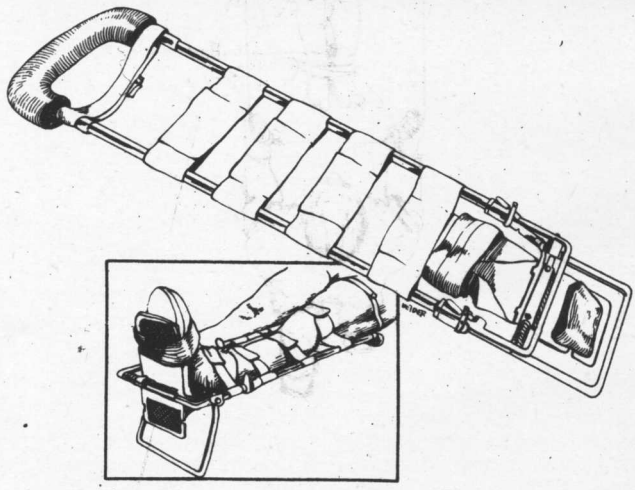
Upper Leg

HIP. Fractures of the hip or pelvis are probably best handled by tying the two legs together and carrying the patient on a long backboard or scoop litter.



FEMUR. The half ring splint must be applied so that the padded ring impinges on the ischial tuberosity, not on the pubic bone. As one rescuer provides traction at the foot, the splint is slipped into position. The patient's shoe is left on, and traction is applied by an ankle hitch using a triangular bandage. The hitch is tightened by a spanish windless stick that is held in place with adhesive tape. Triangular bandages are used to hold the leg. The foot and ankle must be elevated.

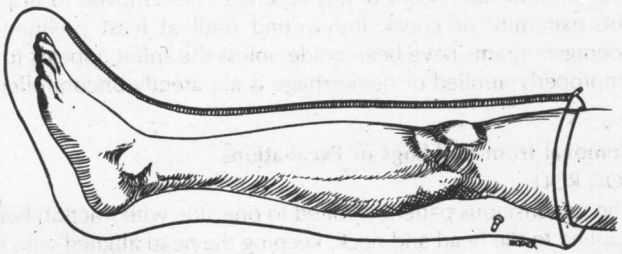
Commercial versions of the half ring splint are usually quickly applied, since Velco leg supports, foot-traction straps, and a heel rest are all attached to the splint.



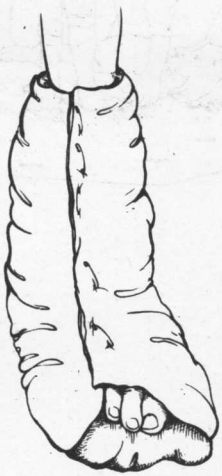
KNEE. Fractures about the knee may be handled with a half ring splint, long leg air splint, or long padded board splints.

Lower Leg

Fractures of the lower leg are splinted with long-leg air splints or long padded board splints.



ANKLE AND FOOT. Ankle or foot fractures can be splinted by an air splint or by wrapping a blanket or pillow around the foot and ankle and tying board splints around it.



Open fractures should have a dry dressing applied to the wound and only enough traction used to allow the splint to be applied. Obviously, a fracture displaced to a great degree needs to be straightened enough to relieve the problem, especially when there is some possibility of compromising the blood supply to the distal arm or leg.

No splint or backboard of any type is to be removed to inspect the extremity or check the wound until at least preliminary roentgenograms have been made unless the splint appears to be improperly applied or hemorrhage is apparently uncontrolled.

Removal from Buildings or Excavations

LOG ROLL

The unconscious patient is rolled to one side with traction being applied to the head and neck, keeping the head aligned with the rest of the body. A long backboard is slid under the patient, and he is fastened to it. The head is sandbagged to hold the normal position.