The SYM Tourniquet

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Most of the tourniquets in use are made of rubber tubing and utilize a half knot to maintain tension around the limbs. The following problems arise with this type of tourniquet:

1. Slippage of the knot, the degree depending on the type and width of rubber used.
2. The ends of the tourniquet get in the way.
3. Pinching of the skin and pulling of the hair with resultant unnecessary discomfort to the patient.
4. Occasional difficulty with release of the knot; the knot may be too tight or one may grab the wrong end of the half-knot.
5. When pressure is released, the untwisting action of the tourniquet upon the skin may dislodge the needle.
6. The tourniquet may roll and be difficult to maintain in position because of the conical configuration of an obese arm. This is especially true if a small rubber tubing is used.

During the past year, we have been experimenting with the various tourniquets available. One was a commercial product employing the use of Velcro fasteners. This tourniquet failed under clinical conditions: the strap was too short, it broke too easily, etc. However, the idea of using Velcro interested us and we continued investigating the problem. The resulting unit is inexpensive and readily adaptable to most clinical conditions. The SYM tourniquet consists of the following: (1) One piece of heavy duty elastic, 1 inch by 10.5 inches. This sewing elastic is available at any notion counter for pennies a foot. (2) Two pieces of Velcro (1 inch by 3 inches), one piece “loops” type and the other “hooks” type. The Velcro-hooks is sewn on one side of the elastic at one end and the Velcro-loops is sewn on the other side at the opposite end (fig. 1). Velcro is available in one inch width as equal quantity of “hooks” and “loops” for about $2.00 a yard. The Occupational Therapy Department of the hospital volunteered to manufacture the units with a cost of less than 20¢ a tourniquet.

The dimensions of the SYM tourniquet were determined after much trial and error and were designed to cover most of the clinical situa-

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Fig. 1. Top: Tourniquet showing “Velcro-loops.” Bottom: Tourniquet showing “Velcro-hooks.”

Fig. 2. Use of tourniquet on arms of different size.
tions encountered. It is recommended that the given size be retained. The SYM tourni-
quyet gives the following advantages:

(1) The wider area compressed results in better venous stasis with less constrictive pressure on the arm.

(2) The skin is not pinched or the hair pulled.

(3) It stays in place regardless of the shape of the arm.

(4) Release is easy without an untwisting action on the skin.

(5) The ends are not in the way.

(6) There is no sliding of the tourniquet once it is in place.

(7) It will fit most patients’ arms in clinical practice.

(8) The unit is inexpensive and its production can contribute to the activity of an occupational therapy department.

Adaptation of the Infant Pulmonator

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The infant pulmonator is described by the manufacturer as a simple effective lightweight respirator which permits the operator to inflate rhythmically and intermittently the lungs of an infant who has either ceased or never begun to breathe. It would appear, therefore, that this instrument might be valuable for resuscitating the newborn.

The apparatus consists of a Bennett infant face mask (internal volume, size 3 mask: 24 ml; size 4 mask: 38 ml.), a Lewis Lee non-rebreathing valve (dead space: 16 ml.) and a Neoprene-foam breathing bag (internal volume: 343 ml.).

The pulmonator was found to be a potentially dangerous piece of equipment. By compressing the bag with one hand, it is possible to develop airway pressures of 180 to 210 cm. of water for a duration of 5 seconds or more. These pressures are far in excess of those necessary to expand the lungs of newborn infants. It is recommended that pressures no higher than 25 to 35 cm. of water be applied to the airway of a newborn for no longer than 1 to 2 seconds, for fear of rupturing the alveoli. It has been found that an infant can tolerate airway pressures of 60 cm. of water if the duration does not exceed 0.2 seconds. It is obvious that such short time intervals cannot be guaranteed by simple manual compression of a breathing bag.

An effort was made to make the apparatus safer by attaching an aneroid manometer to the pulmonator by means of a piece of plastic tubing (see illustration). In this manner, the operator can observe the pressures achieved and not exceed the upper safe limits.

It is recommended by the authors that this

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