

SURGICAL RESTRAINT APPARATUS FOR LIVING SPIDERS

Experiments involving the surgical manipulation of a living spider require immobilization of the specimen. Anesthesia is a commonly used method of immobilization but the possibility exists that the chemicals used (CO₂ ether, chloroform, etc.) could alter the post-surgery behavior and/or physiology. Such alterations in behavior and physiology are difficult to quantify but the possibility of their existence must be assumed until data to the contrary is reported. Low temperatures have also been used to immobilize arthropods for experimental work (Berry, Miller and Harris. 1978. *Ann. Entomol. Soc. Amer.*, 71:126-128). Dosage can be a problem with any of the above methods.

Seligy (1970. *Canadian J. Zool.*, 48:406-407) and Randall (1978. *Florida Entomol.*, 6:192) each designed an apparatus to immobilize spiders without anesthesia for examination purposes but no apparatus has been described to restrain live spiders for surgical procedures.

I designed and fabricated an apparatus that holds a spider between two layers of polyurethane foam with the appendages exposed for surgery without damaging the specimen (Fig. 1). The polyurethane allows fragile spiders (immature *Latrodectus variolus* Walckenaer and *Peucectia viridans* (Hentz) to be held, firmly immobilized, in one position without injury.

A 1 1/2" wide X 3/8" disc of polyurethane is cut horizontally about three-fourths of the way through the disc. A 60 X 15 mm tissue culture dish (Falcon no. 3002) is filled to 75% of its capacity with liquid paraffin and the split polyurethane disc floated on the wax until it has hardened.

Spiders as early as second instar *L. variolus* have been transferred from rearing containers using lightweight ("mosquito") forceps to be placed in the apparatus. Insect pins are inserted through the disc, around the spider and into the paraffin to secure the specimen in place. This apparatus, easily positioned under a dissecting microscope, has been used to immobilize spiders for amputation and ligation procedures.

To facilitate surgical procedures on the prosoma and opisthosoma a modification of this device was made by cutting a hole in the top layer of the slit disc through which the operations could be performed.

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