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Freeze-dried specimens for gross anatomy teaching

As more and more emphasis is placed on the use of prosected specimens to support teaching and learning of gross anatomy, consideration must be given to developing new methods to preserve human cadaveric material, and in ways which will resist the wear and tear to which they are necessarily subjected. Taxidermists have developed techniques for freeze-drying whole small animals as a method of long term preservation (Metcalf, 1981). We have explored the use of this methodology to preserve small prosected specimens for use in the teaching of gross anatomy. The technique we report here was tested initially on larynges (Fig. 1) but has since been applied with equal success to other structures, including pieces of small intestine dissected to show the arterial arcades (Fig. 2). We have used material from cadavers which were preserved using our standard embalming procedure (O’Sullivan & Mitchell, 1993).

To prepare freeze-dried specimen of the larynx: (1) prepare prosection as required; (2) wash specimen to remove debris; (3) pack specimen with nonabsorbent cotton-wool to help retain the natural shape of the specimen as it dries; (4) freeze specimen to between $-20 \, ^\circ C$ and $-29 \, ^\circ C$ for 24 h; (5) remove specimen from freezer and place in a freeze-drier. We used an Edward Modulyo freeze-drier fitted with an Edwards high vacuum pump (model E2M5); (6) freeze-dry specimen until process is complete. (The freeze-drying process took about 5 d for a prosected larynx); (7) remove any packing from specimen. The specimen is then ready for use. When it is not in use it can be stored in an air tight container with silica gel to absorb any moisture.

We have used our freeze-dried specimens of larynges at Southampton for nearly 3 y without any signs of deterioration. Mould, a common problem with wet specimens has not affected the freeze-dried specimens when stored as indicated above.

This is a very quick and cheap method of producing dry specimens for teaching. Once dissected, small specimens such as the larynx (Fig. 1) can be prepared in 1 or 2 wk, in comparison with a plastinated specimen of similar size which may take between 4 and 6 mo using the room temperature stepwise method (von Hagens, 1985; O’Sullivan & Mitchell, 1995).

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