

3-1978

Letters to the editor

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Recommended Citation

(1978) "Letters to the editor," *Henry Ford Hospital Medical Journal* : Vol. 26 : No. 1 , 53-54.

Available at: <https://scholarlycommons.henryford.com/hfhmedjournal/vol26/iss1/7>

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Letters to the Editor

A New Machine for Organ Perfusion

To the Editor:

Good organ preservation techniques are essential for an effective transplantation program. Two types of hypothermic preservation systems are used for clinical organ preservation: storage and perfusion. The pulsatile system, such as the Mox-100¹ and the Belzer,² is the one most frequently used. The nonpulsatile perfusion system is typified by the Gambro.³

Since there is some evidence to indicate that continuous hypothermic pulsatile perfusion can cause injury in the preserved organ,⁴ other methods of perfusion should be considered as alternatives for preservation. Therefore, we have devised a new system for organ perfusion that basically consists of a nonpulsatile pump, refrigeration unit, membrane oxygenator, and a dual functional support apparatus for portable or stationary use (Figures 1 and 2).

This new system was designed to meet all preservation needs. Like the other systems, it provides hypothermia and oxygenation. In contrast to the Mox-100 system, this machine is nonpulsatile, considerably smaller, easier to transport, less expensive, and supplied with a support apparatus for either portable or stationary use. It has the same characteristics as the Gambro machine, except for a different type of nonpulsatile perfusion pump.

This system has been tested extensively in our laboratory. Forty canine kidneys were perfused for 24-48 hours with cryoprecipitated plasma, with excellent results. It was demonstrated that this machine adequately supports kidney viability for 48 hours with immediate, life-supporting renal function after transplantation. Normal renal function was achieved in the second postoperative day and continued throughout the follow-up period of 20 days.

This combined transport and stationary system offers a reliable method for kidney preservation. It is compact, self-contained, easy to handle, and has fewer potentially harmful effects than the pulsatile systems.⁴

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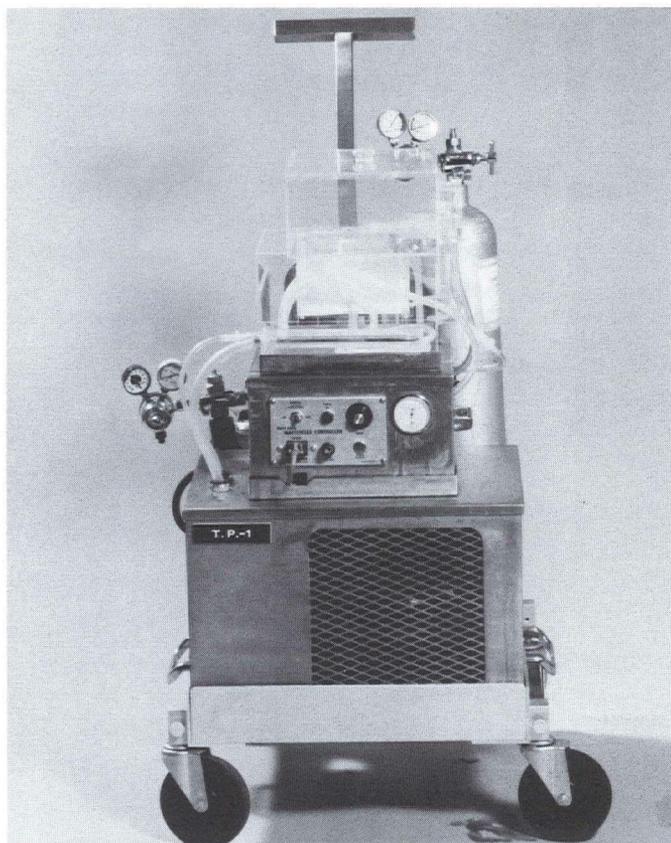


Fig. 1

Stationary and portable machine (TP-1) for organ perfusion. It provides a system with nonpulsatile pump, gas source for O₂, CO₂, air, and constant refrigeration. The flow is controlled by the nonpulsatile pump. pH is maintained by modification of O₂ and CO₂ flow rates.

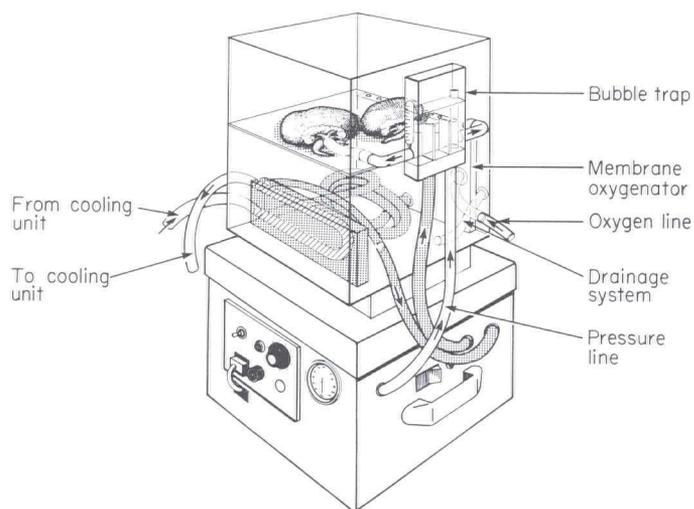


Fig. 2

Schematic representation of the portable or transport system (TP-1). The cassette and the nonpulsatile pump units are maintained together for transportation purposes. A battery keeps the system working.

Acknowledgments

The ideas and assistance of Gerald H. McKenzie from our laboratories were important in the development of this work.

This work was supported by a Henry Ford Hospital Institutional Grant, No. 730-0786, from the Ford Foundation.

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