Liver Research Directory

[A new transportable machine for the preservation of livers to be transplanted by means of hyperbaric oxygenation perfusion]

(Chir Ital. 2007 Sep-Oct;59(5):723-34)

[Article in Italian]


Dipartimento di Chirurgia Generale e Specialità Chirurgiche, Ospedale di Stato della Repubblica di San Marino, San Marino.

The preservation of livers to be transplanted is currently obtained by static cold storage at 4 C degrees and flushing with UW solution. New methods of preservation are being studied that take advantage of machines for continuous hypothermic perfusion of the organ. Such machines have permitted a lengthening of preservation times and the use of livers from non-beating-heart donors. In an attempt to eliminate the damage due to hypothermia, to lengthen preservation times, and to extend the availability of livers to be transplanted, also using those subjected to short periods of warm ischaemia, we have constructed a transportable machine that produces a hyperbaric atmosphere and allows continuous perfusion of the liver. Ten pig livers from beating-heart donors were perfused with Ringer solution in hyperbaric conditions with oxygen at temperatures ranging from 10 to 25 degrees C for periods of up to 24 hours and studied by means of histopathological analysis and tests of mitochondrial activity (FAU) in order to verify cell viability. The group of livers perfused up to 15 hours yielded an FAU value of 169.40 +/- 5.5 compared to the value of the non-perfused livers (controls) established as 100 and those perfused up to 24 hours had a FAU value of 139.18 +/- 10.7 compared to the controls established as 100, thus demonstrating cell viability.

The viability of the organs after preservation with our procedure in the hyperbaric oxygenation perfusion machine gives us good reason to believe that, after appropriate further confirmation of the results, it will be possible to use the machine for the transplantation both of livers subjected to warm ischaemia and of livers preserved for longer periods than is currently the case.

PMID: 18019646 [PubMed - indexed for MEDLINE]

Printed with Permission

Legal Disclaimer

The content and information provided within this site is for informational and educational purposes only. Consult a doctor before pursuing any form of therapy, including Hyperbaric Oxygen Therapy. The information provided within this site is not to be considered Medical Advice. In Full Support of the F.D.A., Hyperbaric Oxygen Therapy is considered Investigational, Experimental, or Off Label. Please consult with your Treating Medical Physician.