Further steps of hepatocyte transplantation

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Background: Hepatocyte transplantation is a promising treatment for several liver diseases and can also be used as a "bridge" to liver transplantation in cases of liver failure. Although the first animal experiments with this technique began in 1967, it was first applied in humans in 1992. Unfortunately, unequivocal evidence of transplanted human hepatocyte function has been obtained in only one patient with Crigler-Najjar syndrome type I, and, even then the amount of bilirubin-UGT enzyme activity derived from the transplanted cells was not sufficient to eliminate the patient's eventual need for organ transplantation. Methods: A literature review was performed using MEDLINE and library searches. Results: This review considers the following: 1) Alternatives or Bridges to orthotropic liver transplantation (OLT); 2) Solutions to the shortage of organs; the shortage of organ donors has impeded the development of human hepatocyte transplantation, and immortalized hepatocytes in particular could provide an unlimited supply of transplantable cells in a nearly future; and 3) Future Directions. We review these efforts along with hepatocyte transplantation over the last 20 years. Conclusion: OLT is a standard method of treatment for patients with severe and end-stage chronic liver disease. However, the chronic shortage of donor livers and parallel growth of the transplant waiting list mean that a substantial proportion of patients will die while waiting for a donor liver. Although attempts to reduce the waiting list by use of split-liver and living-related live donor techniques have had some impact, additional approaches to management are vital if the mortality rate is to be significantly reduced. This review examines potential hepatocyte sources, methods of hepatocyte isolation, and protocols for preservation that have been successfully established, along with an overview of clinical results.