Living Related Donor Liver Transplantation

Kazue Ozawa

Living Related Donor
Liver Transplantation

Assessment of Graft Viability
Based on the Redox Theory

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In memory of the late

Dr. Yorinori Hikasa
Professor emeritus
Kyoto University

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I wish to acknowledge my immense debt to the many fellow scientists, colleagues and friends with whom I have had the honor of working with over
the years. When I first began this program, living related liver transplantation was a new modality, with few reported experiences. Sharing with me their scientific, medical, ethical, surgical and other fields of expertise and giving me their understanding and support, they have each in their own way contributed greatly to the evolution of the living related liver transplantation program as a whole. Among these individuals, indeed too many to mention, I wish to give special recognition to the following doctors and groups at the Faculty of Medicine, Kyoto University:


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Preface

Since transplantation surgeons must be thoroughly familiar with every facet of an operative technique, it is imperative that they refer back to the landmark developments made by our forbears in that sphere. On the other hand, no matter how often they perform retrospective analyses of past data, they will never succeed in developing safer and surer transplantation surgery by that means. At our institute, where we have striven constantly to introduce scientific thinking into the surgical field, I believe it is our duty as surgeons to seek to perform operations on a scientific basis so as to achieve the utmost safety, however long it may take. During the past 30 years, along with my duties as a practicing surgeon, I have been engaged in mitochondria research, in which pursuit I have been fortunate to be blessed with so many excellent coworkers.
The research we did enabled me to establish what I would call the Redox theory.
Applying this theory in a program of aggressive surgery for liver cancer accompanied by cirrhosis, we were able to raise both the curability and the resectability for these cases. The introduction of liver transplantation techniques, especially for the aggressive treatment of advanced liver cancer cases, 31 of which were successful, subsequently set the stage for the liver transplantation series performed at our institute.
Also, with regard to the Redox theory, through international joint research conducted with the Hannover Medical School, the University of Pittsburgh, and the University of California at Los Angeles, it has been demonstrated that the theory has utility in evaluating the viability of the graft liver throughout the entire process of cadaveric liver transplantation. These studies suggested that if the graft viability is of a high value, there is good reason to expect a successful outcome. This was the breakthrough we needed for our liver transplantation series. In other words, I was convinced that mitochondria research was the key direction in which all related research should proceed.
In living related donor liver transplantation, first and foremost is the parents' love for the child, which is so strong that they are willing to expose themselves to the dangers of a surgical operation. Our job, then, is to verify whether they are clearly aware of the risks involved, before any operation is done.

In other countries orthotopic liver transplantation using living donors has
been introduced as one solution to the acute shortage of cadaveric donor livers. In performing our living related donor liver transplantation series we have instead placed emphasis on the advantage of genetic matching which would exist between parent and child. In either case, living related donor liver transplantation has come to be established as a therapeutic modality for treating pediatric cases stricken with end-stage liver disease. When it comes to selecting between cadaveric liver transplantation or living related donor liver transplantation, that decision is, of course, one which must be left to the patients and their parents. My hope is that the present work relating the characteristics of liver transplantation will be taken up by transplant surgeons seeking a guidebook for performing living related donor liver transplantation.

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