New Approaches to Allograft Transplantation

Editorial Comment

Hans Burchardt PhD

Published online: 19 June 2008
© The Association of Bone and Joint Surgeons 2008

The Musculoskeletal Transplant Foundation Symposium, held in Vancouver, B.C. in October 2007, was the fifth invitational meeting since 1993. These Symposia have reflected the Foundation's commitment to the science of allografts and bioconstructs. This 5th International Symposium celebrated the Foundation's 20th year and recognized the founders' dreams for a viable institution capable of furthering scientific advances in transplantation. Through the support of internal and external research, the ultimate goal has been to advance the medical treatment of patients.

Dr. J. Buckwalter of the University of Iowa and Dr. M. Bolander of the Mayo Clinic were the architects and co-chairs for this international meeting. In addition to being members of the Musculoskeletal Transplant Foundation (MTF) Board of Directors, these individuals are well-known, both nationally and internationally, as advocates of scientific research.

At the opening of the Symposium, Dr. William F. Enneking and Dr. V. Frankel were formally acknowledged as the two founding members of MTF who have provided key stewardship since its inception in 1987. Both Drs. Enneking and Frankel are recognized nationally and internationally as leaders in the fields of orthopaedics, education, and research. Their vision prompted the development of a peer-review grant program that encouraged young investigators to enter today's competitive research environment. More than a grant program, this program also emphasized presentation and publication.

Since 1993, the MTF grant program has awarded over \$20 million for allograft and bioconstruct research to men and women representing more than 112 institutions. The five International Symposia are landmarks of this program. The 5th Symposium is of even greater importance since 32 of the 40 presentations were recipients of awards within the last seven years.

The Symposium's three sessions emphasized cartilage, soft tissue, and bone transplantation. The 40 presentations represented the work of researchers from Europe, South America, Canada, and the United States. Each session was characterized by the intermixture of basic science, tissue banking safety, or the technological improvements being explored with hard and soft tissue engineering.

Twenty-three manuscripts were submitted for publication, with the 20 published here best representing the entire spectrum of the Symposium. The articles in CORR have been reordered from the original presentation to better group the topics of tissue transplantation. Thus, the reader will first encounter clinical work, such as the use of transplants in children, followed by research with autologous cartilage cell transplants in a synthetic matrix. New clinical information is also presented on the characteristics of graft failure in allografts, and the lack of immunogenic consequences to tissue transplants.

The futuristic topics in tissue transplantation are of unusual interest to both professionals and the lay public. Three articles emphasize the modification of natural remodeling characteristics usually associated with transplants to enhance incorporation. Another focuses on interference with the first phase of cortical bone remodeling, namely resorption. The question remains: Does modifying the resorptive phase allow for normal incorporation and biomechanical properties of the transplants?

H. Burchardt (✉)
Musculoskeletal Transplant Foundation, 125 May Street, Edison,
NJ 08837, USA
e-mail: hans_burchardt@mtf.org

The hard and soft tissue engineering field is the forerunner of change in today's transplantation research. Therefore, the articles on growth factors, the use of stem cells, nano meshes and microspheres are of particular interest. This modern engineering includes newer technologies capable of assessing biological materials in vivo using a dynamic contrast-enhanced MRI to quantify vascularity, or the testing of transplant materials in an in vivo bioreactor.

It seems we have an obligation to provide continuing support to evaluate transplants. Decisions must be made regarding their success in relation to the use of synthetics, which seem to emerge from many directions. It is possible the future of tissue transplants will demonstrate a greater merging with synthetics and pharmaceuticals, whereby transplants will act as carriers of future technologies. Undoubtedly, research in the next 5 decades will dazzle us

even more than the scientific changes we have witnessed in the past 50 years. The most surprising advances will likely come from the direction that research takes unexpectedly by incorporating newer technologies. The recognition in the 60's and 70's that musculoskeletal tissue transplantation could be performed with relative immunological impunity led to tissue banking. The maturing of the newest experimental advances will lead to twists and turns not yet comprehended.

I thank all of the investigators for their contributions to the Symposium. The publication process has become more detailed and exacting, and these changes reflect the greater expectations demanded from all of us to better serve the medical needs of the public. Finally, I want to express to all of you involved in the Symposium and the publication, my appreciation for your efforts and my gratitude for your dedicated support.