Sperm Banking
Sperm Banking: Theory and Practice

Edited by

Allan A. Pacey
University of Sheffield

Mathew J. Tomlinson
Nottingham University Hospital
Contents

Contributors vi
Preface vii
Acknowledgements viii

1. The history of sperm cryopreservation   Eric M. Walters, James D. Benson, Erik J. Woods, and John K. Critser

2. Effects of antineoplastic and other medical treatments on sperm production 18
   Marvin L. Meistrich

3. Referring patients for sperm banking 30
   Allan A. Pacey

4. The psychological and psychosocial issues surrounding sperm banking 41
   Marilyn A. Crawshaw

5. Legal and ethical aspects of sperm banking 58
   Susan Avery

6. Methods of sperm retrieval and banking in cancer patients 73
   Sepideh Mehri, Jose Sepulveda, and Pasquale Patrizio

7. Sperm processing and storage 86
   Mathew J. Tomlinson

8. Assisted reproduction using banked sperm 105
   Hasan M. El-Fakahany and Denny Sakkas

   Mathew J. Tomlinson and Allan A. Pacey

Index 122
Contributors

Susan Avery
Assisted Conception Unit, Birmingham Women’s Hospital, Birmingham, UK.

James D. Benson
Comparative Medicine Center, College of Veterinary Medicine, University of Missouri, Columbia, USA.

Marylin A. Crawshaw
Department of Social Policy & Social Work, University of York, Heslington, UK.

John K. Critser
Comparative Medicine Center, College of Veterinary Medicine, University of Missouri, Columbia, USA.

Hasan M. El-Fakahany
Dermatology, STDs, and Andrology Department Al-Minya University Hospital, Al-Minya, Egypt.

Sepideh Mehri
Yale University Fertility Centre New Haven, USA.

Marvin L. Meistrich
Department of Experimental Radiation Oncology, The University of Texas M. D. Anderson Cancer Center, Houston, USA.

Allan A. Pacey
Academic Unit of Reproductive and Developmental Medicine, University of Sheffield, UK.

Pasquale Patrizio
Yale University Fertility Centre, New Haven, USA.

Denny Sakkas
Yale University School of Medicine, New Haven, USA.

Jose Sepulveda
Istituto Etudio Concepcion Humana, Monterrey, Mexico.

Mathew J. Tomlinson
Fertility Unit, Nottingham University Hospital, Nottingham, UK.

Eric M. Walters
Comparative Medicine Center, College of Veterinary Medicine, University of Missouri, Columbia, USA.

Erik J. Woods
Genome Resources, Indianapolis, USA.
Preface

Sperm banking is now routinely offered to men as a means of preserving their fertility prior to either medical or surgical treatments that have a high risk of rendering them infertile. This is most common before cancer treatments such as chemo- or radiotherapy but is becoming increasingly common in other areas of medicine that rely on the use of potentially cytotoxic drugs, including the treatments for autoimmune conditions or in cases of progressive loss of muscular or neurological function. Some men elect to bank sperm prior to surgery, either because the surgery is intended as a contraceptive measure (e.g. vasectomy) or because infertility is an unwanted side effect of the operation. Lastly, and less commonly, men are now wishing to preserve their fertility as a precautionary measure because of a high-risk occupation or activity, including service in the security or armed forces. Whilst this book deals primarily with sperm banking prior to planned medical treatments with gonadotoxic agents, the processes involved are largely similar whatever the reason for wanting to bank sperm.

Despite sperm banking now being routine in almost every major city throughout the world, very little has been written about the clinical process from beginning to end. Only technical details about the freezing of sperm, the effects of certain cytotoxic treatments on male fertility, or the number of men coming forward to use banked samples have been described in individual research papers. This was highlighted at a one-day workshop in May 2002, organized by the British Andrology Society in Birmingham, UK. At that meeting, a series of presentations and open forum discussions, the idea that sperm banking was a unique service in its own right was discussed. The topics covered ranged from diagnosis of a medical condition through referral for sperm cryopreservation, the maintenance of the samples in storage, the process of follow-up, and the ultimate fate of frozen samples (use in treatment or disposal). The meeting attracted a multidisciplinary audience of nurses, counselors, scientists, and medical staff from a variety of specialties (e.g. oncology, hematology, fertility), and led for the first time in the UK to a sharing of knowledge on this topic. The workshop demonstrated quite clearly that, despite sperm banks working within the same broad regulatory framework, clinical, counseling and scientific practices varied enormously. There were clearly issues at the boundaries of those disciplines, which were often barriers to providing a joined-up service.

Following the British Andrology Society meeting, feedback from delegates prompted us to write a brief summary so that the spirit of the meeting could be shared more widely. This was published in Human Fertility in 2003. However, further feedback suggested that the article did not go far enough and what was needed was a single source of reference for anyone involved in the day-to-day delivery of sperm banking services. Hence the idea for this book was born. For this volume, we have deliberately invited experts in discrete areas of medicine, law, medical, and social science to contribute from within their own field to provide input into the sperm banking process from their own perspectives. We are grateful for their contributions and hope they will accept in good spirit our editing in order to dovetail the various chapters into one another in an attempt to outline the various sperm banking process as a continuum.
Acknowledgements

There are many people to thank in preparing this book. First of all to the staff of Cambridge University Press who kept their belief that we would be able to deliver a final typescript eventually. Primarily, we would like to thank Peter Silver, with whom we first discussed our idea, and then subsequently Betty Fulford, Nicholas Dunton, and Katie James who guided us through the process. Thanks also go to our authors for delivering their chapters but also in allowing us to change them to improve the dovetailing between them throughout the book. We are grateful to Dr. Anthony Hirsch for providing the diagrams for Figures 6.5 and 6.6. Finally, we must acknowledge the support of our respective Heads of Department (Professor William Ledger in Sheffield and Mr. James Hopkisson in Nottingham) for allowing us to engage our time on this project, perhaps to the detriment of other things we should have been doing.