

VIEWS AND REVIEWS

831 Introduction: Obesity and reproduction

D. R. Meldrum
San Diego, California

Women bear the predominant burden of our obesogenic environment. Fertility specialists and obstetricians/gynecologists have a unique opportunity to reduce that burden and its associated health care costs.

833 Obesity pandemic: causes, consequences, and solutions—but do we have the will?

D. R. Meldrum, M. A. Morris, and J. C. Gambone
San Diego and Los Angeles, California; and Durango, Colorado

Women are disproportionately affected by the obesity pandemic and account for the large majority of the economic cost. The health consequences are extensive.

840 Obesity and female infertility: potential mediators of obesity's impact

D. E. Broughton and K. H. Moley
St. Louis, Missouri

This article reviews the literature supporting a negative effect of obesity on female fertility and explores potential underlying biologic mechanisms.

848 Obesity, male infertility, and the sperm epigenome

J. R. Craig, T. G. Jenkins, D. T. Carrell,
 and J. M. Hotaling
Salt Lake City, Utah

In men of reproductive age, obesity negatively affects fertility through changes in androgen processing and epigenetic changes in the male genome and sperm genome. These changes may also impact the progeny of affected men.

860 Effects of obesity treatment on female reproduction: results do not match expectations

R. S. Legro
Hershey, Pennsylvania

This review examines the effects of obesity treatment before and during pregnancy and finds that treatment has had minimal impact on improving perinatal outcomes.

868 Adverse effects of female obesity and interaction with race on reproductive potential

B. Luke
East Lansing, Michigan

Obesity is associated with greater risks for adverse health outcomes across the reproductive spectrum, including subfertility, infertility, early pregnancy loss, fetal deaths, stillbirths and neonatal deaths, and congenital anomalies.

Fertility and Sterility® (ISSN 0015-0282) is a registered trademark of the American Society for Reproductive Medicine and is published monthly in two volumes by Elsevier Inc., 230 Park Avenue, Suite 800, New York, NY 10169. Periodicals postage paid at New York, NY and at additional mailing offices. Membership dues to the American Society for Reproductive Medicine include \$50.00 for *Fertility and Sterility®*. Publication of an advertisement or other product mentioned in *Fertility and Sterility* should not be construed as an endorsement of the product or the manufacturer's claim. Statements and opinions expressed in articles and communications herein are those of the authors and not necessarily those of the editors, publisher, or the American Society for Reproductive Medicine or any organizations endorsing this journal. **Subscriptions:** Personal Rates: US\$464.00 (USA), US\$682.00 (all other countries); Students: US\$176.00 (USA), US\$181.00 (all other countries). Prices include postage and are subject to change without notice. Any enquiry relating to subscriptions should be sent to: **The Americas:** Elsevier Health Sciences Division, Subscription Customer Service, 3251 Riverport Lane, Maryland Heights, MO 63043; Tel: (800) 654-2452 (U.S. and Canada), (314) 447-8871 (outside U.S. and Canada); Fax: (314) 447-8029; E-mail: journalscustomerservice-usa@elsevier.com (for print support); journalslinesupport-usa@elsevier.com (for online support). **Japan:** Elsevier Inc., Customer Support Department, 9-15 Higashi-Azabu 1-chome, Minato-ku, Tokyo 106-0044, Japan; Tel: (+81) 3 5561-5033; Fax: (+81) 3 5561-5047; e-mail: info@elsevier.co.jp. **Asia Pacific (excluding Japan):** Elsevier Inc. (Singapore) Pte Ltd., No. 1 Temasek Avenue, 17-01 Millenia Tower, Singapore 039192; Tel: (+65) 434-3727; Fax: (+65) 337-2230; e-mail: asiainfo@elsevier.com.sg. **Latin America:** Elsevier Inc., Rua Sete de Setembro 111/16 Andar, 20050-002 Centro, Rio de Janeiro - RJ, Brazil; Tel: (+55) (21) 3970 9300; Fax: (+55) (21) 2507 1991; e-mail: rsola.info@elsevier.com.br. **South America:** for orders, claims, and help desk information, please contact the Regional Sales Office in Florida as listed above. **Rest of World:** Elsevier Inc., Customer Service Department, P.O. Box 211, 1001 AE Amsterdam, the Netherlands; Tel: (+31) 20-485-3757; Fax: (+31) 20-485-3432; e-mail: ninfo-f@elsevier.nl.

POSTMASTER: Send address changes to *Fertility and Sterility®*, Elsevier Health Sciences Division, Subscription Customer Service, 3251 Riverport Lane, Maryland Heights, MO 63043.



INKLINGS

878 Why should patients experience infertility or poor outcomes before using assisted reproductive technologies?
C. Simon
Valencia, Spain; and Houston, Texas

880 Toward standardizing the embryo transfer procedure: from “how to” to “how many”
R. J. Paulson, R. H. Reindollar, and K. J. Doody
Birmingham, Alabama

ASRM PAGES

882 Performing the embryo transfer: a guideline
Practice Committee of the American Society for Reproductive Medicine
Birmingham, Alabama
For embryo transfer, pregnancy rates are improved by removal of cervical mucus, use of soft catheter, ultrasound guidance, correct location of the catheter tip, and immediate ambulation.

897 ASRM standard embryo transfer protocol template: a committee opinion
Practice Committee of the American Society for Reproductive Medicine
Birmingham, Alabama
An embryo transfer protocol template developed from a systematic review of the literature and survey of SART medical directors is presented.

901 Guidance on the limits to the number of embryos to transfer: a committee opinion
Practice Committee of the American Society for Reproductive Medicine, and the Practice Committee of the Society for Assisted Reproductive Technology
Birmingham, Alabama
ASRM/SART guidance for the limits on the number of embryos to be transferred in in vitro fertilization cycles is presented.

REFLECTIONS

904 Microsurgical excision of testicular mass
M. Goldstein
New York, New York

905 How good is good enough? Defining normal semen parameters after vasectomy reversal
S. L. Hecht and J. C. Hedges
Portland, Oregon

906 Healthy diets and men’s contribution to fertility; is semen quality good enough?
J. E. Chavarro
Boston, Massachusetts

908 Long-awaited long-term follow-up of reproductive parameters in female offspring conceived with the use of intracytoplasmic sperm injection
J. M. Franasiak
Marlton, New Jersey; and Philadelphia, Pennsylvania

910 The most well kept secret, embryo culture media: a smart reveal from an expert
M. Meseguer and A. Pellicer
Valencia, Spain

ORIGINAL ARTICLES

ANDROLOGY

911 Vasectomy reversal semen analysis: new reference ranges predict pregnancy
A. Majzoub, N. N. Tadros, A. S. Polackwich, R. Sharma, A. Agarwal, and E. Sabanegh Jr.
Cleveland, Ohio; and Miami, Florida
Normal semen parameter standards may not adequately predict post-vasectomy reversal fertility. Significantly lower semen parameters compared with the normal population may be sufficient in previously fertile patients after reversal.

916 Strong adherence to a healthy dietary pattern is associated with better semen quality, especially in men with poor semen quality

E. C. Oostingh, R. P. M. Steegers-Theunissen, J. H. M. de Vries, J. S. E. Laven, and M. P. H. Koster
Rotterdam and Wageningen, the Netherlands
Strong adherence to a healthy dietary pattern is associated with better semen quality and may thus enhance fertility.

ASSISTED REPRODUCTION

924 Progesterone luteal support after ovulation induction and intrauterine insemination: an updated systematic review and meta-analysis

K. A. Green, J. R. Zolton, S. M. V. Schermerhorn, T. D. Lewis, M. W. Healy, N. Terry, A. H. DeCherney, and M. J. Hill
Bethesda, Maryland
Luteal phase support with exogenous P after ovulation induction and IUI was associated with increased clinical pregnancy and live birth rates in gonadotropin cycles.

934 Serum reproductive hormone levels and ultrasound findings in female offspring after intracytoplasmic sperm injection: first results

F. Belva, M. Roelants, V. Vloeberghs, J. Schietecatte, J. Evenepoel, M. Bonduelle, and M. de Vos
Brussels and Leuven, Belgium

Serum reproductive hormone levels and mean follicle count per ovary were similar between the oldest cohort worldwide of women born after intracytoplasmic sperm injection and spontaneously conceived peers.

940 Perinatal outcomes in children born after fresh or frozen embryo transfer: a Catalan cohort study based on 14,262 newborns

M. Vidal, K. Vellvé, M. González-Comadran, A. Robles, M. Prat, M. Torné, R. Carreras, and M. A. Checa
Barcelona, Spain

Perinatal outcomes are not negatively affected by vitrification, and differences between fresh and frozen embryos are only observed after controlled ovarian hyperstimulation.

948 Impact of oocyte donation on perinatal outcome in twin pregnancies

L. Guilbaud, P. Santulli, E. Studer, V. Gayet, F. Goffinet, and C. Le Ray
Paris, France

Twin pregnancies after oocyte donation are associated with a higher risk of preeclampsia and postpartum hemorrhage than twin pregnancies obtained with another mode of conception.

954 Perinatal outcomes among singletons after assisted reproductive technology with single-embryo or double-embryo transfer versus no assisted reproductive technology

A. S. Martin, J. Chang, Y. Zhang, J. F. Kawa, S. L. Boulet, P. McKane, D. Bernson, D. M. Kissin, and D. J. Jamieson, for the States Monitoring Assisted Reproductive Technology (SMART) Collaborative
Atlanta, Georgia; Lansing, Michigan; and Boston, Massachusetts

Compared to non-assisted reproductive singletons, single-embryo transfer singletons did not have increased odds of adverse perinatal outcomes. Double-embryo transfer singletons with ≥ 2 early fetal heartbeats established had the highest odds.

961 Uterine contractility and elastography as prognostic factors for pregnancy after intrauterine insemination

N. Swierkowski-Blanchard, F. Boitrelle, L. Alter, J. Selva, T. Quibel, and A. Torre
Montigny-le-Bretonneux and Poissy, France

A low frequency and high intensity of uterine contractions on the day of intrauterine insemination appears to be associated with a higher pregnancy rate after intrauterine insemination.

ENDOMETRIOSIS

969 Spontaneous fertility after expectant or surgical management of rectovaginal endometriosis in women with or without ovarian endometrioma: a retrospective analysis

U. Leone Roberti Maggiore, C. Scala, E. Tafi, A. Racca, E. Biscaldi, V. G. Vellone, P. L. Venturini, and S. Ferrero
Genoa, Italy

Crude and cumulative spontaneous pregnancy rates (SPRs) are lower in women treated with the use of expectant rather than surgical management. The presence of ovarian endometrioma decreases SPRs independently from the treatment modality adopted.

977 Functional outcomes after disc excision in deep endometriosis of the rectum using transanal staplers: a series of 111 consecutive patients

H. Roman, B. Darwish, V. Bridoux, R. Chati, S. Kermiche, J. Coget, E. Huet, and J.-J. Tuech
Rouen, France

In a prospective series of 111 patients managed for rectal endometriosis, disc excision was performed instead of colorectal resection with the objective of avoiding low anterior rectal resection syndrome.

987 Important role of collective cell migration and nerve fiber density in the development of deep nodular endometriosis

R. Orellana, J. García-Solares, J. Donnez, O. van Kerckhove, M.-M. Dolmans, and O. Donnez
Brussels, Belgium; and Avignon, France

Deep endometriotic lesions induced in a baboon model were significantly more invasive and innervated after 1 year rather than after 6 months.

996 Laparoscopy vs. Robotic Surgery for Endometriosis (LAROSE): a multicenter, randomized, controlled trial
E. Soto, T. H. Luu, X. Liu, J. F. Magrina, M. N. Wasson, J. I. Einarsson, S. L. Cohen, and T. Falcone
Cleveland, Ohio; Miami, Florida; Scottsdale, Arizona; and Boston, Massachusetts

Robotic and laparoscopic surgery for endometriosis had comparable operative length, blood loss, complication rates, and quality of life improvements after surgical intervention.

1003 Embryo transfer techniques: an American Society for Reproductive Medicine survey of current Society for Assisted Reproductive Technology practices

T. L. Toth, M. S. Lee, K. A. Bendikson, and R. H. Reindollar, for the American Society for Reproductive Medicine Embryo Transfer Advisory Panel
Boston, Massachusetts; Los Angeles, California; and Birmingham, Alabama

Presented here are results of an anonymous survey sent to Society for Assisted Reproductive Technology medical directors assessing policies, protocols, restrictions and specifics pertinent to the technique of embryo transfer.

ENVIRONMENT AND EPIDEMIOLOGY

1012 Demographic, lifestyle, and other factors in relation to antimüllerian hormone levels in mostly late premenopausal women

S. Jung, N. Allen, A. A. Arslan, L. Baglietto, L. A. Brinton, B. L. Egleston, R. Falk, R. T. Fortner, K. J. Helzlsouer, A. Idahl, R. Kaaks, E. Lundin, M. Merritt, C. Onland-Moret, S. Rinaldi, M.-J. Sánchez, S. Sieri, H. Schock, X.-O. Shu, P. M. Sluss, P. N. Staats, R. C. Travis, A. Tjønneland, A. Trichopoulou, S. Tworoger, K. Visvanathan, V. Krogh, E. Weiderpass, A. Zeleniuch-Jacquotte, W. Zheng, and J. F. Dorgan
Baltimore and Rockville, Maryland; Oxford and London, United Kingdom; New York, New York; Melbourne, Victoria, Australia; Philadelphia, Pennsylvania; Heidelberg, Germany; Umeå and Stockholm, Sweden; Utrecht, the Netherlands; Lyon, France; Granada and Madrid, Spain; Milan and Milano, Italy; Nashville, Tennessee; Boston, Massachusetts; Copenhagen, Denmark; Athens, Greece; Tromsø and Oslo, Norway; and Helsinki, Finland

In this study examining correlates of antimüllerian hormone (AMH), lower AMH concentrations were associated with older age, a younger age at menarche, and current use of oral contraceptives.

1023 Geographic access to assisted reproductive technology health care in the United States: a population-based cross-sectional study
J. A. Harris, M. N. Menke, J. K. Haefner, M. H. Moniz, and C. R. Perumalswami
Pittsburgh, Pennsylvania; and Ann Arbor, Michigan

Geographic access to nearby assisted reproductive technology is absent for an estimated 18 million reproductive-age women and limited for an additional 7 million reproductive-age women in the United States.

GENETICS

1028 Comparison of cytogenetics and molecular karyotyping for chromosome testing of miscarriage specimens

M. S. Shah, C. Cinnioglu, M. Maisenbacher, I. Comstock, J. Kort, and R. B. Lathi
Palo Alto and San Carlos, California; and Miami, Florida

Cytogenetics, single-nucleotide polymorphisms, and array comparative genomic hybridization/short-tandem repeat markers are all acceptable options for detecting chromosome imbalances in miscarriage specimens. We detected an unexpectedly high rate of mosaicism.

1034 Maternal common variant rs2305957 spanning *PLK4* is associated with blastocyst formation and early recurrent miscarriage

Q. Zhang, G. Li, L. Zhang, X. Sun, D. Zhang, J. Lu, J. Ma, J. Yan, and Z.-J. Chen
Jinan and Shanghai, People's Republic of China

Maternal common variant rs2305957 spanning *PLK4* is associated with blastocyst formation and early recurrent miscarriage in a Northern Chinese Han population.

MENTAL HEALTH

1041 Male factor infertility and lack of openness about infertility as risk factors for depressive symptoms in males undergoing assisted reproductive technology treatment in Italy

A. Babore, L. Stuppi, C. Trumello, C. Candelori, and I. Antonucci
Chieti, Italy

The current research found that the association of male factor infertility with lack of openness about infertility was a risk factor for depression among Italian males undergoing assisted reproductive technology treatment.

REPRODUCTIVE ENDOCRINOLOGY

1048 Prevalence of polycystic ovary syndrome in Chinese obese women of reproductive age with or without metabolic syndrome

P. Liang, L. Xi, J. Shi, W. Li, S. Zhao, Y. Deng, R. Wang, Y. Sun, B. Gu, L. Yuan, Y. Zhang, W. Gu, W. Wang, and J. Hong

Shanghai, Peoples Republic of China

Polycystic ovary syndrome is no more frequent in metabolically unhealthy obese women than in metabolically healthy obese women.

REPRODUCTIVE SCIENCE

1055 Composition of single-step media used for human embryo culture

 D. E. Morbeck, N. A. Baumann, and D. Oglesbee
Rochester, Minnesota

Introduction of time-lapse monitoring of embryo culture yielded new culture media that lacked detailed composition. This study provides compositions of four common single-step culture media.

1061 In vitro effects of phthalate esters in human myometrial and leiomyoma cells and increased urinary level of phthalate metabolite in women with uterine leiomyoma

 J. H. Kim, S. H. Kim, Y. S. Oh, H. J. Ihm, H. D. Chae, C.-H. Kim, and B. M. Kang
Seoul, South Korea

The present study showed in vitro effects of phthalate in human myometrial and leiomyoma cells and also found that the urinary level of phthalate metabolite is increased in women with leiomyoma.

1070 Mu opioid receptor in the human endometrium: dynamics of its expression and localization during the menstrual cycle

 L. Totoriaguena, E. Olabarrieta, R. Matorras, E. Alonso, E. Agirrecoitia, and N. Agirrecoitia
Bizkaia, Spain

Mu opioid receptor (MOR) mRNA and protein levels in the human endometrium change during the menstrual cycle, showing the highest levels in the late-proliferative phase. These findings suggest a role for MOR in reproduction.

REPRODUCTIVE SURGERY

1078 Uterine viability in the baboon after ligation of uterine vasculature: a pilot study to assess alternative perfusion and venous return for uterine transplantation

M. Shockley, K. Arnolds, B. Beran, K. Rivas, P. Escobar, A. Tzakis, T. Falcone, M. L. Sprague, and S. Zimberg
Weston and Homestead, Florida; and Cleveland, Ohio

The uterus remains viable after disruption of the bilateral uterine arteries and veins in a primate model.

VIDEO

e15 Ovarian transposition: a surgical option for fertility preservation

 S. E. Arian, L. Goodman, R. L. Flyckt, and T. Falcone
Cleveland, Ohio

In this video, we present laparoscopic ovarian transposition as a surgical option for fertility preservation in reproductive-aged women before they undergo cancer treatment.

e16 Microsurgical identification and excision of an intratesticular mass

 L. F. Sávio, N. S. Prakash, R. Clavijo, O. N. Kryvenko, and R. Ramasamy
Miami, Florida

Partial orchiectomy is feasible using an operating microscope and may lead to a more precise resection.

 : Article is only available online

 : Complete article available online

Visit www.fertstert.org for e-only and e-extra materials

Complete Guide for Authors may be found on the journal's website, <http://www.fertstert.org/authorinfo>