

## VIEWS AND REVIEWS

### 1 Introduction: Uterus transplantation

M. Brännström

*Göteborg and Stockholm, Sweden*

Uterus transplantation is the first treatment for absolute uterine factor infertility. Major developments in the uterus transplantation field include assisted reproduction, minimally invasive surgery, screening of donors, and expansion of the donor pool.

### 3 Global results of human uterus transplantation and strategies for pre-transplantation screening of donors

M. Brännström, A. Enskog, N. Kvarnström,

J. M. Ayoubi, and P. Dahm-Kähler

*Göteborg and Stockholm, Sweden; and Suresnes, France*

Since the first live birth after uterus transplantation in 2014, this new field of infertility treatment and reproductive surgery is rapidly growing. Results from several clinical trials and live births have been published. The current knowledge about surgery, outcomes and screening modalities for donors will be discussed further.

### 11 Laparotomy or minimal invasive surgery in uterus transplantation: a comparison

J. M. Ayoubi, M. Carbonnel, P. Pirtea, N. Kvarnström,

M. Brännström, and P. Dahm-Kähler

*Suresnes, France; and Gothenburg and Stockholm, Sweden*

Minimal invasive surgery with robotics will be the preferred method in uterus transplantation in the future. Predicted benefits are surgical accuracy, minimal bleeding, short hospital stays, and early recovery to normal life for live donors and recipients.

### 19 Assisted reproductive technology strategies in uterus transplantation

D. de Ziegler, P. Pirtea, M. Carbonnel, M. Poulain, and J. M. Ayoubi

*Suresnes, France*

Uterine transplantation raises assisted reproductive technology-related issues notably, regarding indications, oocyte retrievals and endometrial preparation.

### 24 Live versus deceased donor in uterus transplantation

N. Kvarnström, A. Enskog, P. Dahm-Kähler,

and M. Brännström

*Göteborg and Stockholm, Sweden*

Uterus transplantation can successfully be performed with the organ from either live or deceased donors. There exist pros and cons with each donor source.

## INKLINGS

### 28 Artificial intelligence: its applications in reproductive medicine and the assisted reproductive technologies

N. Zaninovic, O. Elemento, and Z. Rosenwaks

*New York, New York*

## REFLECTIONS

### 31 Optimizing semen parameters at the molecular level: possible avenue for improvement in assisted reproductive technology success rates?

T. P. Kohn and R. I. Clavijo

*Baltimore, Maryland; and Sacramento, California*

*Fertility and Sterility*® (ISSN 0015-0282) is published 12 times year in January, February, March, April, May, June, July, August, September, October, November and December by Elsevier Inc., 230 Park Avenue, Suite 800, New York, NY 10169, USA. 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\$483.00 (USA and Canada), US\$682.00 (all other countries); Students: US\$183.00 (USA and Canada), US\$181.00 (all other countries). Prices include postage and are subject to change without notice. **Orders, claims, and journal inquiries:** Please visit our Support Hub page <https://service.elsevier.com> for assistance.

**POSTMASTER:** Send Address changes to *Fertility and Sterility*, Elsevier Customer Services Department, 1799 Highway 50 East, Linn, MO 65051, USA.



0015-0282(201907)112:1;1-T

- 32 **DNA methylation profiling of peripheral blood samples is a promising new approach to screen for male infertility**

A. Balasubramanian, N. Thirumavalavan,  
and A. W. Pastuszak  
*Houston, Texas; and Salt Lake City, Utah*

- 34 **Discordant ovarian reserve testing: what matters most?**

H. S. Hipp and J. F. Kawwass  
*Atlanta, Georgia*

- 35 **Primum non nocere: are we closer to saying that the trophoctoderm biopsy does no harm?**

J. J. Berger  
*Los Angeles, California*

- 37 **Need for expanding insurance coverage for in vitro fertilization in the United States**

C. N. Herndon  
*Seattle, Washington*

- 39 **Is coffee bad for reproduction? Maybe not, after all.**

J. E. Chavarro  
*Boston, Massachusetts*

- 41 **Health status of young adults conceived by assisted reproductive technology: is there cause for concern?**

R. S. Kirby  
*Tampa, Florida*

- 42 **Ovarian antimüllerian hormone system: more complex than was thought**

A. La Marca  
*Modena, Italy*

## FERTILITY AND STERILITY: 50 YEARS AGO TODAY

- 44 **Original investigations into the effects of testicular biopsy**

M. Kathrins  
*Boston, Massachusetts*

## ORIGINAL ARTICLES

### ANDROLOGY

- 46 **Sperm chromatin structure assay high DNA stainability sperm as a marker of early miscarriage after intracytoplasmic sperm injection**



E. Jerre, M. Bungum, D. Evenson, and A. Giwercman  
*Malmö, Sweden; and Brookings, South Dakota*

High DNA stainability, as determined by sperm chromatin structure assay, is a marker of increased risk of early miscarriage in intracytoplasmic sperm injection pregnancies.

- 54 **Sperm DNA fragmentation and recurrent pregnancy loss: a systematic review and meta-analysis**



D. B. McQueen, J. Zhang, and J. C. Robins  
*Chicago, Illinois*

Sperm DNA fragmentation is elevated in male partners of women with recurrent pregnancy loss compared with fertile control women.

- 61 **Array-based DNA methylation profiling reveals peripheral blood differential methylation in male infertility**



S. Sarkar, K. M. Sujit, V. Singh, R. Pandey, S. Trivedi, K. Singh, G. Gupta, and S. Rajender  
*Lucknow, Varanasi, New Delhi, India; and Oxfordshire, United Kingdom*

In a genomewide methylation array on peripheral blood DNA from oligo/asthenozoospermic infertile patients and normozoospermic fertile controls, we found 329 differentially methylated CpG spots that correlate with infertility.

### ASSISTED REPRODUCTION

- 73 **Low antimüllerian hormone (AMH) is associated with decreased live birth after in vitro fertilization when follicle-stimulating hormone and AMH are discordant**



S. Ligon, M. Lustik, G. Levy, and B. Pier  
*Tripler, Hawaii*

Low AMH ( $<1$  ng/mL) with normal FSH is associated with decreased live birth and higher cycle cancellation compared with normal AMH and elevated FSH ( $>10$  mIU/mL) in women undergoing IVF.

**82 Neonatal outcomes of live births after blastocyst biopsy in preimplantation genetic testing cycles: a follow-up of 1,721 children**

H. He, S. Jing, C. F. Lu, Y. Q. Tan, K. L. Luo, S. P. Zhang, F. Gong, G. X. Lu, and G. Lin  
*Changsha, People's Republic of China*

Blastocyst biopsy may not add additional risk to neonatal outcomes when compared with controls.

**89 Intrauterine injection of human chorionic gonadotropin before embryo transfer can improve in vitro fertilization-embryo transfer outcomes: a meta-analysis of randomized controlled trials**



M. Gao, X. Jiang, B. Li, L. Li, M. Duan, X. Zhang, J. Tian, and K. Qi  
*People's Republic of China*

This meta-analysis reveals that infertile women treated with 500 IU hCG within 15 minutes before ET may achieve better IVF-ET outcomes.

**98 Effect of GnRH agonist and letrozole treatment in women with recurrent implantation failure**

N. Steiner, G. Shrem, S. Tannus, S. Y. Dahan, J. Balayla, A. Volodarsky-Perel, S.-L. Tan, and M. H. Dahan  
*Montreal, Quebec, Canada*

In patients with unexplained recurrent implantation failure, treatment for 2 months with GnRH agonist and letrozole before embryo transfer may improve live birth rates.

**105 Factors associated with early in vitro fertilization treatment discontinuation**

B. S. Bedrick, K. Anderson, D. E. Broughton, B. Hamilton, and E. S. Jungheim  
*St. Louis, Missouri; and Seattle, Washington*

Women without in vitro fertilization (IVF) insurance coverage, African-American women, and older women with poor prognoses were most likely to discontinue IVF treatment and to have a longer time to return.

## EARLY PREGNANCY

**112 Ectopic pregnancy and outcomes of future intrauterine pregnancy**

M. Chouinard, M.-H. Mayrand, A. Ayoub, J. Healy-Profítos, and N. Auger  
*Montreal, Quebec, Canada*

Women with ectopic first pregnancies have an increased risk of adverse birth outcomes during subsequent intrauterine pregnancies, including preterm birth, low birth weight, cesarean delivery, placental abruption, and placenta previa.

## EPIDEMIOLOGY

**120 Impact of female daily coffee consumption on successful fertility treatment: a Danish cohort study**



J. Lyngsø, U. S. Kesmodel, B. Bay, H. J. Ingerslev, A.-M. Nybo Andersen, and C. H. Ramlau-Hansen  
*Aarhus, Herlev, Horsens, Aalborg, and Copenhagen, Denmark*

Low-to-moderate female coffee consumption may not be detrimental to successful medically assisted reproduction treatments.

**130 Health of adults aged 22 to 35 years conceived by assisted reproductive technology**

J. Halliday, S. Lewis, J. Kennedy, D. P. Burgner, M. Juonala, K. Hammarberg, D. J. Amor, L. W. Doyle, R. Saffery, S. Ranganathan, L. Welsh, M. Cheung, J. McBain, S. J. C. Hearps, and R. McLachlan  
*Parkville, Clayton, Melbourne, and Richmond, Victoria, Australia; and Turku, Finland*

A study of vascular, cardiometabolic, growth, and respiratory health of adults conceived by assisted reproduction (ART) compared with non-ART controls provides no evidence of adverse long-term effects of ART.

## GYNECOLOGY

**140 Medications for pain relief in outpatient endometrial sampling or biopsy: a systematic review and network meta-analysis**



A. M. Abbas, A. Samy, A. El-Naser Abd El-Gaber Ali, M. M. Khodry, M. A. M. Ahmed, M. I. El-Rasheedy, K. M. Abdallah, A.-E. Mohammed, W. H. Abdelbaky, O. K. Raslan, M. A. Badawy, and H. H. Elktatny  
*Assiut, Cairo, and Qena, Egypt*

Lidocaine spray is the most effective medication for pain relief during endometrial biopsy, while naproxen sodium is the most effective one during endometrial aspiration.

## REPRODUCTIVE ENDOCRINOLOGY

**149 Associations of different molecular forms of antimüllerian hormone and biomarkers of polycystic ovary syndrome and normal women**



M. L. Wissing, A. L. Mikkelsen, A. Kumar, B. Kalra, S. E. Pors, E. M. Flachs, and C. Y. Andersen  
*Køge and Copenhagen, Denmark; and Webster, Texas*

Serum levels of AMH isoforms were significantly higher in women with PCOS compared with control women. The relative distribution of AMH isoforms did not differ between women with PCOS and control women.

**156 Reproductive history of patients with hereditary 1,25-dihydroxyvitamin D-resistant rickets**

D. Tiosano and Y. Weisman  
*Haifa and Tel Aviv, Israel*

Vitamin D receptor is expressed throughout the organs of reproduction, suggesting a role for vitamin D in reproduction.

## REPRODUCTIVE SURGERY

**162 Unified diagnostic criteria for chronic endometritis at fluid hysteroscopy: proposal and reliability evaluation through an international randomized-controlled observer study**



E. Cicinelli, A. Vitagliano, A. Kumar, R. B. Lasmar, S. Bettocchi, and S. Haimovich, for the International Working Group for Standardization of Chronic Endometritis Diagnosis  
*Bari and Padua, Italy; Jaipur, India; Brazil; and Barcelona, Spain*

We propose a series of hysteroscopic diagnostic criteria for chronic endometritis in women of reproductive age. Our randomized-controlled observer study found a positive impact of our criteria on physicians' ability to recognize chronic endometritis.

**177 A case of obstructed hemivagina and ipsilateral renal anomaly syndrome complicated with pyometra: tips and tricks for laparoscopic hemihysterectomy**

K. Huseyin, T. S. Lale, Y. Burak, K. Tolga, K. Pinar, and S. D. Kerem  
*Istanbul, Turkey*



Obstructed hemivagina and ipsilateral renal anomaly syndrome is characterized by the triad of uterovaginal duplication, obstructed hemivagina, and ipsilateral renal agenesis. Understanding the nature of the disease is of paramount importance for successful management.



: Connects to Video Article



: Article is only available online



: Complete article available online

Visit [www.fertstert.org](http://www.fertstert.org) for e-only and e-extra materials

## VIDEOS

**174 Tilapia fish skin as a new biologic graft for neovaginoplasty in Mayer-Rokitansky-Kuster-Hauser syndrome: a video case report**

M. T. Pinto Medeiros Dias, E. M. Lima Júnior, A. P. Negreiros Nunes Alves, A. P. Monteiro Bilhar, L. C. Rios, B. A. Costa, E. S. Rocha Matos, A. C. Venancio, Z. V. Bruno, M. Odorico de Moraes Filho, and L. R. Pinheiro Sobreira Bezerra  
*Fortaleza, Ceará, Brazil*



Use of Nile tilapia skin as a scaffold for the proliferation of new vaginal epithelium offered, to this patient, a successful anatomic and functional neovagina by means of a simple, safe, easy, effective, quick, and minimally invasive procedure.

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