



LETTER TO THE EDITOR Re: First live birth after fertility preservation using vitrification of oocytes in a woman with mosaic Turner syndrome

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To the Editor,

We were excited to read the report published recently in JARG by Strypstein and colleagues on the first live birth after fertility preservation using autologous oocyte vitrification in a woman with mosaic Turner syndrome [1]. The Turner syndrome community of patients, families, and healthcare providers has been waiting expectantly for reports of successful cryopreservation and fertility outcomes [2–4]. In fact, as more fertility options become available, we would like to reiterate the importance of appropriate and thorough counseling and cardiovascular monitoring in this population. As clinicians who care for young women with Turner syndrome, we are aware that they will read your report with great interest. We encourage families to advocate for themselves when it comes to a rare condition and associated health risks.

As the authors appropriately highlight, women with Turner syndrome have an increased risk of aortic dissection or rupture during pregnancy and in the immediate post-partum period, with the risk of death estimated as high as 2% [5–8].

Women with Turner syndrome and their providers must recognize that medical care should include standardized, systematic pre-conception cardiovascular monitoring that continues diligently throughout the pregnancy and postnatally to assess for these potentially devastating cardiac consequences while also contributing to favorable outcomes [8–11]. We look forward to additional research from this group and others in this important area of Turner syndrome care.

Yours sincerely,

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Declarations

Conflict of interest The authors declare no competing interests.

References

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1. Strypstein L, Van Moer E, Nekkebroeck J, Segers I, Tournaye H, Demeestere I, Dolmans MM, Verpoest W, De Vos M. First live birth after fertility preservation using vitrification of oocytes in a woman with mosaic Turner syndrome. *J Assist Reprod Genet.* 2022. <https://doi.org/10.1007/s10815-022-02420-4>.
2. Backeljauw PF, Bondy C, Chernauek SD, Cernich JT, Cole DA, Fasciano LP, Foodim J, Hawley S, Hong DS, Knickmeyer RC, Kruszka P, Lin AE, Lippe BM, Lorigan GA, Maslen CL, Mauras N, Page DC, Pemberton VL, Prakash SK, Quigley CA, Ranallo KC, Reiss AL, Sandberg DE, Scurlock C, Silberbach M. Proceedings from the Turner Resource Network symposium: the crossroads of health care research and health care delivery. *Am J Med Genet A.* 2015;167A(9):1962–71. <https://doi.org/10.1002/ajmg.a.37121>.
3. Lin AE, Karnis MF, Calderwood L, Crenshaw M, Bhatt A, Souter I, Silberbach M, Reindollar RH. Proposal for a national registry to monitor women with Turner syndrome seeking assisted

- reproductive technology. *Fertil Steril*. 2016;105(6):1446–8. <https://doi.org/10.1016/j.fertnstert.2016.01.042>.
4. Gravholt CH, Andersen NH, Conway GS, Dekkers OM, Geffner ME, Klein KO, Lin AE, Mauras N, Quigley CA, Rubin K, Sandberg DE, Sas TCJ, Silberbach M, Söderström-Anttila V, Stochholm K, van Alfen-van derVelden JA, Woelfle J, Backeljauw PF; International Turner Syndrome Consensus Group. Clinical practice guidelines for the care of girls and women with Turner syndrome: proceedings from the 2016 Cincinnati International Turner Syndrome Meeting. *Eur J Endocrinol*. 2017;177(3):G1-G70. <https://doi.org/10.1530/EJE-17-0430>.
 5. Söderström-Anttila V, Pinborg A, Karnis MF, Reindollar RH, Paulson RJ. Should women with Turner syndrome be allowed to carry their own pregnancies? *Fertil Steril*. 2019;112(2):220–5. <https://doi.org/10.1016/j.fertnstert.2019.06.003>.
 6. Grewal J, Valente AM, Egbe AC, Wu FM, Krieger EV, Sybert VP, van Hagen IM, Beauchesne LM, Rodriguez FH, Broberg CS, John A, Bradley EA, Roos-Hesselink JW; AARCC Investigators. Cardiovascular outcomes of pregnancy in Turner syndrome. *Heart*. 2021;107(1):61–66. <https://doi.org/10.1136/heartjnl-2020-316719>.
 7. Silberbach M, Roos-Hesselink JW, Andersen NH, Braverman AC, Brown N, Collins RT, De Backer J, Eagle KA, Hiratzka LF, Johnson WH Jr, Kadian-Dodov D, Lopez L, Mortensen KH, Prakash SK, Ratchford EV, Saidi A, van Hagen I, Young LT; American Heart Association Council on Cardiovascular Disease in the Young; Council on Genomic and Precision Medicine; and Council on Peripheral Vascular Disease. Cardiovascular health in Turner syndrome: a scientific statement from the American Heart Association. *Circ Genom Precis Med*. 2018;11(10):e000048. <https://doi.org/10.1161/HCG.0000000000000048>.
 8. Cadoret F, Parinaud J, Bettioli C, Pienkowski C, Letur H, Ohl J, Sentilhes L, Papaxanthos A, Winer N, Mathieu d'Argent E, Catteau-Jonard S, Chauleur C, Biquard F, Hieronimus S, Pimentel C, Le Lous M, Fontaine N, Chevreau J, Parant O. Pregnancy outcome in Turner syndrome: a French multi-center study after the 2009 guidelines. *Eur J Obstet Gynecol Reprod Biol*. 2018;229:20–5. <https://doi.org/10.1016/j.ejogrb.2018.08.005>.
 9. Hagman A, Loft A, Wennerholm UB, Pinborg A, Bergh C, Aittonmäki K, Nygren KG, Bente Romundstad L, Hazekamp J, Söderström-Anttila V. Obstetric and neonatal outcome after oocyte donation in 106 women with Turner syndrome: a Nordic cohort study. *Hum Reprod*. 2013;28(6):1598–609. <https://doi.org/10.1093/humrep/det082>.
 10. Cauldwell M, Steer PJ, Adamson D, Alexander C, Allen L, Bhagra C, Bolger A, Bonner S, Calanchini M, Carroll A, Casey R, Curtis S, Head C, English K, Hudsmith L, James R, Joy E, Keating N, MacKiliop L, McAuliffe F, Morris RK, Mohan A, Von Klemperer K, Kaler M, Rees DA, Shetty A, Siddiqui F, Simpson L, Stocker L, Timmons P, Vause S, Turner HE. Pregnancies in women with Turner syndrome: a retrospective multicentre UK study. *BJOG*. 2021. <https://doi.org/10.1111/1471-0528.17025>.
 11. Andersen NH, Gravholt CH. Re: Pregnancies in women with Turner syndrome: a retrospective multicentre UK study. *BJOG*. 2022. <https://doi.org/10.1111/1471-0528.17097>.

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