Gynecologic Oncology Reports 54 (2024) 101436

Contents lists available at ScienceDirect

Gynecologic Oncology Reports

journal homepage: www.elsevier.com/locate/gynor

Educational video

Uterine displacement as fertility sparing technique for pelvic malignancies: Demonstration of the surgical options on a human cadaver

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ARTICLE INFO

Keywords:
Uterine transposition
Uterine ventrofixation
Uterine suspension
Uterine displacement
Pelvic cancer
Radiotherapy

ABSTRACT

Preservation of fertility without compromising oncological outcomes is a major objective in young patients at the time of cancer treatment (Azaïs et al., 2018; Bizzarri et al., 2022). Radio(chemo)therapy is often required in pelvic malignancies (anus, rectum, sarcoma). Direct irradiation results in a damage to ovarian (Bizzarri et al., 2023) and endometrial function (Lohynska et al., 2021), compromising the fertility of female patients of reproductive age. While ovarian transposition is an established method to move the ovaries away from the radiation field (Morice et al., 2022; Pavone et al., 2023), corresponding surgical procedures displacing the uterus are investigational (Pavone et al., 2023; Querleu et al., 2010; Ribeiro et al., 2017, 2024). In a human female cadaver model, the reported laparoscopic techniques of uterine displacement were carried out to demonstrate their feasibility and the step-by-step surgical techniques. The surgeries were performed in a hybrid operating room which enables to perform CT-scan and evaluate the uterine positions according to anatomical landmarks. The following procedures were performed in the same cadaveric model and were described in the video: 1. Uterine suspension of the round ligaments to the abdominal wall 2. Uterine ventrofixation of the fundus at the level of the umbilical line 3. Uterine transposition according to the technique reported by Ribeiro et al. All procedures were completed without technical complications. All of these uterine displacement procedures are technically feasible. Uterine transposition is the most technically complex procedure, and its effectiveness in protecting the endometrium should be evaluated in comparison to the simpler techniques (Table 1). Future studies incorporating radiotherapy simulations are needed to define which technique represents the best compromise between surgical complexity and positioning the uterus at a level that receives the lowest possible radiation dose.

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https://doi.org/10.1016/j.gore.2024.101436
Received 26 April 2024; Received in revised form 9 June 2024; Accepted 16 June 2024
Available online 22 June 2024

See Table 1.

Table 1
Synoptic summary of displacement techniques pro and cons (Ribeiro et al., 2024; Wallace et al., 2003).

	Uterine Round Ligament Suspension	Uterine Ventrofixation	Uterine Transposition
PRO	– Low Surgical complexity – Low patient discomfort – No reported perioperative complications	– Intermediate surgical complexity – No reported perioperative complications – One spontaneous pregnancy reported	– Highest distance from the pelvis – Three spontaneous successful pregnancy reported
CONS	– No reported spontaneous pregnancy – Low distance from the radiation field	– Intermediate distance from the radiation field	– Highest surgical complexity – Reported Cervical necrosis/ischemia and same possible complications of hysterectomy

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

All data generated or analyzed in this review are included in this article and/or its figures. Further enquiries can be directed to the corresponding author.

Acknowledgments

The authors sincerely thank those who donated their bodies to science so that anatomical research could be performed. Results from such research can potentially increase mankind's overall knowledge that can then improve patient care. Therefore, these donors and their families deserve our highest gratitude.

The authors are grateful to Catherine Cers-Meunier for illustrating the surgical procedures.

Funding

This work was supported by French state funds managed within the "Plan Investissements d'Avenir" and by the ANR (reference ANR-10-IAHU-02).

Authors' contributions

Dr. Matteo Pavone, Dr. Nicolo' Bizzarri and Pr. Denis Querleu contributed to the study design, Dr. Matteo Pavone and Pr. Barbara Seeliger wrote the first draft and edited the video. Dr. Matteo Pavone, Dr. Lise Lecointre and Pr. Denis Querleu performed the surgeries. Pr. Jacques Marescaux, Pr. Giovanni Scambia, Pr. Cherif Akladios and Pr. Denis Querleu were responsible for the critical revision of the manuscript and for important intellectual content. All Authors have read and commented on the previous version of the paper. All Authors approved the final version of the paper before submission.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gore.2024.101436.

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