



# The Use of Artificial Intelligence in Urogynecology

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As Artificial intelligence (AI) has revolutionized various fields of medicine, and one area that has greatly benefited from it is urogynecology (1). Urogynecologists deal with pelvic floor disorders' diagnosis and treatment, which includes urinary incontinence, pelvic organ prolapse, and fecal incontinence (2). Urogynecologists can enhance their clinical practice, improve patient outcomes, and offer personalized treatment plans by harnessing AI's power (1).

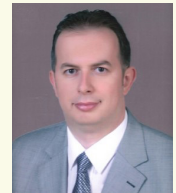
AI algorithms have proven to be valuable tools in urogynecology for several reasons. Firstly, they assist in the accurate diagnosis of pelvic floor disorders. By analyzing complex data sets, including medical imaging, patient history, and symptom reports, AI algorithms can detect subtle patterns that may not readily appear to human experts. This improves diagnostic accuracy and reduces the chances of misdiagnosis, ultimately leading to better patient care (3-5).

Furthermore, AI has the potential to aid in treatment planning for urogynecological conditions. With access to extensive medical literature and clinical databases, AI algorithms can analyze and integrate vast amounts of information to recommend the most effective treatment options based on individual patient characteristics. This assists urogynecologists in making well-informed decisions and tailoring treatment plans to meet the specific needs of their patients (6-8).

AI-powered systems also facilitate surgical interventions in urogynecology. Surgical procedures for pelvic floor disorders often require precise and intricate maneuvers (9). AI can assist surgeons by providing real-time feedback during operations. By integrating data from imaging systems and sensors, AI algorithms can alert surgeons to potential risks or deviations from optimal surgical pathways, enabling them to make necessary adjustments promptly. This enhances the surgical precision, reduces complications, and improves patient outcomes (4).

In addition to diagnosis and treatment, AI holds great promise in improving patient monitoring and post-operative care. Wearable devices and sensors can collect data on various parameters, such as bladder function, muscle activity, and patient-reported outcomes (10). AI

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algorithms can analyze this data and generate personalized insights, allowing urogynecologists to monitor their patient's progress remotely and intervene if necessary. This improves patient convenience and enables timely intervention, reducing the likelihood of complications and readmissions (3).

Furthermore, scientific publications about urogynecology, like in other fields of medicine, may be generated with AI by using advanced natural language processing techniques to analyze the current literature in this field and produce texts very similar to the usual medical articles written by authors (11). The AI-powered Nova app was used while preparing this editorial to give a striking example. The authors reviewed the content by making minor edits. However, the references suggested were not used since they could not be verified. After an extensive literature review, the authors determined the most suitable references, confirming the content of this editorial.

Despite these evolutions, it is essential to acknowledge the ethical and regulatory challenges associated with AI in urogynecology (11-13). Patient privacy, data security, and efficacious communication between healthcare professionals and AI systems are vital considerations that must be handled (3). Furthermore, integrating AI into urogynecology requires ongoing collaboration between medical professionals, data scientists, and engineers to



ensure the development of reliable and clinically validated algorithms (14).

In conclusion, AI has appeared as an essential tool within urogynecology, potentially transforming the field. By assisting in diagnosis, treatment planning, surgical interventions, and post-operative care, AI algorithms enable urogynecologists to provide personalized and effective care. However, it's crucial to approach AI integration cautiously, address the ethical and regulatory aspects, and maintain a patient-centric approach. With continued research and collaboration, AI will undoubtedly play a significant role in enhancing the practice of urogynecology, improving patient outcomes, and advancing women's health.

#### Competing Interests

Both authors are appointed as editor-in-chief at the *International Journal of Women's Health and Reproduction Sciences*.

#### Ethical Issues

Not applicable.

#### References

- Bentaleb J, Larouche M. Innovative use of artificial intelligence in urogynecology. *Int Urogynecol J*. 2020;31:1287-8. doi:10.1007/s00192-020-04243-2
- Sodagar N, Ghaderi F, Ghanavati T, Ansari F, Asghari Jafarabadi M. Related risk factors for pelvic floor disorders in postpartum women: A cross-sectional study. *Int J Womens Health Reprod Sci*. 2021;10:51-6. doi:10.15296/ijwhr.2022.10
- Seval MM, Varlı B. Current developments in artificial intelligence from obstetrics and gynecology to urogynecology. *Front Med*. 2023;10:1098205. doi:10.3389/fmed.2023.1098205
- Daykan Y, O'Reilly BA. The role of artificial intelligence in the future of urogynecology. *Int Urogynecol J*. 2023;34:1663-6. doi:10.1007/s00192-023-05612-3
- Zhang M, Lin X, Zheng Z, Chen Y, Ren Y, Zhang X. Artificial intelligence models derived from 2D transperineal ultrasound images in the clinical diagnosis of stress urinary incontinence. *Int Urogynecol J*. 2022;33:1179-85. doi:10.1007/s00192-021-04859-y
- Jelovsek JE, Chagin K, Brubaker L, et al. A model for predicting the risk of de novo stress urinary incontinence in women undergoing pelvic organ prolapse surgery. *Obstets Gynecol*. 2014;123:279-87. doi:10.1097/aog.0000000000000094
- Jelovsek JE, Chagin K, Lukacz ES, et al. Models for Predicting Recurrence, Complications, and Health Status in Women After Pelvic Organ Prolapse Surgery. *Obstets Gynecol*. 2018;132:298-309. doi:10.1097/aog.0000000000002750
- Qureshi A, Mathur A, Alshiek J, Shobeiri SA, Wei Q. Utilization of artificial intelligence for diagnosis and management of urinary incontinence in women residing in areas with low resources: An overview. *Open J Obstets Gynecol*. 2021;11:403-18. doi:10.4236/ojog.2021.114040
- Bae HA, Choi JI, Chung S-H, Sang JH. Migration of neglected vaginal pessaries: A case report. *Int J Womens Health Reprod Sci*. 2020;9:225-7. doi:10.15296/ijwhr.2021.42
- van Leuteren PG, Nieuwhof-Leppink AJ, Dik P. SENS-U: clinical evaluation of a full-bladder notification – a pilot study. *J Pediatr Urol*. 2019;15:381.e1-e5. doi:10.1016/j.jpuro.2019.04.006
- Daykan Y, O'Reilly BA. The impact of artificial intelligence on academic life. *Int Urogynecol J*. 2023;34:1661. doi:10.1007/s00192-023-05613-2
- Baessler K, Bortolini M. "The role of artificial intelligence in the future of urogynecology" by Yair Daykan, Barry A. O'Reilly. *Int Urogynecol J*. 2023;34:1667-. doi:10.1007/s00192-023-05624-z
- Rabiei R, Rouzbahani F, Asadi F, Moghaddasi H, Emami H, Rahimi F. Health information governance program: A review on components and principles. *Crescent J Med Biol Sci*. 2021;8:10-4.
- Hu Q, Wang T, Chen Y, et al. Medicine and engineering collaboration in urogynecology: a narrative review. *Gynecol Pelvic Med*. 2022;5:13. doi:10.21037/gpm-21-41

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