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**ADVANCEMENTS IN ARTIFICIAL INTELLIGENCE, APPLICATIONS  
IN OBSTETRICS AND GYNECOLOGY.**

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Artificial intelligence (AI) is rapidly advancing in medicine, particularly in obstetrics and gynecology (OB/GYN). It enhances fetal health monitoring, aids in diagnosing preterm pregnancy complications, and improves surgical precision through technologies like augmented reality and 3D printing. Despite challenges, AI shows promise in reducing medical errors, lowering costs, and enhancing patient care by assisting in decision-making and diagnosis. The integration of AI in OB/GYN can optimize clinical outcomes, create predictive models, and lead to more personalized surgery, revolutionizing healthcare practices. This development signifies a significant shift towards precision and personalized medicine in the field of gynecology, offering new possibilities for improved patient care and outcomes.

Artificial Intelligence in obstetrics and gynecology is pivotal for interpreting CTG and FHR, aiding in diagnosing pregnancy complications and preterm labor, reducing infant and maternal mortality. It can identify high-risk women and support preterm labor risk assessment using extensive genomic data. Additionally, AI's vast storage capacity helps in training surgeons with realistic 3D models, improving preoperative planning and surgical outcomes.

AI-enhanced ultrasonography revolutionizes medical ultrasound use in pregnancy, aiding physicians in diagnosing pregnant women's conditions. For obstetric and echocardiography ultrasounds, it provides structured data for precise analysis, benefiting from artificial neural networks (ANNs). Wu et al. achieved a 94.50% accuracy rate using AI algorithms to diagnose brain tumors during pregnancy, demonstrating significant diagnostic improvement. Wu's Artificial Bee Colony algorithm enhances ultrasound image quality, reduces noise, and improves disease diagnosis throughout pregnancy stages.

Artificial intelligence plays a crucial role in assessing patient characteristics like ovarian reserve, endocrine status, and age, enhancing the effectiveness of reproductive system disorder diagnosis and treatment. By utilizing AI tools, parameters crucial for successful invitro fertilization (IVF) outcomes are predicted, overcoming obstacles related to unknown factors during pregnancy. Larger datasets and computer vision are employed to develop accurate artificial neural network (ANN) models for enhanced predictive capabilities. AI methods have been used to evaluate human oocytes, predict fertilization success, and analyze embryo development to blastocyst stages, including assessing implantation potential using static oocyte images pre- and post-pregnancy.

Artificial intelligence is transforming cervical cancer screening, enhancing accuracy and efficiency. Linked to HPV, cervical cancer screening traditionally used Pap smears but sought more advanced methods. AI, including convolutional neural networking (CNN) and deep learning, analyzes cytology samples with high precision, detecting subtle abnormalities imperceptible to humans.

Artificial intelligence is advancing colposcopy and biopsy procedures by aiding in identifying suspicious areas, optimizing biopsy sites, and reducing false negatives during cervical cancer diagnosis. It is believed that AI improves the efficiency of diagnosis, reduces the burden of clinicians, and improves the effect of treatment and prognosis. AI will play an irreplaceable role in the field of gynecological malignant oncology and will promote the development of medicine and further promote the transformation from traditional medicine to precision medicine and preventive medicine.