

Foreword – Innovative techniques in gynecological practice

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This collection aims to bring together the innovative technical advances in diagnosis and treatment of gynecological practice.

Molecular markers in tumor classification, endometrial stem cells in immunoregulation, regenerative medicine and novel therapeutic strategies for reproductive and cancerous diseases, hysterosalpingo-foam sonography in infertility investigation, intravascular and 3D ultrasonography, interventional radiology, artificial intelligence, new tracers in oncological mapping, new surgery techniques have changed the gynecological pathology approach of the last 20 years.

Oncogenetics is an important tool in the management of multidisciplinary medical team towards targeted molecular therapies. Artificial intelligence in obstetrics and gynecology is an innovative technology and it is fundamental for clinicians to understand how AI works, improve its impact on healthcare, and prepare themselves to utilize it, simultaneously respecting the patient-physician relationship and work to improve the future. Saline infusion sonohysterography in endometrial exploration can be used to select those females who require further therapeutic procedures, especially in infertility, caused by endometrial pathology. Sonohysterography is very well tolerated by patients, has a minimum degree of discomfort, can be performed without hospitalization, at a reduced cost. Hysterosalpingo-foam sonography in the evaluation for tubal patency is a minimally invasive diagnostic procedure, with imperceptible risks or complications, which simultaneously imports valuable information about the uterine cavity and the tubal patency to the sonographer. There is increasing evidence supporting the use of three-dimensional sonography in the assessment of uterine anomalies, except for uterine agenesis or hypoplasia, where MRI prevails. Transvaginal ultrasound has proven its utility in 10 endometrial issues in the paraclinical evaluation of the patient: endometrial cycle phase, endometrial thickness, endomyometrial

junction, endometrial vacuum line, cystic endometrium, endometrial vascularization, endometrial polyp, intracavitary development of leiomyomas, thick endometrium and endometrial cancer. Abnormal uterine bleeding in postmenopause requires endometrial biopsy in certain situations that are clearly defined. Adenomyosis has nowadays a series of good criteria of non-invasive diagnosis and the appropriate diagnosis algorithm should be applied in all women with complaints of bleeding. Ultrasound accuracy is very good in diagnosing adenomyosis, leading to prompt treatment in younger patients, who are especially interested in conserving their reproductive function. Endometrial carcinomas are one of the most frequent carcinomas of the female genital tract. The particularities of both histopathological, immunohistochemical and molecular aspects, according to the new World Health Organization (WHO) Classification of endometrial tumors could classify cases in 4 groups depending on the present mutation and subsequent prognosis. Mast cells tend to gather within and around neoplastic proliferations and could either promote or inhibit tumoral growth, based on regional stromal environment. The mast cell microenvironment in smooth muscle tumors of the uterine corpus could present diagnostic implications and prognostic value. Endocervical pathology can be correctly diagnosed starting from the clinical picture, completed with laboratory investigations, bacteriological examinations, Pap smear test, molecular tests for the diagnosis of HPV infection, colposcopy, but also by thorough ultrasound examination as part of the routine protocol, because its systematic evaluation can significantly contribute to refining the diagnosis. Multidisciplinary specialists are engaged in new studies, regarding better tumoral descriptors, like vascular imaging, MRI, new biomarkers and proteomics. Both IOTA and O-RADS systems presented in this collection immensely contributed to diagnostic progress in the area of ovarian tumors. Pelvic congestion syndrome represents an underdiag-

nosed pathology, with significant impact on the patient's quality of life, with no definitive diagnosis criteria or standardized treatment, with a progressive evolution to intensification of the pain-related symptoms. Interventional radiology in the treatment of both pelvic congestion syndrome and ectopic pregnancy has a primary advantage represented by fertility preservation among young fertile women simultaneously with the avoidance of an invasive surgical method with the subsequent risks and possible complications. Concerning the uterine prolapse in young women, the FDA ban of synthetic mesh use does not concern the use abdominal repair of uterine prolapse, but this could become prohibited in future, forcing surgeons to think about viable alternatives and to try new methods. Further reports should be done to ameliorate the patient

quality of life especially for young women who desire to keep their sexual life and fertility abilities. Numerous determining factors of uterine scar defect have been identified, and can be classified into 2 categories: factors related to the surgical technique, and those related to the patient and her medical history. Indocyanine green can be part of the therapeutic armamentarium which provides a correct identification of non-palpable breast lesions. Also, indocyanine green in the identification of sentinel lymph node biopsy appears to gain more and more field as an alternative to conventional mapping methods.

We invite you through an intense marathon of developments in the gynecological practice of the future.