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Invited Editorial

Classification of Müllerian anomalies: Is a consensus possible?

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There are many proposed classification systems for Müllerian anomalies. The American Fertility Society (AFS) Classification from 1988 had been the most widely recognized and utilized for uterine malformations [1]. It was based on the one introduced by Buttram and Gibbons in 1979, which grouped the uterine anomalies according to the failure of the Müllerian ducts to develop properly (agenesis, lack of fusion, absence of reabsorption or lack of appropriate development) and its correlation with clinical pregnancy outcomes [2]. Since the vast majority of congenital genital malformations affect the uterus, and also uterine deformity seems to correlate well with the impact on pregnancy outcome, the advantages of this classification system included its simplicity and recognizability. However, the AFS classification had been criticized for its focus primarily on uterine anomalies, with exclusion of those of the vagina and cervix, its lack of clear diagnostic criteria, and its inability to classify complex malformations.

Since then, other classifications have been developed. Oppelt proposed the VCUAM classification (Vagina, Cervix, Uterus, Adnexa, and associated Malformations), whose goal was to describe the Müllerian and associated anomalies accurately and precisely in the manner we are used to for cancer staging [3]. Similarly, in 2013, the European Society of Human Reproduction and Embryology (ESHRE) and the European Society for Gynecological Endoscopy (ESGE) developed a classification based primarily on uterine anatomy, with cervical and vaginal anomalies classified as independent supplementary subclasses to precisely identify each anomaly [4]. However, as was true of Oppelt's classification, the ESHRE/ESGE classification is complex to use, as it uses letters and numbers (U0–6, C0–4, V0–4), and is merely descriptive and not based in embryology, and so is not suggestive of other associated genitourinary malformations. In addition, specific measurement criteria using three-dimensional ultrasound were given to define septate and bicorporeal uterus. But two main aspects of that classification must be noted, as they may have an impact on management decisions: the arcuate uterus was considered normal, and the definition provided for septate uterus seemed to overestimate its frequency. Therefore, the group Congenital Uterine Malformations by Experts (CUME; a mixture of gynaecologists with a special interest in malformations from an ultrasound, surgical or clinical point of view) published criteria for defining septate and T-shaped uterus, and those are considered to be the best [5,6].

The problem we face is not only that Müllerian anomalies may go undiagnosed for extended periods but also that the reproductive results of a certain uterus malformation are not the same if that malformation is a consequence of a Wolffian anomaly or purely Müllerian, enhancing the importance of completely evaluating the whole genitourinary system before classifying a case [7]. For that reason, we proposed a system for classifying female genitourinary anomalies according to their embryologic origin, with 6 groups: 1) agenesis or hypoplasia of an entire urogenital ridge, 2) mesonephric anomalies, 3) isolated Müllerian anomalies, 4) gubernaculum dysfunctions, 5) anomalies of the urogenital sinus, and 6) combinations of malformations [8]. In group 3 (the isolated Müllerian anomalies) we included the AFS classification [1] subdividing between anomalies of the paramesonephric or Müllerian ducts, the Müllerian tubercle anomalies, and the anomalies of both Müllerian tubercle and ducts.

Moreover, certain malformations often receive inappropriate or inadequate surgical interventions, that result in persistent issues such as chronic pelvic pain or loss of reproductive function, especially if the anomaly is a complex one. In our opinion, knowledge of the correct genitourinary embryology is essential for the understanding, study, diagnosis and subsequent treatment of genital malformations, especially those complex ones that lead to gynecological and reproductive problems, particularly in young patients [9].

The American Society for Reproductive Medicine has recently published an update aiming to overcome the disadvantages of the AFS classification while retaining its advantages, but we were surprised to read that it does not consider the concepts that we currently know regarding genitourinary embryology and focuses only on morphological abnormalities, or imaging, of the Müllerian ducts [10]. This

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classification includes Wolffian anomalies without acknowledging, and other malformations of the female genital tract, such as urogenital sinus anomalies (the congenital vesico-vaginal fistula and other cloacal anomalies), or the dysfunctions of the female gubernaculum (such as the cavitated accessory uterine masses), have not been included. Consequently the classification ignores the fact that the entire urogenital ridge (with the gonadal ridge and the Wolffian and Müllerian ducts), the urogenital sinus and also the gubernaculum are involved in the embryological development of the female genitourinary tract.

Maybe it is time to try to unify all these efforts and knowledge in finding a classification system that satisfies all the prerequisites. So far, we truly believe our classifying system is the most complete and helpful one.

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