

Concordance of Magnetic Resonance Imaging with final diagnosis in Müllerian Tract anomalies: A fifteen-year study between March 2003 and June 2017 from an Australian Quaternary Paediatric and Adolescent Gynaecology Centre



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INTRODUCTION

MRI is the diagnostic imaging gold standard for Müllerian Duct anomalies¹. It allows patients to avoid invasive procedures, particularly in those with low clinical suspicion, & has the ability to detect associated renal and skeletal abnormalities. Multiple studies have shown good agreement of MRI diagnosis to clinical diagnosis ranging from 78% to 100%²⁻³. However recent studies have shown that MRI has limitations for definitive initial diagnosis with implications that can be clinically significant, life-threatening and potentially fatal⁴⁻⁵.

OBJECTIVES

Define concordance of MRI diagnosis with final diagnosis in patients with suspected Müllerian Tract anomalies from a Quaternary Paediatric and Adolescent Gynaecology (PAG) Centre, to better understand the limitations of MRI and highlight areas of discordance.

METHODS

MRI images of 64 patients with suspected Müllerian Tract anomalies who presented between March 2003 - June 2017 were reviewed. Initial MRI diagnosis was compared to final diagnosis based on clinical, surgical and histological findings. Concordance meant anatomical features on MRI were consistent with clinical, surgical and histological findings, otherwise were considered discordant. Concordance was reviewed in detail for uterine, cervical, and vaginal structures separately. All MRIs were reviewed by a specialist radiologist experienced in PAG.

RESULTS

- Mean age at MRI was 15 years (range 10-26)
- Surgery was carried out in 47/64 (73%)

Types of Anomalies Classified as per the American Society for Reproductive Medicine + Other Anomalies		
Type of Anomaly	Cases	Vaginal Septum
I (MRKH)	14 (22%)	1
II Unicornuate	8 (12%)	0
III Didelphys	13 (20%)	10
- TRIAD (Uterine didelphys, obstructed hemivagina & ipsilateral renal anomaly)	8	8
IV Bicornuate	11 (17%)	8
Complete vaginal atresia	4 (6%)	0
High vaginal septum	3 (5%)	3
Vaginal stricture post surgery	3 (5%)	0
Lower vaginal anomaly	7 (11%)	4
Other (delayed puberty)	1 (1%)	0
Total	64	26 (40%)

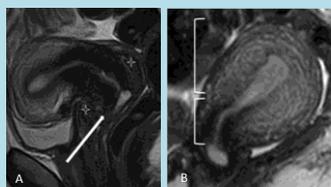
RESULTS

Concordance of MRI diagnosis with Final Diagnosis	
Structure	Concordance
Final Diagnosis	40/64 (62.5%)
Uterine	61/64 (95%)
Cervical	55/64 (86%)
Vaginal	47/64 (73%)

In total 24 patients had discordance, 19 had single structure and 5 had dual structure discordance

Discordant Cases as per Structural Category

Total Discordant	Structural Category	Discordant Finding
29 cases	Uterine (3/64)	2 Incorrect class reported 1 Non-communicating uterine horn not reported
	Cervical (9/64)	6 Partial cervical agenesis not reported 2 Two cervixes reported one cervix present 1 Hypoplastic cervix reported, nil cervix present
	Vaginal (17/64)	5 Vaginal septa reported but not present 8 Vaginal septa not reported but present 2 Stenosed lower vaginal canal/stricture not reported 2 Blind ending vaginal canal not reported



A: Normal uterus & cervix characterised by clear anterior and posterior fornices (stars), a well demarcated ectocervix (arrow) and a normal cervical canal length. B: Partial cervical agenesis & complete vaginal atresia. Cervix originally reported as normal secondary to the normal cervical canal length (demarkation). Retrospective review found absent vaginal fornices and ectocervix.

PARTIAL CERVICAL AGENESIS

In 6/9 cases discordant for cervical structures, partial cervical agenesis was not reported. Histology post definitive surgery showed the absence of ectocervix with endocervix present. All cases had complications including pain, re-obstruction, severe septic shock, multi-organ failure & extracorporeal membrane oxygenation. All required definitive surgical management with hemi or total hysterectomy, and emergency surgery was required in 50%.

DISCUSSION

- MRI is useful for diagnosis of Müllerian Tract anomalies, particularly in relation to uterine structures.
- Discordance related mainly to partial cervical agenesis and in delineation of vaginal septa.
- Recognition of limitations is important and if discordance is apparent clinically, further vigilance, investigation or surgery may be pertinent to avoid morbidity & mortality.

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