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Rectovesical ligament and fusion defect of the uterus with or without obstructed hemivagina and ipsilateral renal agenesis

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ABSTRACT

Objective: The rectovesical ligament is a peritoneal band in women with failure of fusion of the two Müllerian ducts. The aim was to evaluate existence of this abnormal structure in women with dysfused uterus and its possible relations to concomitant vaginal and renal anomalies.
Study design: The study group comprised 47 women with uterine fusion defect (37 didelphic and 10 bicornuate uterus). They had undergone laparoscopy or laparotomy to visualize the pelvic cavity, and imaging for renal evaluation. The rectovesical ligament was present if inspection of the pelvic cavity revealed a broad peritoneal band between the two hemiuteri, attached anteriorly to the bladder and posteriorly to the sigmoid. Presence or absence of the ligament was reported, and concomitant renal and vaginal anomalies were evaluated.
Results: The rectovesical ligament was not visualized in 14 patients with didelphic or complete bicornuate uterus associated with unilateral renal agenesis: of these 13 had a previously treated obstructive longitudinal vaginal septum. A peritoneal band was found in 27 women with didelphic uterus with longitudinal vaginal septum with no obstruction and normal bilateral kidneys. Six women with bicornuate uterus had normal kidneys and an identified rectovesical ligament between the uterine hemicorpora, except for one with partial bicornuate uterus.
Conclusion: The rectovesical ligament is not merely a consequence of the failed fusion of two Müllerian ducts, but its relation to uterine malformation with or without vaginal and renal anomalies indicates some share of this structure in the early development of the urogenital system.

1. Introduction

The rectovesical ligament is an abnormal structure which occurs in women with failure of fusion of the two Müllerian ducts resulting in either a didelphic or bicornuate uterus [1]. This peritoneal band is attached anteriorly to the bladder folds, passes over and between the hemiuteri, continues posteriorly in the cul-de-sac, and ends with its attachment to the serosa of the sigmoid or rectum [2]. The rectovesical ligament is not invariably present in women with didelphic or bicornuate uterus and is not found at all in those with septate or unicornuate uterus or Müllerian agenesis [3–7].

The existence of this rectovesical ligament has been known for decades and it is usually mentioned when surgical unification of the malformed uterus (metroplasty) is described [1,2,8,9]. Otherwise, the clinical importance of the rectovesical ligament is minor in that it causes no harm or symptoms indicating surgical intervention.

The embryological explanation for this structure, however, is only meagerly treated and its possible relations to vaginal and renal anomalies associated with uterine malformations are unknown [1,3]. The present aim was to evaluate the existence of a rectovesical ligament in women with a dysfused uterus, paying attention to a possible connection with concomitant vaginal and renal anomalies.

2. Materials and methods

Assessment of all cases with Müllerian malformations diagnosed at the Department of Obstetrics and Gynecology, University Hospital of Tampere, Finland, during the period March 1962 to December 2010 revealed 68 women with a congenital fusion defect of the uterus: 55 had a didelphic and 13 a bicornuate uterus.

Diagnostic laparoscopy and/or laparotomy mostly for cesarean section had been performed in 51 cases (40 with didelphic and 11 with bicornuate uterus). Hysterosalpingography, ultrasonography or magnetic resonance imaging (MRI) had been undertaken to

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Table 1
Evaluation and anatomic findings in 68 women with fusion defect of the uterus.

Uterus	Didelphic	Bicornuate	All
No. of patients	55	13	68
Longitudinal vaginal septum	55	7	62
Obstructed hemivagina	12	3	15
Unilateral renal agenesis[a]	12/49	4/12	16/61
Concomitant obstructed hemivagina and ipsilateral renal agenesis (%)	12 (24.5)	3 (25.0)	15 (24.6)
Laparoscopy/laparotomy	40	11	51
Both pelvic and renal evaluation (%)	37	10	47 (69.1)

[a] Values are number of cases affected/number of cases assessed.

diagnose uterine malformations in 17 cases (15 didelphic and 2 bicornuate uterus). Renal status was determined in 61 patients (49 with didelphic and 12 with bicornuate uterus), using an intravenous pyelogram or ultrasound scanning. Both inspection of the pelvic cavity (laparoscopy/laparotomy) and renal imaging for evaluation had been performed in 47 (69.1%) women (Table 1). Additional data on other possible anomalies were obtained by reviewing operative notes, hospital charts and radiographic studies.

Three patients with bicornuate uterus had undergone metroplasty, two Strassmann procedures and one a modified Jones operation [2,10]. Fifteen patients with obstructing longitudinal vaginal septum causing hematocolpos, vaginal discharge or pyocolpos, had had surgical excision of the septum.

The study group consisted of 47 women who had undergone both inspection of the pelvic cavity and renal imaging (Table 1). The presence or absence of a rectovesical ligament was established in cases with didelphic or bicornuate during laparoscopy or laparotomy. The ligament was present if inspection of the pelvic cavity revealed a broad peritoneal band or fold lying midway between the two lateral hemiuteri and attached anteriorly to the bladder and posteriorly to the serosa of the sigmoid colon or rectum (Fig. 1A). Cases with only an imaging diagnosis of the uterine anomaly by ultrasonography or MRI were excluded from the study, as identification of the rectovesical ligament using these means was not reliable. Presence or absence of the ligament was reported, and possible associations with other malformations such as vaginal septum and renal status were evaluated. The institutional review board in Tampere University Hospital approved the study protocol.

3. Results

All 55 women with a didelphic uterus had a longitudinal vaginal septum. Twelve (24.5%) out of 49 evaluated had had obstructed hemivagina and established ipsilateral renal agenesis (Table 1). Eight out of 13 women had a complete bicornuate uterus and seven of them had a longitudinal vaginal septum, three with obstruction and ipsilateral renal agenesis. One patient with complete bicornuate uterus had unilateral renal agenesis but no longitudinal vaginal septum and thus no treated obstructed hemivagina.

Forty-seven patients with uterine fusion defect underwent both inspection of the pelvic cavity and renal imaging for evaluation (Table 2). Twenty-seven with didelphic uterus and longitudinal vaginal septum without obstruction had normal bilateral kidneys. In all of them a rectovesical ligament between the two hemiuteri was recognized (Fig. 1A). Ten out of 12 patients with didelphic uterus and previously treated obstructed vaginal septum and ipsilateral renal agenesis evinced no abnormal band between the hemiuteri (Fig. 1B). Two of these 12 patients underwent no inspection of pelvic cavity.

Ten out of 13 patients with bicornuate uterus underwent pelvic and renal evaluation (Table 2). Four with a complete bicornuate uterus and unilateral renal agenesis had no rectovesical ligament on pelvic evaluation. One patient had no diagnosed vaginal septum at all, while three others had been treated for obstructive vaginal septum. Six patients with a bicornuate uterus (one complete and five partial) had bilateral normal kidneys and a rectovesical band between the uterine bifurcation, except for one who had a partial bicornuate uterus without vaginal septum (Table 2).

Two of three patients with metroplasty for unification of a bicornuate uterus had undergone operative resection of a rectovesical ligament. One patient with a partial bicornuate uterus had no peritoneal band between the hemiuteri.

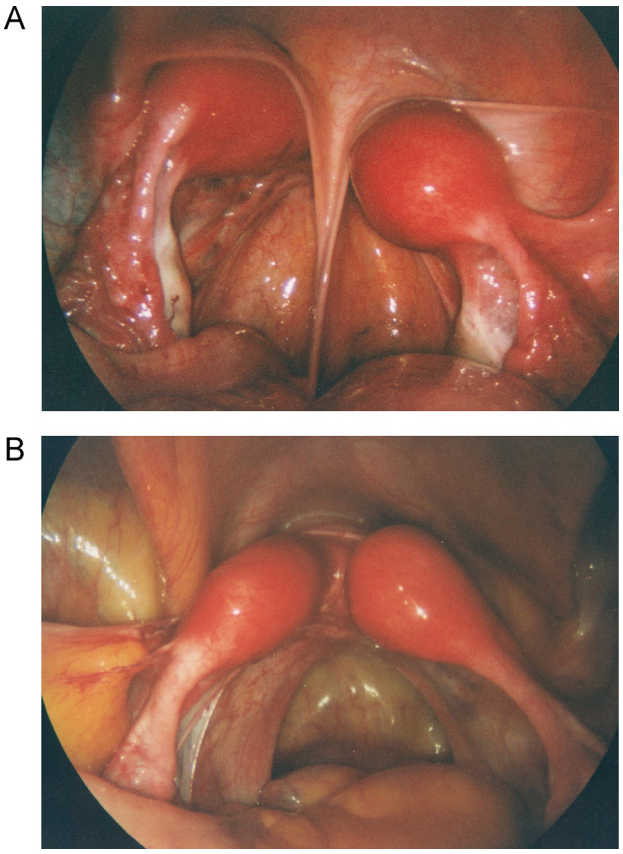

Fig. 1. (A) Rectovesical ligament attached anteriorly to the bladder folds between the hemiuteri and attached posteriorly to the serosa of the sigmoid, as seen in laparoscopy in a patient with didelphic uterus, non-obstructive longitudinal vaginal septum and bilateral normal kidneys. (B) Laparoscopic view of the didelphic uterus without rectovesical ligament. The patient had undergone surgical opening of the left obstructive vaginal septum eight years earlier and had ipsilateral renal agenesis. Omental adhesion in the left hemiuterus may be a consequence of the left-side obstruction.

Table 2
Presence or absence of the rectovesical ligament in 47 patients with fusion defect of the uterus associated with unilateral renal agenesis and ipsilateral obstructive vaginal septum or bilateral normal kidneys and longitudinal vaginal septum without obstruction.

Uterus	Renal evaluation	No of. patients	Rectovesical ligament	
			Presence	Absence
Didelphic	Bilateral kidneys	27	27	0
	Unilateral agenesis	10	0	10
Bicornuate	Bilateral kidneys	6[a]	5	1
	Unilateral agenesis	4[b]	0	4

[a] Five partial bicornuate uterus without vaginal septum.
[b] One patient had no longitudinal vaginal septum.