

Postoperative Course and Complications after Pull-through Vaginoplasty for Distal Vaginal Atresia



Roshanak Mansouri MD*, Jennifer E. Dietrich MD, MSc

Division of Pediatric and Adolescent Gynecology, Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, Texas

ABSTRACT

Study Objective: To report the usual postoperative course and complications after pull-through vaginoplasty for isolated distal vaginal atresia.

Design, Setting, and Participants: Retrospective chart review at Texas Children's Hospital of all patients who were diagnosed with isolated distal vaginal atresia and underwent pull-through vaginoplasty during the study time frame.

Interventions: None.

Main Outcome Measures: Postoperative complications such as vaginal stenosis or infection and postoperative vaginal diameter.

Results: Sixteen patients were identified and charts were reviewed. Patients were initially evaluated by pelvic magnetic resonance imaging and found to have distended hematometrocolpos with distal vaginal atresia. All patients underwent pull-through vaginoplasty with similar operative techniques. The average distance from the perineum to the level of the obstruction was 1.84 ± 1.2 cm. Two patients, both with obstructions at greater than 3 cm, experienced stricture formation postoperatively. Four patients (25%) experienced postoperative vaginitis. One patient (6.25%) experienced a postoperative urinary tract infection. Two groups (3 cm or less versus greater than 3 cm) were compared, and the presence of stricture was statistically different based on mean centimeters from perineum prior to pull-through vaginoplasty ($P = .038$).

Conclusions: Distal vaginal atresia is managed with pull-through vaginoplasty. Atresias that extend greater than 3 cm from the perineum are at increased risk for vaginal stricture formation and should be followed to monitor for their formation. Other complications are infrequent and minor.

Key Words: Distal vaginal atresia, Hematocolpos, Hematometrocolpos, Vaginoplasty, Vaginal stricture

Introduction

Isolated distal vaginal atresia is a rare class I Müllerian anomaly characterized by development of the uterus, cervix, and upper vagina with an atretic lower segment of vagina. This condition frequently presents at puberty when an obstructed menstrual cycle causes hematometrocolpos. Patients often present because of acute abdominal pain and on evaluation can be found to have an abdominal mass and an absent vaginal opening.¹

Imaging is best achieved with pelvic magnetic resonance imaging (MRI), which can delineate presence of a uterus, cervix, and vagina surrounding the distended abdominal mass. MRI can also help evaluate the volume of the hematometrocolpos, which effectively acts as a vaginal tissue expander; evaluate the urinary tract given the frequent association of urinary tract anomalies with Müllerian anomalies; and help with preoperative planning by estimating the distance from the vaginal bulge to the perineum.²

Surgical management of this entity is varied in the literature, and information about long-term outcomes is lacking. At our institution, we perform pull-through

vaginoplasty from a perineal approach with direct anastomosis of the vaginal mucosa to the mucosa at the introitus. Our objective was to present a series of patients presenting at puberty with distal vaginal atresia, describe postoperative outcomes after pull-through vaginoplasty, and describe factors that may predispose patients to these complications.

Patients and Methods

We performed an institutional review board approved retrospective chart review of 16 patients at our institution who underwent pull-through vaginoplasty for distal vaginal atresia between July 2007 and January 2012. Patients were identified by searching *International Classification of Diseases, Ninth Revision* (ICD-9) codes for the following: stricture or agenesis of vagina, congenital anomalies of genital organs, embryonic cyst of cervix, vagina, and external female genitalia, and other anomalies of the cervix, vagina, and external female genitalia, as well as the *Current Procedural Terminology* (CPT) code for vaginoplasty.

Charts were then reviewed for documentation of the diagnosis. Once the study patients were identified, we performed in-depth chart review of images, clinic notes, operative notes, and postoperative clinic visits relevant to the diagnosis. We recorded demographic information, postoperative length of follow-up, any postoperative

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* Address correspondence to: Roshanak Mansouri, MD, 6651 Main St, Suite 1020, Houston, TX 77030; Phone: +1 (832) 826-7464; fax: +1 (832) 825-9349

E-mail address: roshi.mansouri@gmail.com (R. Mansouri).

complications, postoperative assessment of the vaginal caliber, and additional procedures required, if any. Statistics were descriptive or simple Student *t* tests.

Patients presented to our institution preoperatively through presentation to the emergency center with complaints of abdominal pain or through referrals from outside institutions to the Pediatric and Adolescent Gynecology Clinic. For patients presenting with abdominal pain, initial assessment included physical examination and pelvic ultrasound. Patients were found on physical examination to have an abdominal mass and no evidence of a patent vagina. Referred patients were examined in the clinic, and outside pelvic ultrasound images were reviewed. Once a diagnosis of distal vaginal atresia was suspected, all patients were evaluated preoperatively with pelvic MRI and found to have distended hematocolpos or hematometrocolpos (Fig. 1). The volume of hematocolpos was calculated as a volume, using the measurements of the hematocolpos in 3 dimensions by MRI (Table 1).

Results

The patients were of mixed demographic backgrounds. All patients presented at or after menarche (mean age 12.9 ± 1.5 years) with initial complaints of acute or chronic abdominal pain. Two patients were noted on examination to have some development of hymenal tissue just distal to the area of the nonpatent vaginal opening. All patients appeared to have a normal uterus, cervix, and upper vagina on pelvic MRI.

All patients underwent pull-through vaginoplasty procedures with similar operative techniques (Fig. 2). The technique used at our institution, briefly, was to place stay sutures or Allis clamps on the outer quadrants of the planned vaginal opening. Then, a mucosal incision was made, and dissection of the vaginal space was achieved bluntly and with occasional sharp dissection until the palpable vaginal bulge was reached. A spinal needle was introduced into the cavity and aspirated to confirm correct identification of the vaginal space, and stay sutures were placed around the planned incision into the cavity. The vaginal cavity was entered sharply, and the hematocolpos was drained. The vaginal mucosa was then brought to the

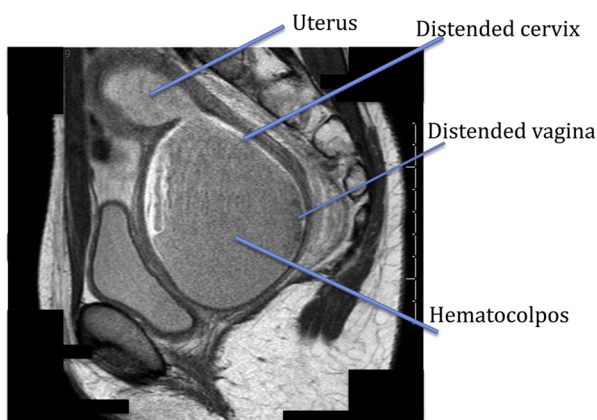


Fig. 1. Pelvic MRI showing hematocolpos with distention of vagina and cervix.

Table 1

Characteristics and Postoperative Complications of the Study Population Divided by Distance from the Vaginal Obstruction to the Perineum

	Distance		P
	> 3 cm (n = 2)	≤3 cm (n = 14)	
Age (yr)	14	12.71	NS
Hematocolpos (cm ³)	383	641.7	NS
Complications			
aginitis (yeast)	1	3	
Urinary tract infection	0	1	
Stricture	2	0	.038
Postoperative vaginal caliber			
Immediate	1.75 cm	2.14 cm	NS
Postoperative check	1.25 cm	2.03 cm	NS
Stent used? (yes)	2	0	.038
Dilation needed (yes)	2	0	.038

perineum and attached circumferentially with interrupted Vicryl suture. Digital vaginal examination was performed in every case post procedure to confirm vaginal caliber.

The distance from the perineum to the most distal level of the vaginal obstruction was determined by MRI and intraoperative rectal examination, which was concordant in all cases. All distances were 1 cm or greater. Average distance to the level of the obstruction was 1.84 ± 1.2 cm. Two patients had obstructions at greater than 3 cm. Both of these patients had soft inflatable stents placed postoperatively. Both of these patients experienced stricture formation postoperatively requiring a simple dilation procedure. This was accomplished in the operating room with sequential

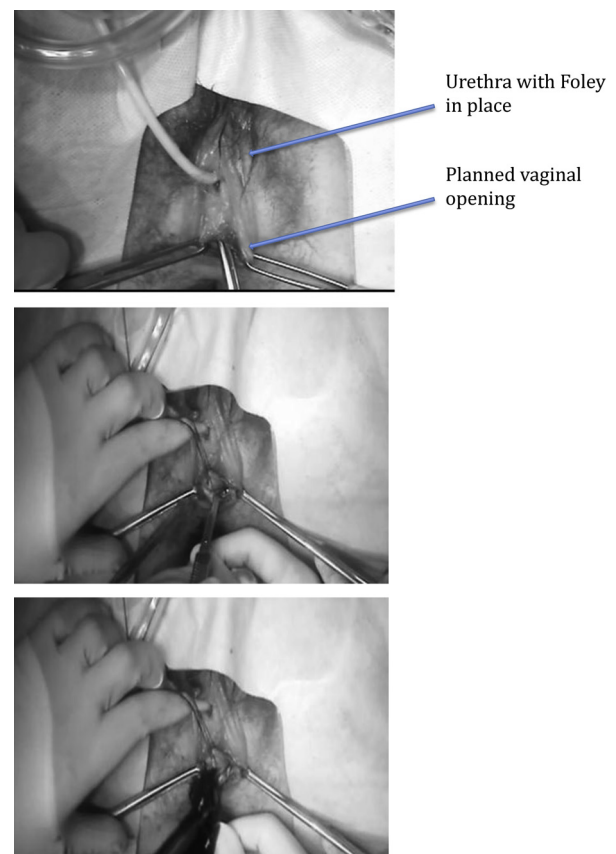


Fig. 2. Sequential images from a pull-through vaginoplasty.

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