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Short-term "double natural orifice catheterization": Nonoperative management of hydrocolpos in persistent cloaca patients – case series

Stjepan Višnjić *, Mislav Bastić, Mateja Marčec [1], Marko Mesić

Children's Hospital Zagreb, Klaićeva 16, 10 000 Zagreb, Croatia

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ABSTRACT

Purpose: Management of hydrocolpos in cloaca patients is of clinical importance. We report a nonoperative method for the management of hydrocolpos in the form of initial catheter decompression, followed by an endoscopy with catheters placement into both the bladder and vagina, and leaving these catheters for 9 and 14 days respectively.

Methods: The medical records of six cloaca patients with hydrocolpos in the last 12 years were reviewed. The outcomes measured were the renal function, bladder emptying, the presence/resolution of hydronephrosis, and the recurrence of hydrocolpos.

Results: Complete drainage of hydrocolpos was achieved in four out of six cases and partial drainage in two. On common channel endoscopy, in four patients the structures were identified and balloon catheters inserted. After catheter removal, the vagina and urinary tract remained adequately drained through the natural cloacal opening with no post-micturition residual urine, resolution of hydroneprosis within 60 days, preserved renal function, and no hydrocolpos reaccumulation.

Conclusion: Initial decompression and short time catheterization can be the definite solution for some cloaca patients with hydrocolpos. Our case-series showed a success rate in two-thirds of patients by achieving the three main goals; permanent hydrocolpos derivation, undisturbed voiding, and preservation of renal function.

Level of evidence: Study can be classified as a Treatment Study, LEVEL IV Case series with no comparison group.

Persistent cloaca is the most complex form within the spectrum of anorectal anomalies and is comprised of a variety of pathoanatomical variations of the hindgut and genitourinary tract. The initial management is usually carried out at a regional pediatric surgery center, and the ultimate goal for patients in this period is adequate urine and stool derivation, as well as the management of hydrocolpos, if present [1–3]. Hydrocolpos is present in around 30% of the patients; more often in those with a common cloacal channel that is longer than 3 cm [1]. Successful management is of the utmost clinical importance, since, if left untreated, hydrocolpos represents the main source of morbidity due to compressive mass effect, with obstructive uropathy and possible urosepsis as consequences [1,3]. When evaluating the initial hydrocolpos management, one can realize that the specific guidelines are not standardized and that the literature favors the operative methods for drainage [3]. However, some recent reports propose clean, intermittent catheterization (CIC)[2] as a less invasive but adequate strategy to decompress and drain the genitourinary tract [4]. We report an alternative, non-operative method for the management of hydrocolpos in the form of initial catheter decompression, followed by an early endoscopy, with the placement of balloon catheters into both the bladder and vagina, and leaving these catheters in-situ for 9 and 14 days respectively.

1. Methods

We reviewed the medical records of all cloaca patients initially managed and followed up at our hospital (national tertiary care center) during the last 12 years. Among these cloaca patients, the presence of hydrocolpos was the inclusion criteria for the study. The ultrasound (US) pattern of hydrocolpos, the content of cysts, and the mode of hydrocolpos drainage and urine diversion were analyzed. Measured outcomes were the renal function (serial serum creatinine) on day 1 and 15, bladder emptying (post-micturition residual urine, followed by US), the presence of hydronephrosis, time to resolve hydronephrosis, and the recurrence of hydrocolpos. Permission of the Hospital's Ethical Board was sought for this study.

* Corresponding author.
E-mail addresses: stjepanvisnjic@gmail.com, stjepan.visnjic@zg.t-com.hr (S. Višnjić).
[1] Permanent address: General Hospital "Dr. Ivo PEedišić", Strossmayerova 59, 44,000 Sisak, Croatia.
[2] CIC- Clean intermittent catheterization

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2. Results

Six cloaca patients with hydrocolpos at the initial presentation were identified. All patients had concomitant hydronephrosis. Five had a long common channel of 3 cm or more, verified through endoscopy.

Initial decompression on the admission day in the PICU was done through gentle blind catheterization of the common cloacal channel by using a round tip, single-use (Nelaton) catheter. In all of the six patients, procedures were continued until the evacuation of retained fluid was achieved. US was repeated immediately, following the initial catheterization. Ultrasound was used to confirm complete drainage of hydrocolpos in four out of six cases (Patients No 1–4, Table 1). In the other two cases, partial drainage was achieved, with a clear reduction in the size, but some residual fluid persisted after the initial catheterization.

Two types of content were noticed during the initial decompressions; viscous, whitish mucus, and watery (similar to urine). Mucus-like content was found in all patients with successful hydrocolpos drainage, while urine-like content was found in patient number 5 and 6. In both cases of watery drained content, alterations in organs derived from Müllerian structures were found during the operative procedure.

Diagnostic and therapeutic common channel endoscopy was performed in all patients just prior to colostomy surgery, when the newborn was already anesthetized. "Regular" gynecological anatomy was found in all four of the cases, with complete initial drainage. In these cases, endoscopy was smoothly performed, structures identified, and balloon catheters inflated and fixed in both the vagina and the bladder. Close inspection of the trigone, and both uretheral orifices was performed at this time. Cystoscopy was diagnostic but topographic as well, since it helped to confirm anatomy. Inspection of the cavum of the vagina followed immediately after the inspection of the bladder. An irregular surface was found, and it was difficult to identify the cervix. The drainage catheters were left in place for 9 days in the vagina, and 14 days in the bladder (Fig. 1). In contrast, in patient 5 and 6, in whose case an endoscopy was not able to give definite answers about anatomy, no catheters were placed until the operative procedures revealed the exact pathology.

After the catheter removal, in two out of the four initially drained cases (Table 1: Patient number 1, 2), both the vagina and urinary tract remained adequately drained through the natural cloacal opening, with no post-micturition residual urine. This was monitored through subsequent US exams. A complete resolution of hydrocolpos and hydronephrosis within 30 days was also documented. These patients had no further invasive management and had no complications during the follow-up period. Patient number 3 demonstrated persistent hydronephrosis (grade II) on the side of the vesicoureteral reflux, and immediately improved the hydronephrosis on the other side. Complete resolution of hydronephrosis at the reflux side was achieved by day 60. Patient number 4 had initially presented with a properly drained vagina, confirmed by the immediate and subsequent US, but demonstrated persistent bilateral ureterohydronephrosis. Since there was no mass effect from a distended hydrocolpos, ureterovesical obstruction was considered to be caused extrinsically through hypertrophic vaginal tissue, and we concluded that the patient was in need of a more permanent form of urinary diversion. This was initially accomplished through coiled tube vesicostomy on day 36, followed by a Blocksom vesicostomy on a later date. After definite cloacal repair at the age of 14 months, this patient's hydronephrosis was completely resolved, and US findings showed no form of renal impairment or renal obstruction.

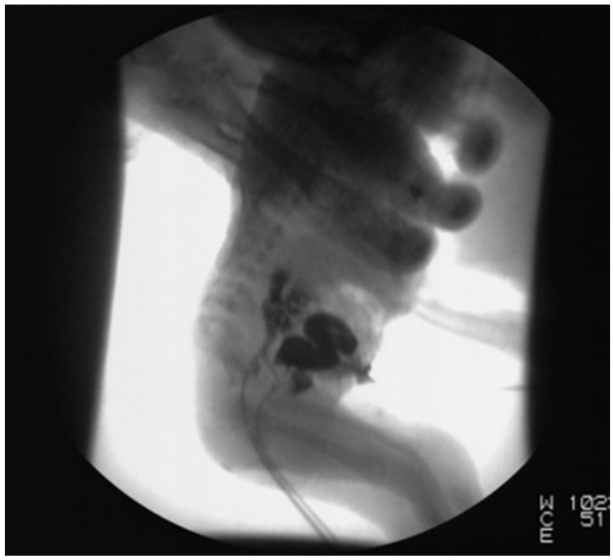

Fig. 1. X-ray image of "double perineal catheterization" with catheters in situ in bladder and vagina.

In two patients with incomplete drainage and inconclusive endoscopy, operative procedure resolved the dilemma. For patient number 5, an explorative vaginotomy was performed at the time of the colostomy creation. A septum, detected by US preoperatively, was excised, and a coiled tube vaginostomy was created. Immediately after the tube placement, 80% of diuresis went via the coiled tube, but this changed over time until it reached 80% per cloacal orifice. In another case (patient number 6), the distended bladder misdiagnosed for a hydrocolpos. Operative findings showed a bicornuate uterus, and probably the firm, enlarged bicornuate uterus caused the urinary retention and vesical

Table 1
Cloaca patients with clinical outcomes after initial treatment and follow-up.

Patient	Day 1. Admission day Initial catheterization US finding	Day 2. Endoscopy and Procedure of choice	Day 2. Operative finding and procedure	Day 30 Hydronephrosis	Day 60 Hydronephrosis
No1	Complete drainage	B + V catheterization	2nd day colostomy	Total resolution	Total resolution
No2	Complete drainage	B + V catheterization	2nd day colostomy	Total resolution	Total resolution
No3	Complete drainage	B + V catheterization	2nd day colostomy	One sided VUR/Hydroneprosis	Total resolution
No4	Complete drainage	B + V catheterization	2nd day colostomy + 36th day bladder- coiled tube 94th day Blocksom vesicostomy	Hydroureteronephrosis bill gr IV + VUR bill gr V No reaccumulation Minimal residual urine	Hydroureteronephrosis bill gr IV + VUR bill gr V
No5	Incomplete drainage/Septet cyst	Inconclusive cystoscopy/operative exploration Double barrel uterus	2nd day colostomy + 2nd day vaginal tube + septum fenestaration 46th day vaginal tube reinsertion	Hydronephrosis gr IV → II	Hydronephrosis gr II → I
No6	Incomplete drainage/Irregular anatomy	Inconclusive cystoscopy/operative exploration Bicornuate uterus and vagina duplex	2nd day colostomy	Hydronephrosis gr I	Total resolution