Serious Complication after Laser Treatment of Ureterocele in an Infant

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Abstract
Endoscopic decompression has been recently suggested as the first line treatment of ureterocele in children, including laser transurethral incision. We report a case of a unique but very serious complication after simple ureterocele puncture using a holmium laser in an infant. A 6-week-old male with a history of laser treatment of right simple ureterocele (procedure performed at the other institution 2 days earlier) was admitted because of sepsis. Imaging studies revealed urine leak around the bladder. Destroyed right bladder wall with perforation (locally coagulated and buried tissue) and damaged distal part of the right ureter along the distance of 3-4 cm were found during cystoscopy and laparotomy. Bladder was closed wall after removal of damaged tissues and then end right ureterocutaneostomy was done. The presented case shows that one has to be very careful using new techniques for endoscopic treatment, especially in very young patients and complications may overweight the advantages.

Keywords
Ureterocele, Laser therapy, Endoscopic incision, Children

Case Report
A 6-week-old male after laser incision of a simple right ureterocele performed at the other hospital two days before admission to our institution, was admitted because of general bad condition and signs and symptoms of sepsis. Endoscopic incision was done as an outpatient procedure and a boy was discharged home immediately after cystoscopy.

Ultrasound (US) showed mild distention of the right collecting system and upper part of the right ureter

Figure 1: Voiding cystourethrography: contrast leak around the bladder on the right side.
voiding cystourethrogram (VCUG) suggested contrast leak localized paravesically (Figure 1). Computed Tomographic Urography (CTU) showed dilatation of the right collecting system, only partially visible right ureter and contrast leak from its distal end above the bladder (Figure 2a and Figure 2b).

Cystoscopy revealed necrotic right bladder wall (Figure 3a and Figure 3b). During laparotomy completely destroyed bladder wall on the right side with perforation (locally coagulated and buried tissues) together with damage of the distal 3-4 cm of the right ureter was found. Healthy appearing ureter was present 4-5 cm above the bladder. Also, anterior wall of the rectum was involved, but without perforation (Figure 4a, Figure 4b and Figure 4c). After removal of damaged tissues the bladder was closed in layers and finally end right ureterocutaneostomy was done.

Immediate postoperative period was uneventful. Control CTU showed no urinary tract leak. Radionuclide examination showed right renal parenchyma scarring with slightly diminished function (45% ERPF). Recurrent Urinary Tract Infections (UTI) were observed during first two months together with progressing stenosis of cutaneous orifice of end ureterocutaneostomy (Figure 5). This stenosis required reoperation with further excision of distal part of scarred ureter and more proximal localization of stomy (Figure 6).

Good function of the ureterostomy, no dilatation of the right collecting system and no UTIs were noted during almost 4 years observation.

**Figure 2:** a) Computed tomographic urography; b) Dilatation of the right collecting system, no visible distal part of the right ureter, contrast leak at the end of the right ureter.

**Figure 3:** Cystoscopy: necrotic right bladder wall.
has been proposed in older children and also in neo-
nates [9,11]. Also, fetoscopic laser surgery to decom-
press ureterocele prenatally is reported [12-15]. Up to
date the largest series of laser treatment of ureterocele
using holmium: YAG laser in neonates, including 8 cases,
was published in 2015. No intraoperative complications
were observed [11].

All authors who presented the results of laser uret-
terocele treatment in children underline the advantages
of laser procedures. They conclude that holmium: YAG
laser puncture or incision is a safe, efficacious option
and even should be considered as the initial treatment
in most patients. The main described advantage is that
the use of laser allows for more precise, controlled and
accurate incision of ureterocele with the very short
penetration of the holmium laser. Also, additional, but
theoretical benefit is that laser fibres do not have the
local thermal effect, as compared with standard elec-
trocautery.

To our knowledge our report is perhaps the first to
present the serious side effect of laser therapy. Accord-
ing to our observation it can be clearly stressed that

**Discussion**

Several techniques for endoscopic ureterocele de-
compression in children have been previously used, in-
cluding incision with electrocautery, cold knife incision,
puncture with a stylet [3,4,8,10]. Regardless the tech-
nique used, the only encountered and described com-
pliation, was new-onset Vesicoureteral Reflux (VUR)
into the punctured system. Reported rates of postoper-
ative VUR ranged from 18 to 27% [1-4,6,8].

The use of holmium: YAG laser to incise ureterocele

![Figure 4: a) Intraoperative view: destroyed bladder wall on the right side with perforation; b) Intraoperative view: damaged distal part of the right ureter, healthy appearing ureter 4-5 cm above the bladder; c) Intraoperative view: buried anterior wall of the rectum.](image)

![Figure 5: Stenosis of cutaneous orifice of the end uretero-cutaneostomy.](image)

![Figure 6: Intraoperative view: scarred distal part of the ureter.](image)
one have to be very careful using new techniques for endoscopic treatment and have to take into consideration that possible complications may overweight the advantages.

References


