



# Robotically assisted retroperitoneoscopic heminephrectomy in children: initial clinical results

L.H. Olsen\*, T.M. Jørgensen

Department of Urology, Division of Paediatric Urology, Aarhus University Hospital, Skejby, 8200 N Aarhus, Denmark

Received 8 December 2004; accepted 10 January 2005

## KEYWORDS

Robotics;  
Laparoscopy;  
Child;  
Infant;  
Duplex kidney;  
Heminephrectomy

**Abstract Objective:** To investigate the feasibility of robotically assisted retroperitoneoscopic upper pole heminephrectomy with the Da Vinci Surgical System™. **Patients and methods:** Fourteen girls (median age 4.9 years, range 0.5–20.2) underwent upper pole heminephrectomy using the retroperitoneal approach with the Da Vinci Surgical System™. Prior to all procedures a ureteric catheter was placed. Using a modified access to the retroperitoneum the ureter to the upper pole and the vessels were dissected and ligated. The upper pole was removed by diathermy or ultrasonic scissors.

**Results:** The median operative time was 176 min (range 120–360 min). In two patients, the procedure was converted to an open operation; in one case due to lack of progress, and in the other due to bleeding which could not be handled with the robotically assisted instruments. One patient had the ureteric stump removed due to recurrent infections. In all other patients the peri- and postoperative period was uneventful.

**Conclusion:** The robotically assisted system is an excellent tool for minimally invasive surgery in the retroperitoneum, such as pyeloplasty, with its advantages of wrist-like movements of the instruments, magnified three-dimensional view, tremor control and improved ergonomics for the surgeon. Further development of the instruments is required before the resection of a non-functioning upper pole can be included in the spectrum of indications.

© 2005 Journal of Pediatric Urology Company. Published by Elsevier Ltd. All rights reserved.

\* Corresponding author. Tel.: +45 8949 5923; fax: +45 8949 6006.  
E-mail address: h-olsen@dadlnet.dk (L.H. Olsen).

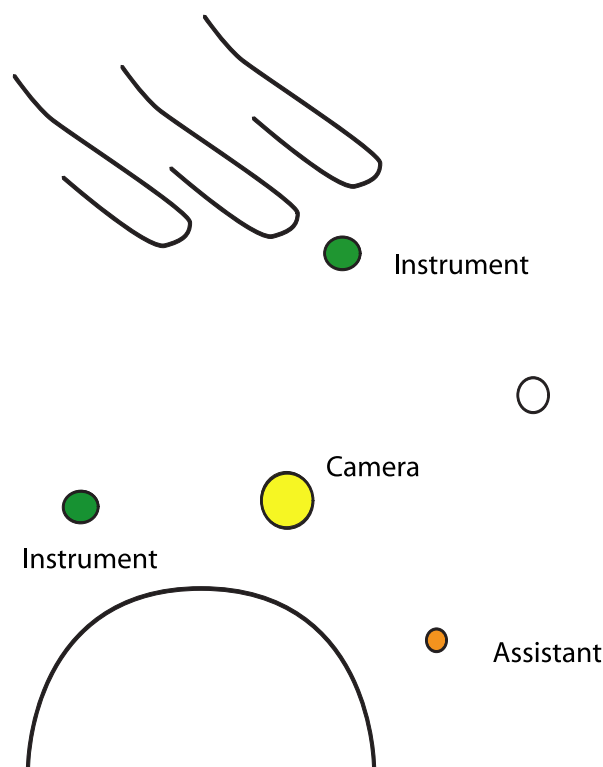
## Introduction

The main goal of robotically assisted laparoscopic surgery is to facilitate the various laparoscopic procedures for the surgeon and thereby improve the feasibility and quality of minimally invasive procedures. The three-dimensional magnified view, wrist-like movements of the instruments, tremor control and improved ergonomics are the main advantages of the system [1]. A better outcome and shorter operation time should justify the higher costs of the procedure. The latter may be true particularly in retroperitoneoscopic pyeloplasty, a procedure that requires suturing of an anastomosis [2]. Laparoscopic/retroperitoneoscopic heminephrectomy in children and its advantages related to open surgery have been described by other authors [3–6]. We report our initial experiences of robotically assisted heminephrectomies using the retroperitoneoscopic approach, which has not been done before.

## Patients and methods

From November 2002 until October 2004 upper pole heminephrectomy with the robotically assisted system was performed in 14 girls (median age 4.9 years, range 0.5–20.2). The indications were recurrent urinary tract infections in a non-functioning upper moiety on DMSA (dimercaptosuccinic acid) scintigraphy and/or incontinence due to an ectopic ureter. The data were collected prospectively in a database. Initially, a retrograde pyelogram was performed and a ureteric catheter was placed in the ureter of the lower pole.

Access to the retroperitoneal cavity with the robotically assisted system requires a modified approach and has been described before [2]. Briefly, with the patient in a lateral-semiprone position, a 15 mm incision is made 10–15 mm above the iliac crest at the level of the tip of the 11–12th rib. The lumbodorsal fascia is opened and the retroperitoneal space is digitally developed. Hereafter, the retroperitoneal space is dilated with a home-made balloon to 150–800 ml depending on the size of the patient. The two Da Vinci 8-mm ports are placed under finger guidance, one just anteriorly to the lumbosacral muscle close to the iliac crest, the other one close to the costal margin in the anterior axillary line. An additional 5-mm port was placed for assistance in the right or left iliac fossa. The port placement is shown in Fig. 1. After docking of the Da Vinci Surgical System (Sunnyvale, CA, USA) and opening of Gerota's fascia the kidneys were approach from



**Figure 1** Port placement in robotically assisted retroperitoneoscopic heminephrectomy. Green: 12-mm camera port. Yellow: 8-mm instrument port. Red: 5-mm assistant port.

behind and the ureters were dissected. The ureter of the upper pole was ligated and divided, the vessels to the upper pole identified and divided. By cranial traction of the upper pole's ureter, upper and lower pole were separated along the demarcation line between upper and lower pole. The upper pole ureter was then dissected as far as possible down to the bladder and divided. The upper pole and the ureter were removed through the 15-mm incision. Drains were inserted for 18 h in some cases.

## Results

In 12 out of the 14 patients the procedure could be performed with robotic assistance. In two patients the procedure had to be converted to an open procedure. In one of these patients the bleeding from the resection surface could not be controlled by the robotically assisted instrument; the blood loss in all other patients was minimal (<10 ml). The other patient was converted to open surgery due to a lack of progress, the upper pole being too large to be handled in the small

Download English Version:

<https://daneshyari.com/en/article/9375929>

Download Persian Version:

<https://daneshyari.com/article/9375929>

[Daneshyari.com](https://daneshyari.com)