Case Report

Access this article online
Website: www.afrjpaedsurg.org
DOI: 10.4103/0189-6725.125456
Quick Response Code:

# An unusual complication of ischemic injury to upper pole ureter during lower pole heminephroureterectomy

**Katherine Victoria Hurst, Ashok Daya Ram[1], Dragan Milanovic, Swe Lynn[2]**

## ABSTRACT

Lower pole heminephroureterectomy is a common paediatric urology procedure with few reported complications. We report a case of possible vascular ischemic injury to the normal remaining ureter following a lower pole heminephroureterectomy, probably due to both ureters sharing a common blood supply. Extra caution in such procedures is therefore warranted.

**Key words:** Complication, heminephroureterectomy, ischemia

## INTRODUCTION

Lower pole heminephroureterectomy is a well-established and common paediatric procedure often indicated in patients born with duplex kidney and a non-functioning or symptomatic moiety.[1,2] The procedure has only few reported complications: of which include an urinoma, urinary tract infection and/or vascular compromise in the moiety that remains.[3,4]

We report a further complication of possible vascular ischemic injury to the normal remaining upper pole ureter after lower pole heminephroureterectomy. As far as the authors are aware, it has not been reported in the English literature.

## CASE REPORT

A term male with antenatal diagnosis of left renal pelvic dilatation was confirmed to have left duplex kidney with marked dilated left moiety on a day 10 ultrasound scan. At four weeks of age a MCUG scan also diagnosed the patient to have grade five reflux into the lower moiety. DMSA scan at nine months demonstrated left kidney differential function of 35% with the lower moiety contributing 15% of the total left kidney function.

In light of these results, a standard open left lower pole heminephroureterectomy via loin incision was performed at the age of one. During the operation the upper left moiety and ureter were well visualised and preserved.

On day twelve post operation, the child was taken to theatre to drain an urinoma, which had been detected on ultrasound scan, and for an insertion of a JJ stent. At cystoscopy the JJ stent could not be inserted into the left ureteric opening and therefore left groin exploration was performed.

The left upper pole ureter had undergone atrophy with only a cord like structure remaining. The only explanation for this is ischemia of the upper pole ureter while removing the lower pole ureter, probably due to both ureters sharing a common blood supply.

The patient eventually underwent removal of the remaining left upper moiety after discussing various options with the parents and is consequently being followed up.

## DISCUSSION

A heminephroureterectomy is often indicated in children born with a duplex kidney in which one moiety is non-functional or symptomatic to the patient.[1,2] Although large amounts of research have attempted to compare laparoscopic and open surgery procedures, as of yet no long term studies have been conducted on laparoscopic cases therefore comparisons are difficult to draw.[5]

Department of Paediatric Surgery, University Hospital Wales, Cardiff, [1]Department of Paediatric Surgery, Birmingham Children's Hospital, Birmingham, [2]Department of Paediatrics, Bronglais General Hospital, Aberystwyth, Wales, UK

**Address for correspondence:**
Mr. Ashok Daya Ram,
Department of Paediatric Surgery, Birmingham Children's Hospital, Steelhouse Lane, Birmingham, B4 6NH, United Kingdom.
E-mail: ashokdram@hotmail.com

The literature however does show agreement on the common complications which arise post heminephroureterectomy. These being: urinoma, urinary tract infection and/or vascular compromise on the remaining moiety.[3,4] The case we report shows a further complication of ischemic damage to the remaining ureter after heminephroureterectomy.

The ureter has three distinct blood supplies: the proximal ureter receives its supply from the ureteric branch of the renal artery, the mid ureter is supplied by an anastomosis of the gonadal artery with branches from the common iliac, and the distal ureter gains supply from the inferior and superior vesical arteries. Venous drainage follows arterial supply.[6]

Variations in vasculature may occur in some patients. However, although it may not be possible to identify variations in the vascular supply during surgery, as trying to do so may induce injury, extra caution in such procedures is warranted.

## REFERENCES


1. Sakellaris G, Hennayake S, Cervellione RM, Dickson AP, Gough D. Outcome study of lower pole heminephrectomy in children. Scand J Urol Nephrol 2009;43:482-5.
2. Pearce R, Subramaniam R. Partial nephroureterectomy in a duplex system in children: The need for additional bladder procedures. Paediatr Surg Int 2011;27:1323-6.
3. You D, Bang JK, Shim M, Ryu DS, Kim KS. Analysis of the late outcome of laparoscopic heminephrectomy in children with duplex kidneys. Br J Urol Int 2010;106:250-4.
4. Jayram G, Roberts J, Hernandez A, Heloury Y, Manoharan S, Godbole P, *et al*. Outcomes and fate of the remnant moiety following laparoscopic heminephrectomy for duplex kidney: A multicenter review. J Pediatr Urol 2011;7:272-5.
5. Singh R, Wagener S, Chandran H. Laparoscopic management and outcomes in non-functioning moieties of duplex kidneys in children. J Paediatr Urol 2010;6:66-9.
6. Wood D, Greenwell T. Surgical anatomy of the kidney and ureters. Surgery 2010:28:314-6.


**Cite this article as:** Hurst KV, Ram AD, Milanovic D, Lynn S. An unusual complication of ischemic injury to upper pole ureter during lower pole heminephroureterectomy. Afr J Paediatr Surg 2013;10:384-5.

**Source of Support:** Nil **Conflict of Interest:** No conflict of interest