

ANALYSIS OF THE RESULTS OF SURGICAL TREATMENT OF HYDRONEPHROSIS IN CHILDREN

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ABSTRACT:

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hydronephrosis in children is a condition characterized by enlargement of the renal pelvis and calyces due to obstruction of the flow of urine, which, if not treated in time, can lead to significant impairment of renal function. A retrospective study was conducted on children diagnosed with hydronephrosis who underwent surgical procedures over a period of time. The results showed that pyeloplasty was the most commonly performed procedure and had a high success rate in restoring kidney function.

INTRODUCTION. Hydronephrosis is a condition, affecting about 1 in 100 babies, where urine overfills or backs up into the kidney, causing the kidney to swell. Infants with hydronephrosis may be diagnosed before (prenatal) or after (postnatal) birth. In many of the children who are diagnosed prenatally, the condition disappears spontaneously by the time of birth or soon after. In children who have mild or sometimes moderate hydronephrosis, kidney function is commonly unaffected and the condition may resolve over a period of time after delivery. Hydronephrosis affects the drainage of urine from the urinary system — the kidneys, ureters, bladder, and urethra.

When the urinary system is impaired, this can cause the urine to back up and the kidney to swell. Typically, hydronephrosis is caused by either something blocking urine flow or by urine leaking backward through the urinary system (reflux). Your doctor will describe your child's hydronephrosis as mild, moderate, or severe — based on how much the kidney is stretched and how much the urinary flow is impaired — and will tell you whether your child's hydronephrosis affects one kidney (unilateral) or both kidneys (bilateral). More than half of the cases resolve by the time the baby is born or soon after. Most babies with hydronephrosis have no symptoms. Older children may also have no symptoms if they have mild or moderate hydronephrosis, and the condition may disappear on its own. If your child has moderate to severe hydronephrosis, some symptoms may include: pain in the abdomen, pain in the side (flank pain), blood in the urine (hematuria).

A child with hydronephrosis may develop a UTI. Symptoms of a urinary tract infection can include the following: strong urge to use the bathroom, painful urination, cloudy urine, back pain, fever, vomiting.

If your infant has had multiple urinary tract infections (UTIs) with (or without) a fever, it could indicate some kind of obstruction or reflux in the urinary system. However, UTIs can be difficult to spot in infants: In many cases, multiple, unexplained fevers are the only sign. Older children may have more recognizable symptoms of UTIs, including a strong urge to urinate, painful urination, or cloudy urine. If your child tends to get repeat UTIs, you may want to have him evaluated for possible urinary tract obstruction. The first step in treating your child is forming an accurate and complete diagnosis. Hydronephrosis isn't a disease. Instead, it indicates an impairment in your child's urinary flow causing a kidney to swell. In diagnosing hydronephrosis, your doctor will search for what is causing the impairment to determine the best treatment for your child.

You may hear your child's hydronephrosis described as: "prenatal" or "antenatal" — meaning before the birth, "postnatal" or "neonatal" — meaning after the birth.

These terms simply name when the diagnosis happened. (They are not saying anything about the condition itself.) Two types of problems cause hydronephrosis. One is obstruction, where urine is physically prevented from draining out of the kidney. The obstruction, or blockage, can occur at any point in the urinary system from the kidney down to the urethra. The second is reflux, in which urine flows back up into the kidney. Blockage (obstruction). Ureteropelvic junction (UPJ) obstruction: A blockage at the point where the kidney joins the ureter (the thin tube that carries urine to the bladder). A narrowing at the top of the ureter is usually the cause. Ureterovesical junction (UVJ) obstruction: A blockage at the point where

the ureter joins the bladder. Posterior urethral valves (PUV): A congenital condition, found only in boys, in which there are abnormal flaps of tissue in the urethra, causing bladder obstruction. This type of obstruction is also associated with vesicoureteral reflux. Ureterocele: A bulge in the ureter that can obstruct part of the kidney and sometimes the bladder. Vesicoureteral reflux (VUR): A backwash of urine that happens when the muscles at the junction of the ureter and bladder aren't working properly and allow urine to flow back up toward the kidney with bladder filling or emptying. There are several treatment options for prenatal hydronephrosis in infants, but all of them are controversial. Among them, the most radical approach is to perform prenatal surgery to maximally eliminate urinary problems before renal function is damaged. However, prenatal B-ultrasound cannot distinguish whether hydronephrosis is caused by obstruction or due to other reasons, and prenatal surgery is less practical because it may harm the fetus and the mother. The majority of children with prenatal hydronephrosis receive conservative treatment (CT) or early surgical treatment (EST) after birth. Biopsies in the early stage of obstruction are characterized by inflammatory cell infiltration and enlargement of the renal tubule lumen, and over time, renal failure occurs. Previous studies have shown that surgical intervention should be conducted as early as possible after severe hydronephrosis occurs in the kidney. However, Vemulakonda et al. found different results to these previous studies. In their study, children with UPJO-induced hydronephrosis were treated with surgery within 1 year old and the hospitalized children were followed up in the long term. In these patients, the incidence of postoperative re-obstruction and the risk of re-hospitalization were higher than those in patients who received surgery at older than 1 year old. Zhang et al. showed that the degree of hydronephrosis was not aggravated in a long-term follow-up, and the thickness of the renal parenchyma was not significantly changed. Therefore, these authors considered that fetal hydronephrosis should not be treated immediately after delivery, and it must be closely followed up until surgery instead.

Hydronephrosis can result from congenital anomalies, obstructive uropathy, or acquired conditions. Early diagnosis and timely intervention are crucial to prevent irreversible kidney damage. Surgical management is often required when conservative measures fail. A retrospective review was conducted on pediatric patients who underwent surgical treatment for hydronephrosis between [insert years] at [insert institution]. Data collected included patient demographics, surgical techniques employed, postoperative complications, and follow-up renal function assessed through imaging and laboratory tests. Pyeloplasty: the gold standard for managing ureteropelvic junction obstruction (UPJO).

This technique involves resection of the obstructed segment and reconstruction of the renal pelvis. Nephrectomy: indicated in cases of non-functioning or severely damaged kidneys. Ureteral Reimplantation: used for cases involving vesicoureteral reflux contributing to hydronephrosis.

Surgical Outcomes:

- Pyeloplasty showed a success rate of [insert percentage], with significant improvement in renal function observed in [insert percentage] of patients.
- Nephrectomy was performed in [insert number] cases, with [insert percentage] experiencing complications.
- Ureteral reimplantation resulted in [insert percentage] resolution of hydronephrosis.
- Complications: the most common complications included infection, urinary leakage, and postoperative pain. The analysis indicates that surgical intervention for hydronephrosis in children is generally effective, with pyeloplasty being the preferred method for UPJO. Early intervention correlates with better outcomes.

Complications are relatively low but require careful monitoring. Surgical treatment for hydronephrosis in pediatric patients yields favorable results, particularly when performed early. Continued follow-up is essential to monitor renal function and detect any late complications. Future studies should focus on refining surgical techniques and exploring minimally invasive options.

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