

# Deflux®

The VUR advantage

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## NEW DEFLUX TREATMENT

*Helps Children with Urinary Reflux*

*By Scott P. Edwards*

**For** years, children affected by vesicoureteral reflux (VUR) were treated with long-term antibiotics or, in severe cases, surgery or they were left to out-grow the condition. Now, thanks to a new, minimally invasive treatment called Deflux, children are being cured of VUR before it can cause irreversible damage to their kidneys.

VUR, the backward flow of urine, can allow bacteria that would normally pass out of the body during urination to enter the kidney, causing infection, scarring or potentially irreversible kidney disease.

### **Causes and Diagnosis**

VUR occurs in about one percent of healthy children, with diagnosis typically occurring between birth and five years of age. Girls are about four times more likely than boys to have VUR. The condition appears to be inherited, as about one quarter of siblings of children with reflux also have the disorder. If a mother has been treated for VUR, as many as half of her children may also have the condition.

In most cases, VUR is caused by a congenital defect in the valve between one or both ureters and the bladder. Normally, the ureter tunnels

through the bladder wall. As it exits the bladder wall, the ureter is compressed, creating a flap valve that prevents urine from flowing back up the ureter toward the kidney.

“With retrograde urine flow,” says Kevin P. Moriarty, MD, a pediatric surgeon on staff at Baystate Medical Center, “the length of ureter within the bladder wall is so minimal that no valve exists, so urine flows back toward the kidney rather than out of the urethra.”

Other children, he says, may have VUR because of underlying problems such as lower urinary obstruction and a neurogenic bladder. Left untreated, VUR can lead to chronic kidney infections, renal scarring, high blood pressure, and in severe cases, kidney failure that requires dialysis or kidney transplantation.

Because there are no symptoms, VUR often goes undiagnosed until a child presents with a urinary tract infection. The condition is diagnosed with a test called a voiding cystourethrogram (VCUG), an X-ray of the bladder that uses a radioactive dye to determine if reflux is present. It can also be diagnosed prenatally using ultrasound. If reflux is found, a renal scan is conducted to look for any kidney damage.



### Grades of VUR

There are five grades of VUR which determine, in large part, the course of treatment. Grade 1 reflux is the mildest form and, says Dr. Moriarty, is considered “curable.” Grade 5 reflux is the most severe, characterized by massive reflux of urine up the ureter, which results in severe hydronephrosis and twisting of the ureter.

“Most children outgrow grades 1 through 2 VUR as the length of their ureter grows,” says Dr. Moriarty. “In the meantime, they are treated with prophylactic antibiotics unless there are repeated urinary tract infections or evidence of renal damage.”

For children with grades 2 through 4 VUR, a new technique called Deflux is becoming the treatment of choice. “I offer this treatment to parents of chil-

dren with reflux who do not want their child on antibiotics, but want an easier, minimally-invasive procedure to cure the reflux,” says Susan Glover, MD, a urologist on staff at Baystate Medical Center. “I provide the parents with cure-rate statistics, benefits of the procedure, and other treatment options. So far, parents have been pretty open to this alternative.”

Grade 5 reflux is most often treated successfully with “open surgical repair by retunneling the ureter into the wall of the bladder,” according to Dr. Glover.

### Deflux Treatment

For the past six years in Europe, doctors have treated VUR with Deflux®, a gel that is made up of two tissue-friendly polysaccharides called dextranomer and hyaluronic acid. Dextranomer has been used in wound treatment for

about 30 years, and hyaluronic acid is a naturally occurring substance in the body.

In patients with VUR, Deflux (which means “downward flow”) is injected endoscopically into the bladder wall, causing a mound of tissue to form a de facto valve that prevents urine from flowing backward out the refluxing ureteral orifice through the ureter. The Deflux bulge reduces the size of the ureteral opening into the bladder, but is small enough to allow urine to flow down into the bladder. Deflux is gradually replaced by the body’s own tissue.

With Deflux treatment, the VUR cure rate is about 80 percent in children with grades 2 through 4. Clinical studies have shown that in eight out of ten patients treated with Deflux, the reflux had disappeared or diminished

◀ Pediatric surgeons Drs. Richard Courtney (left) and Kevin Moriarty (right) have performed 22 Deflux procedures. “With four to six week follow-up,” says Dr. Moriarty, “we have seen no patients with obstructions. We’ve also seen improvement in a few patients with significant hydronephrosis.”

adequately five years after the procedure so that no further treatment was required.

“The operation is basically always successful,” says Richard A. Courtney, MD, a pediatric surgeon on staff at Baystate Medical Center.

The biggest downside to Deflux, the Baystate surgeons say, is that the patient must undergo general anesthesia for the 15 to 20 minute procedure. There are reports of discomfort during the first voiding after the procedure, but the pain resolves quickly. Fewer than one percent of patients develop an obstruction from having too much Deflux injected.

Allergic reactions are rare. “Basically,” says Dr. Moriarty, “the downsides to Deflux are minimal.”

Dr. Courtney says an ultrasound is performed four weeks after the procedure (or sooner if any symptoms occur) to

determine if there is urinary obstruction. A radionuclide VCUG is done at three months to check for the presence of reflux. If any is present, the procedure, which can be performed three times before traditional surgical intervention is required, is repeated.

Approved by the Food and Drug Administration nearly a year-and-a-half ago, Baystate Medical Center Chil-

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children’s Hospital began treating VUR patients with Deflux in June 2003. Drs. Courtney and Moriarty have performed 22 Deflux procedures. “With four to six week follow-up,” says Dr. Moriarty, “we have seen no patients with obstructions.

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improvement in a few patients with significant hydronephrosis.”

Currently VUR treatment is performed at only a handful of hospitals in the United States, with Baystate Medical

Center Children’s Hospital being the only hospital in western Massachusetts to offer this option. “For children who require surgical intervention to treat reflux, this is a much easier treatment option for them, versus traumatic surgery,” says Dr. Glover, who has treated six patients to date with the Deflux procedure.

“The bottom line,” says Dr. Moriarty, “is we don’t know how long it will take a child to outgrow VUR. The question is: do you wait for them to outgrow the condition and run the risk of kidney infections, or do you perform a 20-minute procedure with minimal downsides, high success rates, and low recurrence?”

To refer a patient, please call Drs. Moriarty or Courtney at (413) 734-3222 or Dr. Susan Glover at (413) 734-0677.