

More pediatric kidney patients are being treated with minimally invasive surgical techniques

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More children, like adults, are undergoing minimally invasive surgery for diseased kidneys, with most of the procedures being performed at teaching hospitals to treat non-cancerous conditions.

Those conclusions were reached in a unique study by researchers at Henry Ford Hospital who set out to fill a knowledge gap about the use of nephrectomy – the surgical removal of a diseased kidney – in the U.S. pediatric population.

Published online in *The Journal of Urology*, the research findings suggest that as practitioners become more familiar with the techniques of minimally invasive nephrectomy (MIN) in children, it will be used more often to avoid the potential complications of [traditional open surgery](#).

"At the time we began our research project, little was known about the usage of laparoscopic or robotic [kidney removal](#) in pediatric [patients](#), although many studies have been done about minimally invasive kidney surgery in adults," says Jack S. Elder, M.D., Chief of Pediatric Urology at Henry Ford's Vattikuti Urology Institute and senior author of the study. "As we expected, the use of MIN in children, like in the adult population, is on the rise."

The researchers studied 27,615 U.S. pediatric kidney patients who

underwent MIN or open nephrectomy (ON) between 1998 and 2010. The data was drawn from the Nationwide Inpatient Sample, the only hospital database in the U.S. with charge information on all patients regardless of payer, including those covered by Medicare, Medicaid, private insurance and the uninsured.

The study found:

- Although there has been a significant increase in the use of MIN for [pediatric patients](#), ON still accounts for more than 85 percent of their nephrectomies.
- Nephrectomy was most common in children from birth to age one (36 percent) and least common in children ages six to nine (14 percent).
- The majority of nephrectomies (73.8 percent) were for benign conditions, with only 2.2 percent of MIN procedures performed for malignancy.
- Removal of a malignant kidney was most common in 3- and 4-year-olds.
- MIN usage to treat children increased from 1.1 percent to 11.6 percent over the study period.
- The overwhelming majority of pediatric nephrectomies are being performed at urban, academic medical centers.

"Among adult patients, it can be argued that MIN is the current 'gold standard' for renal tumors requiring removal of the kidney," Dr. Elder says. "As these laparoscopic techniques were being developed, there was a substantial reduction in pain around the time of the operation, as well as decreased blood loss and length of hospital stay after MIN when compared to open surgery."

Dr. Jesse Sammon, lead author of the study, says his team's research suggests that while the use of MIN in pediatric [kidney](#) patients is

increasing, it is not the gold standard for treating [children](#) with malignancies because they have smaller open incisions than adults, and therefore suffer less pain and blood loss from the open approach.

"Consequently, there is less incentive for pediatric urologists to adopt the procedure, particularly when treating malignant conditions," Dr. Sammon says.

Provided by Henry Ford Health System

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