



# The kidney donors with nephrolithiasis: Is it safe?

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# Introduction

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Nephrolithiasis is a significant health concern that necessitates careful assessment when evaluating living kidney donor candidates due to its potential long-term effects on renal function. The lack of universally accepted standard guidelines for managing kidney donor candidates with a diagnosis of urinary stone disease is a notable gap in current practice.

In this retrospective analysis, we investigated the incidence of symptomatic urinary stone disease among kidney donors diagnosed with kidney stones during routine preoperative evaluations. These individuals were selected to donate based on our institutional nephrolithiasis algorithm.

# Method

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A retrospective chart review was conducted on kidney donors who underwent surgery between March 2007 and March 2017. We gathered demographic data, follow-up nephrology notes, and CT scan findings for kidney donors diagnosed with nephrolithiasis. All donors with a urinary stone detected on a CT scan were managed according to our institutional guidelines, as depicted in Figure 1.

# Kidney Donor Candidate with Kidney Stone

## Age < 50 Years Old

If the donor candidate has a kidney stone and one of the following, the kidney donation will be declined.

- A history of recurrent urinary stone disease
- Family history of nephrolithiasis
- Unilateral multiple small stones if the total sum of diameter of stones > 10 mm
- Unilateral solitary stone with a diameter > 5 mm
- Bilateral urinary stone disease

The donor candidates who have no family history of nephrolithiasis and no recurrent urinary stone disease should be evaluated with a metabolic analysis of 24-hour urine collection in the outpatient setting if they have one of the following conditions.

- Unilateral multiple small stones if the total sum of diameter of stones < 10 mm
- Unilateral solitary stone with a diameter < 5 mm

The donor candidates who were referred for metabolic analysis can donate only if

- He has no metabolic abnormality in his 24-hour urine collection
- He has only one metabolic abnormality, which can be managed with dietary measures/simple medical management

## Age > 50 Years Old

If the donor candidate has a kidney stone and one of the following, the kidney donation will be declined.

- A history of recurrent urinary stone disease
- Family history of nephrolithiasis
- Unilateral multiple small stones if the total sum of diameter of stones > 10 mm
- Unilateral solitary stone with a diameter > 10 mm
- Bilateral urinary stone disease

The donor candidates who have no family history of nephrolithiasis and no recurrent urinary stone disease should be evaluated with a metabolic analysis of 24-hour urine collection in the outpatient setting if they have one of the following conditions.

- Unilateral multiple small stones if the total sum of diameter of stones < 10 mm
- Unilateral solitary stone with a diameter between 5 – 10 mm

➤ The donor candidates who have no family history of nephrolithiasis and no recurrent urinary stone disease can donate if they have a solitary kidney stone with a diameter <5 mm.

- The donor candidates who were referred for metabolic analysis can donate only if
- He has no metabolic abnormality in his 24- hour urine collection
  - He has only one metabolic abnormality, which can be managed with dietary measures/simple medical management

**Figure 1. Selection criteria for kidney donation for the donor candidates with kidney stones.**

# Results

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Out of 1,444 donor nephrectomies, 48 patients (3.3%) were diagnosed with kidney stones from preoperative CT scans. Their mean age was  $45.9 \pm 11.7$  years, with 22 males (45.8%) and 26 females (54.2%). The mean BMI was  $26.5 \pm 4$ . Stones were located in the left kidney in 31 cases (64.5%) and the right kidney in 17 cases (35.5%). Only the kidneys with stones were donated, with an average stone diameter of  $3 \pm 1.7$  mm. Over an average follow-up of  $10.1 \pm 2.5$  years, no recurrences of kidney stones, stone passage, hematuria, or other urolithiasis symptoms were reported among these donors.

# Conclusion

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Several guidelines exist for the preoperative assessment of kidney donors with kidney stones; however, it is important to note that these guidelines lack evidence-based support. Additionally, data on the long-term effects of kidney donation in the presence of kidney stones is still limited. We believe that thorough preoperative evaluation and close postoperative follow-up are essential for ensuring the long-term safety of these donors.