# BARIATRIC SURGERY AND KIDNEY STONE DISEASE: AN EXPERIENCE OF AN ITALIAN BARIATRIC CENTRE OF EXCELLENCE

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# INTRODUCTION

The correlation between obesity and kidney stones is demonstrated by numerous epidemiological studies: the prevalence of urolithiasis is higher in obese (11.2%) and overweight patients (9.1%).


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REVIEW

## Obesity and kidney stone disease: a systematic review

Antonio CARBONE [1, 2], Yazan AL SALHI [1], Andrea TASCA [3], Giovanni PALLESCHI [1, 2], Andrea FUSCHI [1], Cosimo DE NUNZIO [4], Giorgio BOZZINI [5], Sandro MAZZAFERRO [6], Antonio L. PASTORE [1, 2] *

## Obesity and Its Impact on Kidney Stone Formation

William Poore, BS,[1] Carter J. Boyd, BS,[1] Nikhi P. Singh, BS,[2] Kyle Wood, MD,[2] Barbara Gower, PhD,[3] Dean G. Assimos, MD[2]
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KIDNEY DISEASES

## Obesity and the Risk of Developing Kidney Stones: A Systematic Review and Meta-analysis

Elham Emami,[1] Saeid Heidari-Soureshjani,[2] Atrin Oroojeni Mohammadjavad,[3] Catherine MT Sherwin[4]

Review

Obesity is associated with an increased excretion of solutes (mainly calcium, oxalates and sodium), and with a lower urinary pH, leading to stones formation. Calcium oxalate and uric acid stones are the most frequent types of stones seen in obese individuals and improper diet plays a main role in its pathophysiology.

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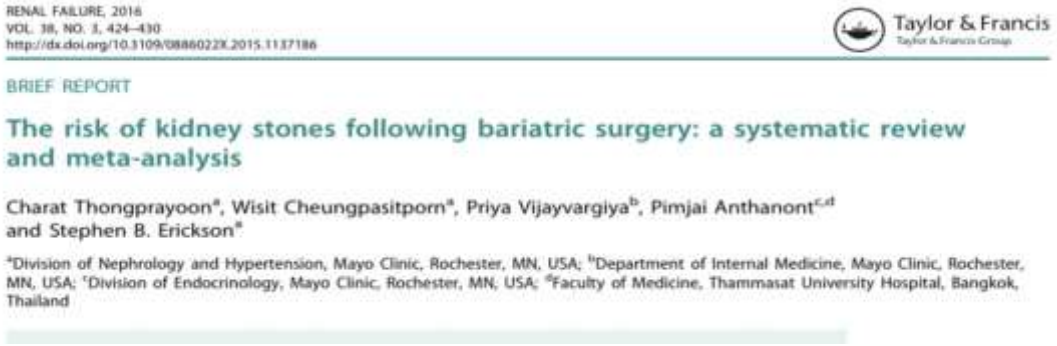
Bariatric Surgery allows a substantial weight loss, a reduction of mortality and a lower incidence of obesity-related comorbidities, but can lead to long-term complications such as urolithiasis, which is estimated to be increased of 7.6% in bariatric patients, and it is higher in malabsorptive procedures.



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Taylor & Francis

BRIEF REPORT

The risk of kidney stones following bariatric surgery: a systematic review and meta-analysis

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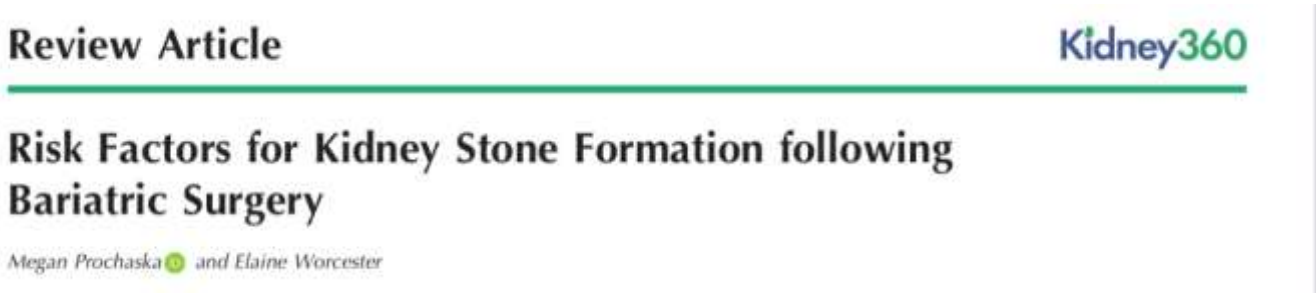

Review Article

Kidney360

Risk Factors for Kidney Stone Formation following Bariatric Surgery

Megan Prochaska and Elaine Worcester

The average time for urolithiasis to occur is 1.5 years after surgery.
Hyperoxaluria is the most frequent disorder in patients undergoing bariatric surgery: the underlying mechanism is not completely clear, but it is probably linked to nutrition imbalances, fat malabsorption and alteration of the intestinal microbiota.

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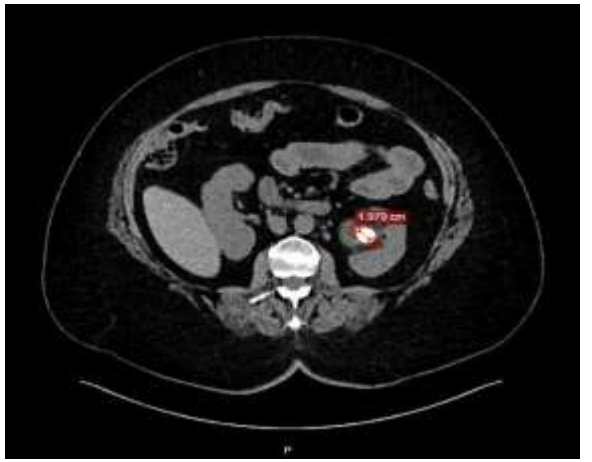
## MATERIALS AND METHODS:

The study was conducted by the Division of General-Bariatric Surgery and the Division of Urology of ICOT hospital, Latina, University of Rome "La Sapienza" between January and August 2022.

185 patients underwent nutritional assessment 1.5-2 years after bariatric surgery. Nutritional counselling was performed and anthropometric parameters (weight, height, BMI and %EWL) were measured. Previous urinary stone disease was excluded by evaluating the upper urinary tract through an abdominal ultrasound, performed one month before surgery;



patients found to have urinary crystals (25 patients – 13.5%) were sent to the Division of Urology to evaluate the possible presence of stones. Lithiasis was diagnosed through an abdominal CT without contrast.

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RESULTS

Kidney stone disease was described in 12 patients (6.49%) out of the 25 evaluated by the Division of Urology;

Mean age 45 years
BMI of 30.41
%EWL of 63.2
They were all female
Stone type was calcium oxalate in every patient

Of 12 patients, n.8 underwent SG, n.2 OAGB and n.2 RYGB.
The mean follow-up was 17.25 months after surgery.

| Study population | |
|---|---|
| N° | 12 |
| Age (Median) | 45 |
| Female/Male | 12/0 |
| EWL% | 63.2 |
| BMI (Kg/M$^2$) | 30.41 |

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# CONCLUSIONS

1. Despite the many benefits that can be reached, bariatric surgery can lead to long-term complications including an increased risk of kidney stones; from our survey, 6.49% of patients presented lithiasis.

2. The majority of these patients underwent SG, which is the most performed bariatric procedure worldwide, and may bring to an inadequate fluid and calcium intake, both implicated in pathogenesis of urinary stone disease.

3. The presence of a registered dietician appropriately trained may be crucial in the prevention of this pathology by evaluating the assumption of water and calcium in patients undergoing bariatric surgery.

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**Figure 2.** Dietary recommendations for BS patients to prevent the risk of stone formation and to reduce recurrence for those who already had stones before the surgery.

*nutrients* MDPI

*Review*

**Dietary Recommendations for Bariatric Patients to Prevent Kidney Stone Formation**

Milene S. Ormanji [1,†], Fernanda G. Rodrigues [1,2,†] and Ita P. Heilberg [1,2,*]

# TAKE HOME MESSAGE

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