

# Subcutaneous Ureteral Bypass (SUB)

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## What is subcutaneous ureteral bypass?

The ureter is a tube that normally connects the kidney to the bladder. A subcutaneous ureteral bypass (SUB) device is designed to maintain the flow of urine from the kidney to the bladder when the ureter becomes obstructed. An obstruction can occur secondary to ureteral stones, trauma, strictures (scarring or narrowing), cancer, and sometimes infection (e.g. pyelonephritis). A SUB is placed surgically through the abdomen. Fluoroscopic imaging is used to guide placement.

The SUB device effectively bypasses an obstructed ureter. It consists of two tubes (also known as catheters) connected by a port. One catheter connects to the kidney and the other to the bladder. The port sits below the skin and allows urine to be sampled in a minimally invasive fashion. Urine flows through each catheter and, therefore, passes from the kidney to bladder bypassing the ureter.



*The X-Ray above shows a SUB device between the kidney and bladder. The arrow points to the port below the skin. The image to the right is of a SUB device.*



## Subcutaneous ureteral bypass vs. stent?

A urinary stent is a device that is placed within the lumen of the ureter (the tube between kidney and bladder). It is designed to both create a new “tunnel” and cause passive ureteral dilation allowing flow of urine from the kidney into the urinary bladder. Your veterinarian will help you decide what is best for your pet.

## Is subcutaneous ureteral bypass placement urgent?

The most common indication for a subcutaneous ureteral bypass (SUB) is ureteral stones. When stones obstruct the ureter irreversible kidney damage can rapidly occur. In one study, after one week of obstruction, kidney function was reduced permanently by 35 percent. After two weeks of obstruction, kidney function was permanently reduced by 54 percent. Therefore, if indicated, placement of a SUB or ureteral stent is relatively urgent.

In 98 percent of cats and more than 50 percent of dogs, the ureteral stones are composed of calcium oxalate, which will not dissolve medically.

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## What is the advantage of a subcutaneous ureteral bypass over traditional surgery?

Subcutaneous ureteral bypass offers less potential risk of complications compared to ureteral surgery (such as ureterotomy and neoureterocystomy). It also can be performed much quicker than traditional surgery. This translates into benefits for the kidneys and the patient.

## Is it permanent?

Yes, a subcutaneous ureteral bypass is a permanent device and is not typically removed.

## What are the complications?

Like any surgical procedure, subcutaneous ureteral bypasses are not without potential complications. Some of these include procedural complications (e.g. urine leakage) as well as short- and long-term complications (such as dislodgement, obstruction, and recurrent urinary tract infection).