GETTING IT RIGHT FIRST TIME

THE BRITISH ASSOCIATION OF UROLOGICAL SURGEONS

Urinary Calculus Removal (including PCNL)

Coder guidance on procedure coding

GIRFT Clinical coding team

Oral surgery GIRFT Coding working group

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Contents

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What is this document for?

The purpose of this document is to provide supplementary information to help coders gain a better understanding of the nature of procedures to treat urinary calculus and codes that most accurately describe them, together with why and how procedures are performed. It also provides examples of different medical terms that may be used by medical professionals in a patient's medical record.

Understanding the relevant disease process and related procedures assists clinical coders to assign codes accurately and consistently in accordance with the national clinical coding standards. The information contained within this document is produced by the GIRFT clinical coding team in collaboration with the BAUS Audit Steering Group.

All clinical codes used in this guidance are taken from **OPCS-4.10** which are valid from April 2023.

What is this document not for?

This document does not cover the coding process in detail and does not cover specific index trails or national standards. The code examples do not replace or contravene national coding standards.

Included

Procedures to treat calculus of the upper urinary tract (kidney and ureter).

Not included

Procedures to treat calculus of bladder and urethra.

Any questions regarding the information within this document should be directed to

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Queries relating to the application of ICD-10 and OPCS-4 classifications codes and the national clinical coding standards should be directed to information.standards@nhs.net.

Diagnosis

Urinary calculus is the formation of calcium deposits (stones) in the urinary tract. The kidney and the ureters (together making up the upper urinary tract) are the most common sites for calculus formation and are the focus of this document. Calculi may also form in the bladder and urethra but the treatments for these are not included in this document.

Main diagnosis codes for upper urinary calculus

Table 1: ICD-10 codes in N20 for calculus of kidney and ureter

ICD-10 code	ICD-10 code definition
N20.0	Calculus of kidney
N20.1	Calculus of ureter
N20.2	Calculus of kidney with calculus of ureter
N20.9	Urinary calculus, unspecified

Codes from N20.- are the main codes used for calculus but there are some alternatives. The most common reason when a code from N20.- will not be used for upper urinary calculus is hydronephrosis. Congenital urinary calculus is also coded differently.

Table 2: Other diagnosis codes for urinary calculus

ICD-10 code	Diagnostic term
Q63.8	Calculus kidney congenital
N13.2	Calculus urinary with hydronephrosis
N13.6	Calculus urinary with hydronephrosis with infection

The above diagnosis code examples cover the most common circumstances but are not a complete list. Coders should always use all of the available information to them and follow the appropriate index trail to arrive at the correct diagnosis code.

Kidney calculus

Kidney calculus can develop at a range of sites around the kidney and associated terms may include the following:

- Kidney
- Renal
- Renal pelvis
- Renal diverticulum
- Calyceal/calyx
- Pelvi-ureteric junction (PUJ) – junction between the renal pelvis and the ureter
- Staghorn

The terms “calyceal” or “calyx” indicate a stone in the kidney, as does a calyceal diverticular stone. A diverticular stone, when noted in the medical record, may indicate either a calyceal diverticular stone or one that has specifically formed in the bladder diverticulum. The calyx is the funnel shaped area leading to the ureter. A staghorn, or partial staghorn stone are also types of calculus that develop in the kidney, taking on the shape of the renal pelvis and calyces resulting in their characteristic shape and name.

Ureteric calculus

There are a variety of terms that can be used to describe ureteric calculus, including the following:

- Ureteric
- Ureteral
- Proximal ureter
- Distal ureter
- Vesico-ureteric junction (VUJ)

The terms “proximal” and “distal” are often used to refer to parts of the ureter and are sometimes used in isolation. When used to refer to a urinary calculus, proximal and distal refer to the ureter even if the word ureter is missing. “VUJ” or “vesico-ureteric junction” refers to part of the ureter.

Code N20.2 should be used when there are two or more sites of calculi in the upper urinary tract and where at least one is a kidney calculus and at least one is a ureteric calculus.

Factors which cannot be captured using diagnosis codes

In accordance with NICE guidance, clinicians consider multiple factors when planning treatment. Two factors cannot be coded:

- Size of the calculus (in millimetres)
- Age of the patient

The ICD-10 diagnosis codes do not capture the size of the calculus and are not affected by age. There is a patient age data item in the Hospital Episode Statistics (HES) dataset that can be used instead.

Relevant comorbidities

Comorbidities that are clinically relevant for urinary calculus (when they are still current) include:

- Hypertension
- Diabetes

- Obesity
- Gout
- Crohn’s disease
- Cystic fibrosis
- Hyperparathyroidism
- Sarcoidosis
- Renal tubular acidosis
- Cystinuria

High risk anatomical factors

There are some anatomical factors which increase the risk of urinary calculus. These include inherited and acquired conditions and some previous surgeries:

- Ileal conduit (the presence of ileal conduit)
- Transplanted kidney
- Pelvi-ureteric junction (PUJ) obstruction
- Horseshoe kidneys
- Medullary sponge kidney disease
- Neuropathic bladder (including due to spina bifida, cerebral palsy and spinal injury)
- Calyceal diverticulum
- Ureteric stricture
- Obesity bypass surgery

Treatment options for upper urinary calculus

There are three main treatments used in the management of calculi of the kidney and ureter:

1. Shockwave lithotripsy (SWL)
2. Ureteroscopic removal
3. Percutaneous nephrolithotomy (PCNL)

All three methods can be used to remove calculi of the kidney and ureter. The site of the calculus affects the diagnosis and procedures codes. Further methods described in more detail below are:

- Laparoscopic approach for kidney calculus removal
- Open stone removal
- Stent insertion

There are two alternative surgical procedures for the treatment of bladder stones (not covered in this document):

- Endoscopic litholapaxy
- Open extraction

In 2019, NICE published guidelines on the treatment of renal and ureteric stones, focussing on lithotripsy, ureteroscopy (ureterorenoscopy, URS) and PCNL. Open surgery and laparoscopic surgery were excluded as they are rarely performed.

The main page for NICE guidance on managing renal and ureteric stones is as follows:

https://www.nice.org.uk/guidance/ng118

Shockwave lithotripsy

The procedure codes for Shockwave lithotripsy (SWL) are very straightforward. Extracorporeal shockwave lithotripsy (ESWL) is a brand name that is commonly used for all non-invasive lithotripsy using soundwaves (shockwave lithotripsy, extracorporeal shockwave therapy, ESWT). Shockwave therapy can also be used to treat other conditions such as calculi of other sites and some musculoskeletal problems.

SWL would normally be performed with the patient awake in an outpatient or day case setting. Oral or intravenous (IV) analgesia is commonly used, occasionally light sedation and rarely general anaesthesia (GA), except in the paediatric setting where GA is more common.

SWL is often performed by a radiographer or ultrasonographer. The clinical record often involves the use of a template or pro forma, and would include information about the analgesia used, stone position, method of stone targeting (x-ray screening or ultrasound), and the number of shocks delivered.

Table 3: Procedure codes for ESWL

Code	Code definition
M14.1	Extracorporeal shock wave lithotripsy of calculus of kidney
M31.1	Extracorporeal shockwave lithotripsy of calculus of ureter

Ureteroscopic removal

There is slight variation in the terms used to describe the instrument used to perform ureteroscopic calculus removal. The precise term used does not influence code assignment - they are all ureteroscopic removal (as opposed to percutaneous calculus removal).

These terms are all used for ureteroscopic calculus removal:

- Ureteroscope
- Ureterorenoscope (URS)
- Flexible ureterorenoscope
- Retrograde intrarenal surgery (RIRS)

Urologists can be inconsistent with their use of this terminology and frequently just write flexible ureteroscope, fURS or URS – this does not affect or alter the procedure codes assigned. A flexible ureteroscope can be used to remove ureteric and renal calculus; a rigid ureteroscope can be used only for ureteric calculus removal.

The procedure normally starts with a diagnostic cystoscopy, an integral part of these procedures and not coded separately. URS is performed from below the calculus (retrograde to the flow of urine), via the urethra, with no external incision.

The principle of not coding a standard diagnostic investigation that precedes a therapeutic operation is valid here. An additional code should not be assigned for diagnostic cystoscopy when it immediately precedes calculus removal using a ureteroscope.

Table 4: Example procedure codes for ureteroscopic removal of ureteric calculus (flexible ureteroscope, fragmentation, bilateral)

Code	Code definition
M27.2	Ureteroscopic fragmentation of calculus of ureter NEC
Z94.1	Bilateral operation

Table 5: Example procedure codes for ureteroscopic removal of kidney calculus (flexible ureteroscope, laser, right kidney)

Code	Code definition
M07.1	Ureteroscopic laser fragmentation of calculus of kidney
Z94.2	Right sided operation

Percutaneous nephrolithotomy (PCNL)

The principal determinant for code assignment is that the instruments are inserted percutaneously, i.e. through the skin. A percutaneous nephrolithotomy (PCNL) procedure normally starts with a diagnostic cystoscopy using a cystoscope. This is considered an integral part of these procedures and is not coded separately. A percutaneous (the "PC" part of PCNL) approach is from above the calculus (antegrade to the flow of urine) using a track made through the skin (percutaneous) into the kidney. A temporary sheath is normally placed to secure the track through the skin during the calculus removal.

PCNL is performed by puncturing the skin with a needle, always under x-ray or ultrasound guidance, passing a wire into the kidney, dilating the track up with serial dilators or a balloon dilator and placing a sheath over the dilator to secure the track. Once the sheath is deployed the urinary tract can be accessed using a scope, normally a nephroscope.

Table 6: Example procedure codes for PCNL (ultrasound fragmentation, x-ray guidance, right kidney)

Code	Code definition
M09.1	Endoscopic ultrasound fragmentation of calculus of kidney
Y53.1	Approach to organ under radiological control
Z94.2	Right sided operation

Table 7: Example procedure codes for percutaneous ureteric calculus removal (nephroscope, laser, ultrasound guidance, left)

Code	Code definition
M26.1	Nephroscopic laser fragmentation of calculus of ureter
Y53.2	Approach to organ under ultrasonic control
Z94.3	Left sided operation

Warning to clinical coders about terminology

PCNL is usually performed using a nephroscope, which is inserted through the sheath which has been inserted percutaneously. A flexible nephroscope may be used to reach stones around corners. A flexible cystoscope is very similar in design to a flexible nephroscope so urologists may have (in the past) used a cystoscope for this purpose (through the PCNL sheath). Using a cystoscope for PCNL is now obsolete. Sometimes a flexible ureterorenoscope may also be inserted through the sheath (i.e. percutaneously, nephroscopic approach) to reach stones in the kidney or ureter.

The correct OPCS procedure codes are defined by the approach (in this case percutaneous and endoscopic) rather than the name of the device used. When a percutaneous, antegrade approach to kidney or ureteric calculus is used, the procedure codes for percutaneous, nephroscopic calculus removal should be used.

The three main factors affecting code assignment are:

1. approach
2. location of the calculus
3. removal technique

Variations on PCNL technique

There is a range of PCNL procedure subtypes including: mini-PCNL/mini-Perc; ultra-mini PCNL; micro-PCNL; tubeless PCNL.

There are no specific codes for these variations and there is no effect on code assignment.

Patient position

From April 2023 it is possible to record “prone position” for a patient because there is a new OPCS-4 code for it:

O48.1 Prone positioning of patient

Code O48.1 is from the new extended category, linked to the principal category Y73 Facilitating operations.

Clinicians are interested in capturing prone positioning for PCNL procedures, and coders should use code O48.1 when prone position is recorded.

Laparoscopic approach for kidney calculus removal

A laparoscopic approach is rarely used for urinary calculus removal but would be clear in the medical record and a laparoscopic approach code would be used. They are not included in the NICE guidelines for upper urinary calculus but a small number are being performed, often for unusual cases. Laparoscopic surgery may be conventional laparoscopy or robot-assisted laparoscopy (which would change the Y code used for the approach).

During the laparoscopic procedure the peritoneal space or retroperitoneal space is filled with gas, and a few small ports are inserted through the skin, to give instruments access to the ureter or kidney. The ureter or kidney is mobilised, the ureter or renal pelvis is opened and the stones extracted. The opening is then closed, usually with a suture, and a ureteric stent may be inserted.

Table 8: Example of OPCS-4.10 codes for kidney calculus removal using a laparoscopic approach

Code	Code definition
M06.1	Open removal of calculus from kidney
Y75.2	Laparoscopic approach to abdominal cavity NEC
Z94.3	Left sided operation

Open stone removal

Open surgery is not usually performed for removal of a ureteric stone but would involve a skin incision, mobilising the ureter, opening it and removing the stone.

Open kidney stone surgery historically included open nephrolithotomy and open pyelolithotomy. This was usually performed via a loin incision for a very large staghorn stone, and the kidney would be accessed via the cortex (nephrolithotomy) or the renal pelvis (pyelolithotomy).

Cystoscopic calculus removal

Cystoscopic removal of *bladder* calculus is common. Cystoscopic removal of calculus of ureter (or kidney) is obsolete and never carried out.

Stent insertion

A stent may be inserted to relieve a blockage caused by a ureteric stone. It is preferable to remove the stone in the first instance, but this may not be possible due to infection, a tight ureter or for logistical reasons (e.g. access to theatre lists and surgeons).

Stents are also commonly, but not universally, inserted at the end of a ureteroscopy or PCNL procedure where the calculus has been successfully treated. This ensures that the ureter does not swell up and obstruct urine flow following the procedure. Stents may also be used in the longer term for blockages caused by scarring (stricture) or extrinsic compression of the ureter.

Whenever a stent remains in the patient following a calculus procedure the stent insertion should be coded as part of the procedure.

Common procedures for different sites and approaches

Kidney

- Lithotripsy – extremely common
- Flexible ureterorenoscopy – very common
- PCNL – common

Ureter

- Ureteroscopy – very common
- Lithotripsy – common
- PCUL/ nephroscopic treatment of calculus of ureter (codes in M26) – rare

Bladder

- Cystoscopic – very common
- Endoscopic litholopaxy (cystolitholopaxy) – less common
- Open removal of bladder stone - rare

Methods of calculus removal

- Crushing
- Laser
- Ultrasound
- Electrokinetic lithotripsy (EKL)
- Shockwave lithotripsy (extracorporeal)
- Basket removal
- Forceps removal

Approaches for calculus removal

- Open
- Laparoscopic
- Ureterorenoscopic
- Percutaneous (nephroscopic)

Terminology that distinguishes calculus removal methods

Ureteroscopy methods

- Laser fragmentation is by far the most common technology used for breaking up a stone.
- Electrokinetic lithotripsy (EKL) is rarely used.
- Small stones or stone fragments may be removed with a basket or grasping forceps.

PCNL methods

- PCNL (of kidney or ureter) will always be described as percutaneous. The term “percutaneous stone removal” means that a PCNL has been performed. The site of the calculus still needs to be known to assign accurate codes for diagnosis and procedure.

- For PCNL, an ultrasound (US) lithoclast is commonly used, as is electrokinetic lithotripsy (EKL). Laser is also frequently used for PCNL.
- There are various proprietary devices which include combinations of these technologies and clinicians may use trade names in patient records. It is important for coders not to assume what has happened during a particular procedure based on the capabilities of a device.
- Graspers or baskets are also commonly used to retrieve the fragmented stones. This would not be coded in addition to the main technique.

Approaches and types of minimally invasive procedures

Lithotripsy (extracorporeal shockwave lithotripsy) is the most performed stone treatment. It is normally performed as a day case and works well for small stones. Stone location determines the procedure code for shockwave lithotripsy (there are two procedure codes, one for kidney and one for ureter).

If surgery is decided upon, ureteroscopy would normally be performed for stones in the ureter.

For smaller stones in the kidney, ureteroscopy is usually the favoured surgical approach – most often a flexible ureterorenoscopy and laser stone fragmentation.

For larger stones in the kidney (usually greater than 2cm) a PCNL is the NICE recommended standard treatment.

Laterality

Laterality is important. It is possible to perform unilateral and bilateral calculus extractions.

It is important to code the laterality accurately every time as analysing repeat surgery rates relies on the procedure codes and laterality codes. It is not possible to differentiate recurrent urinary calculus using ICD10 diagnosis codes, so analysis relies on recorded procedure codes in HES.

If the laterality is omitted or recorded incorrectly, then repeat surgery on the same site will be misreported. Repeat surgery rates are an important measure of quality and can be used to assess and compare the long-term outcomes of particular techniques.

Summary of factors affecting procedure code assignment

The following factors will affect procedure code assignment:

- Method of calculus removal
- Site of the calculus
- Approach
- Image control
- Stents remaining in the patient after the procedure
- Laterality
- Prone patient position

Summary of factors not affecting procedure code assignment

The following factors will **not** affect procedure code assignment:

- Incision type: mini-PCNL; mini-Perc; ultra-mini PCNL; micro-PCNL; tubeless PCNL
- Type of ureteroscopy (flexible, ureterorenoscope, semi-rigid)
- Diagnostic cystoscopy at the beginning of the procedure
- Sheaths and stents which are removed at the end of the procedure
- Size of stone
- Age of patient

Main Procedure Codes 1: Endoscopic calculus removal codes

Table 9: Endoscopic calculus removal codes for percutaneous nephroscopic approach

Site of calculus	Method	Code	Code definition
Kidney	ultrasound fragmentation	M09.1	Endoscopic ultrasound fragmentation of calculus of kidney
	electrohydraulic shockwave fragmentation	M09.2	Endoscopic electrohydraulic shockwave fragmentation of calculus of kidney
	laser fragmentation	M09.3	Endoscopic laser fragmentation of calculus of kidney
	extraction; lithotomy	M09.4	Endoscopic extraction of calculus of kidney NEC
Ureter	laser fragmentation	M26.1	Nephroscopic laser fragmentation of calculus of ureter
	non-laser fragmentation	M26.2	Nephroscopic fragmentation of calculus of ureter NEC
	extraction; lithotomy	M26.3	Nephroscopic extraction of calculus of ureter
	stent insertion	M26.4	Nephroscopic insertion of tubal prosthesis into ureter

Table 10: Endoscopic calculus removal codes for ureteroscopic retrograde approach

Site of calculus	Method	Code	Code definition
Kidney	laser fragmentation	M07.1	Ureteroscopic laser fragmentation of calculus of kidney
	extraction; lithotomy	M07.2	Ureteroscopic extraction of calculus of kidney NEC
Ureter	laser fragmentation	M27.1	Ureteroscopic laser fragmentation of calculus of ureter
	non-laser fragmentation	M27.2	Ureteroscopic fragmentation of calculus of ureter NEC
	extraction; lithotomy	M27.3	Ureteroscopic extraction of calculus of ureter

Main Procedure Codes 2: Other calculus procedure codes

Table 11: Procedure codes for removal of calculus from the ureter

Approach	Method	Code	Code definition
Percutaneous	Stent insertion, plastic	M33.2	Percutaneous insertion of plastic stent into ureter
Ureteroscopic	Stent removal	M27.5	Ureteroscopic removal of ureteric stent
	Dilation	M27.7	Ureteroscopic dilation of ureter
Cystoscopic	Stent insertion	M29.2	Endoscopic insertion of tubal prosthesis into ureter NEC
	Stent removal	M29.3	Endoscopic removal of tubal prosthesis from ureter
Extracorporeal	Shockwave; ESWL	M31.1	Extracorporeal shockwave lithotripsy of calculus of ureter

Table 12: Procedure codes for removal of calculus from the kidney

Approach	Method	Code	Code definition
Laparoscopic	Endoscopic removal; laparoscopic surgical extraction	M06.1 + Y75.2	Open removal of calculus from kidney Laparoscopic approach
Open	Open removal	M06.1	Open removal of calculus from kidney
Extracorporeal	Shockwave; ESWL	M14.1	Extracorporeal shock wave lithotripsy of calculus of kidney

Appendix – Organisations referenced in this document

GIRFT

Getting It Right First Time (GIRFT) is a national programme designed to improve the treatment and care of patients through in-depth review of services, benchmarking, and presenting a data-driven evidence base to support change.

The programme undertakes clinically led reviews of specialties, combining wide-ranging data analysis with the input and professional knowledge of senior clinicians to examine how things are currently being done and how they could be improved.

Working to the principle that a patient should expect to receive equally timely and effective investigations, treatment, and outcomes wherever care is delivered, irrespective of who delivers that care, GIRFT aims to identify approaches from across the NHS that improve outcomes and patient experience, without the need for radical change or additional investment.

GIRFT is part of an aligned set of programmes within NHS England. The programme has the backing of the Royal Colleges and professional associations and has a significant and growing presence on the Model Health System (Model Hospital) portal, with its data-rich approach providing the evidence for hospitals to benchmark against expected standards of service and efficiency.

NHS Digital Terminology and Classifications Delivery Service

The NHS Digital Terminology and Classifications Delivery Service produce and publish the National Clinical Coding Standards in England for the WHO International Statistical Classification of Diseases (ICD-10) and UK OPCS-4 Classification of Interventions and Procedures (OPCS-4) to ensure compliance with these information standards. All Admitted Patient Care episodes, using the information in the patient's medical record, are coded using the current releases of the ICD-10 and OPCS-4 classifications and the National Clinical Coding Standards.

BAUS

The British Association of Urologists (BAUS) is a membership organisation and registered charity which promotes the highest standard in urology for the benefit of patients. 97% of all practising consultant urologists in the UK are members of BAUS.
The BAUS Audit Steering Group (ASG) provides leadership and strategic oversight across all data and audit activity within BAUS, and works in partnership with national programmes for Quality Improvement such as GIRFT, NCIP and urological patient charities. It provides the clinical input into GIRFT coding guidance for urological procedures, to improve the accuracy of urology data underpinning Model Hospital and NCIP, and promotes active engagement by clinicians with their Trust coding departments to improve urology coding locally as a collaborative venture.