



VI Jornadas Interhospitalarias de Urólogos de Extremadura



Angel D. Urbina Lima
UROLOGÍA



urbinalimauro@gmail.com



@drurbinalima





Endourología con material limitado.

¿Donde está el límite?

Tecnología:



- Endourología es una rama de la especialidad en estrecha relación con la tecnología y sus avances.
- La tendencia es a la continua miniaturización de los instrumentos quirúrgicos y sus componentes.
- NO olvidar otras alternativas menos invasivas pero eficientes como LEOC.





Costos



Costos:



- Principal desventaja de URSf desechable es su adquisición (1500\$) vs. reparación de URSf reutilizables (958\$).
- Ureteroscopio flexible desechable (2852\$) vs. URSf reutilizable (2799\$).
- Tomar en cuenta la huella ecológica del material desechable.





Urology
Available online 15 July 2021
In Press, Corrected Proof



Health Services Research

Cost-effectiveness of Retrograde Intrarenal Surgery, Standard and Mini Percutaneous Nephrolithotomy, and Shock Wave Lithotripsy for the Management of 1-2cm Renal Stones

Kevin M. Wymer¹, Vidit Sharma^{1,2,4}, Instan Juvet¹, Dane F. Klett¹, Hjan J. Borah², Kevin Koo¹, Marcelino Rivera², Deepak Agarwal², Mitchell R. Humphreys², Aaron M. Potretzke^{1,3,4}

NLP: 5940\$(o más). RIRS: 4549\$. LEOC: 3384\$.



¿Instrumental básico?



Material es mínimos:



- ***Ureteroscopia semirrígida:***

- Mesa quirúrgica radiotransparente.
- Irrigación salina.
- Ureteroscopio 7.5/9.5 o similar.
- Material para extracción litiásica.
- Sistema de fragmentación litiásica (preferiblemente láser Holmium >10W).
- Guía de trabajo y/o de seguridad.
- Fluoroscopio y/o ecógrafo (opcional).
- Contraste iodado.



Materiales mínimos:



- **URS flexible (RIRS):**
 - Ureterorenoscopio flexible (desechable o inventariable).
 - Vaina de acceso ureteral.
 - Sistema de irrigación o jeringa luer lock de 60cc.
 - Resto de material necesario para la URS semirrígida.

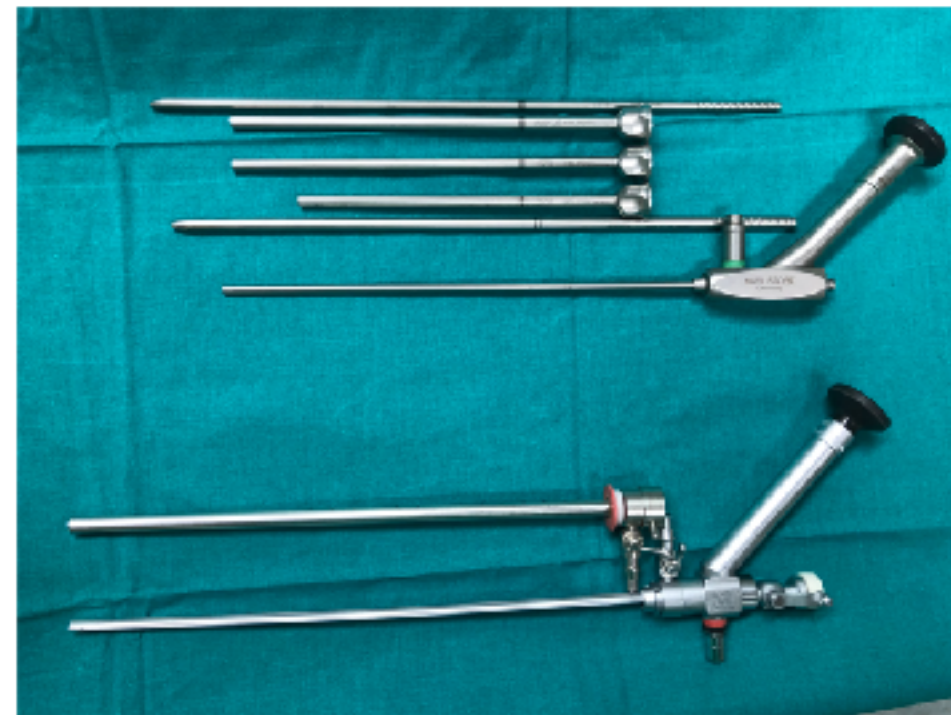


Materialos mínimos:



- ***NLP percutánea:***

- Mesa quirúrgica radiotransparente.
- Irrigación salina.
- Fluoroscopio.
- Nefroscopio.
- Cistoscopio flexible.
- Dilatadores metálicos.
- Vaina de Amplatz.
- Instrumentos para extracción litiásica.
- Litotriptor neumático o láser.
- Contraste iodado.





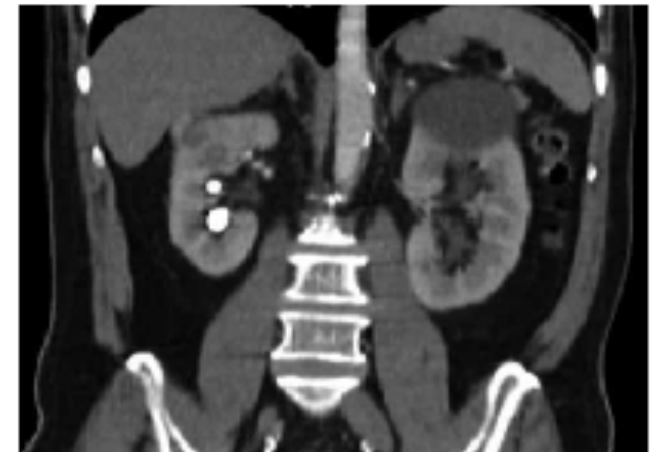
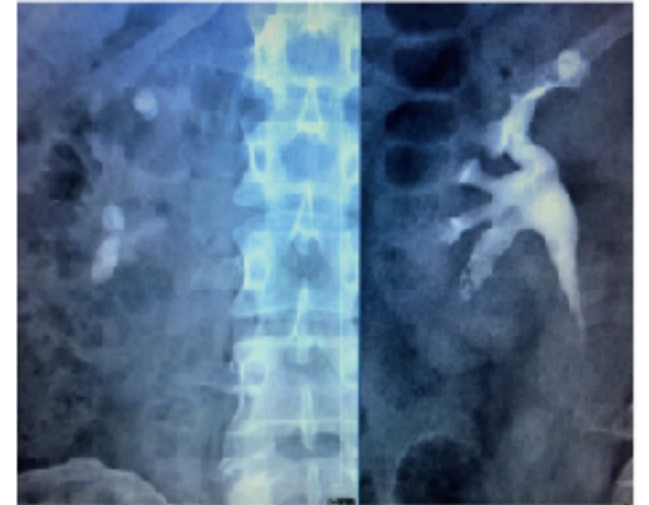
Correcta planificación = prevención de problemas



Planificación quirúrgica



- Anamnesis.
- Exploración física.
- Analíticas.
- Urocultivo.
- Pruebas de imagen:
 - * Rx de abdomen.
 - * Ecografía.
 - * UIV.
 - * Pielografía ascendente o descendente.
 - * **UroTC.**



Prevención de complicaciones o problemas:



Figure 3.1: Treatment algorithm for ureteral stones (if active stone removal is indicated)

EAU Guidelines on
Urolithiasis

C. Park (Chair), A. Bellón,
A. Partl, C. Teo, A. Sotnikoff (Chair), R. Sacco,
S. Thaler, S. Gombosi (Consultant nephrologist),
S. Gombosi (Consultant nephrologist),
S. Gombosi (Consultant nephrologist),
S. Gombosi (Consultant nephrologist)

© European Association of Urology 2021

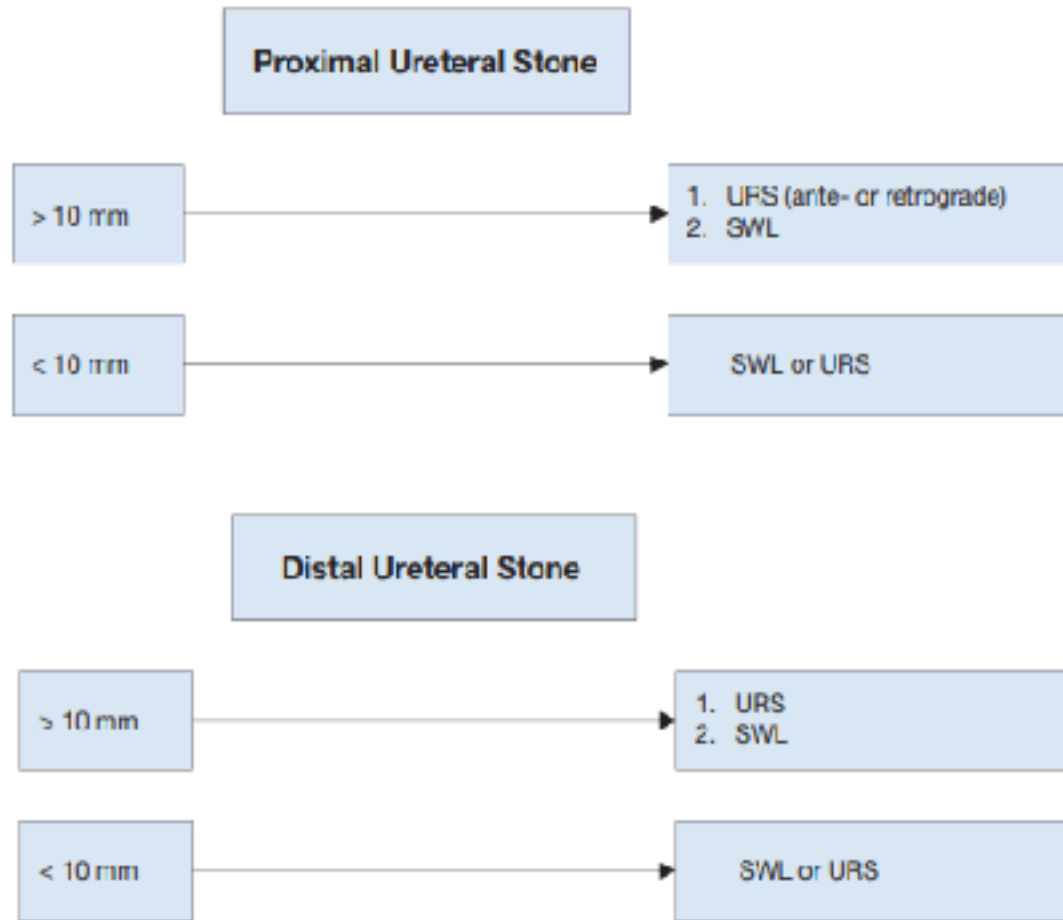
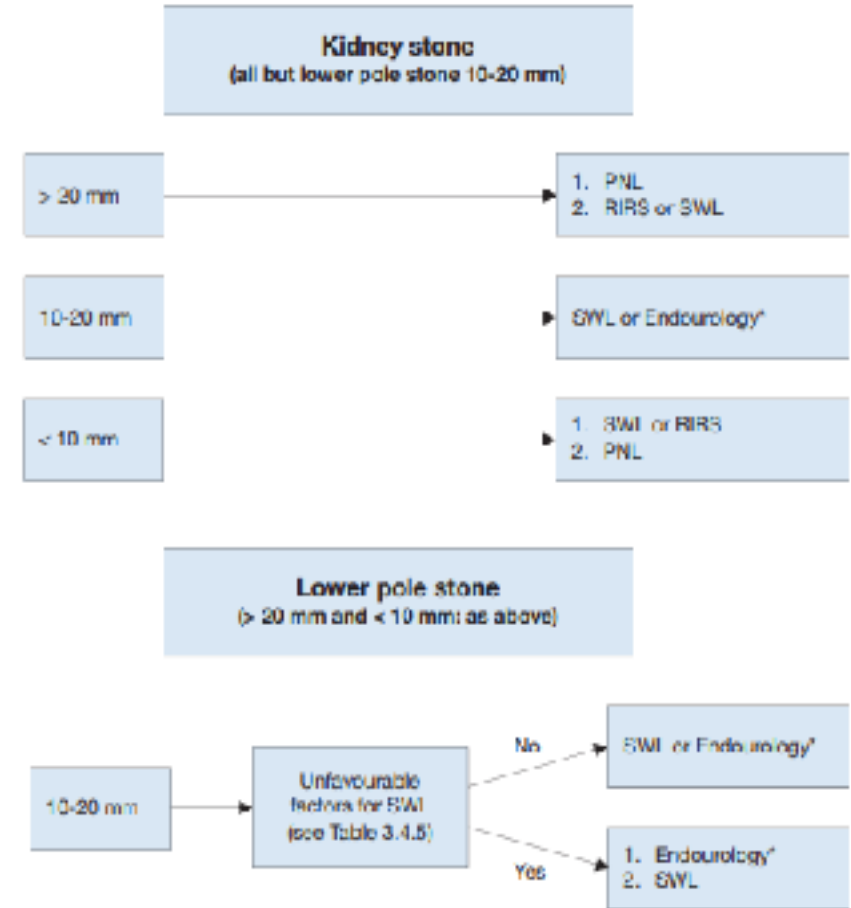


Figure 3.2: Treatment algorithm for renal stones (if/when active treatment is indicated)



*The term 'Endourology' encompasses all PNL and URS interventions.
PNL = percutaneous nephrolithotomy; RIRS = retrograde intrarenal surgery; SWL = shock wave lithotripsy;
URS = ureteroscopy.

SWL = shock wave lithotripsy; URS = Ureteroscopy.





Contraindicaciones:

EAU Guidelines on Urolithiasis

C. Türk (Chair), A. Meisius,
A. Petřík, C. Seitz, A. Skolarikos (Vice-chair), B. Somani,
K. Thomas, G. Gambaro (Consultant nephrologist)
Guidelines Associates: N.F. Davis, J.F. Donaldson,
R. Lombardo, L. Tzelvas

© European Association of Urology 2021

3.4.8.5 Contraindications of procedures

Contraindications of extracorporeal SWL

There are several contraindications to the use of extracorporeal SWL, including:

- pregnancy, due to the potential effects on the foetus [307];
- bleeding disorders, which should be compensated for at least 24 hours before and 48 hours after treatment [308];
- uncontrolled UTIs;
- severe skeletal malformations and severe obesity, which prevent targeting of the stone;
- arterial aneurysm in the vicinity of the stone [309];
- anatomical obstruction distal to the stone.

Contraindications of URS

Apart from general problems, for example with general anaesthesia or untreated UTIs, URS can be performed in all patients without any specific contraindications.

Contraindications of PNL

Patients receiving anti-coagulant therapy must be monitored carefully pre- and post-operatively. Anti-coagulant therapy must be discontinued before PNL [300]. Other important contraindications include:

- untreated UTI;
- tumour in the presumptive access tract area;
- potential malignant kidney tumour;
- pregnancy (Section 3.4.14.1).





Estandarización técnica = disminución de errores





Técnica URS semirrígida:

- Cistoscopia rápida e identificar OU.
- Realización de pielografía retrógrada.
- Colocación de guía(recomendación EAU pero no imprescindible)
- Si evidencia de pus: COLOCAR CATÉTER DOBLE J Y REALIZAR IQx EN 2º TIEMPO.
- PULSAR DE FORMA RÁPIDA EL PEDAL DE RX.
- Recursos para superar obstrucciones al paso de guía.
- Si no es posible paso de guía o acceso:

Colocación de DJ + nueva IQx en 7-14 días.





Técnica URS semirrígida:

Urolithiasis (2018) 46:39–45

<https://doi.org/10.1007/s00240-017-1025-7>

INVITED REVIEW

Semi-rigid ureteroscopy: indications, tips, and tricks

Lily A. Whitehurst¹ · Bhaskar K. Somani²

Received: 30 January 2017 / Accepted: 11 November 2017 / Published online: 18 November 2017

© The Author(s) 2017. This article is an open access publication



Técnica URS semirrígida:



Table 1 Summary of the 'tips and tricks' necessary for difficulties during semi rigid URS

	Step 1	Step 2	Step 3	Step 4	Step 5
Difficulty at the Bladder neck/ UO [7]	Be cautious with the scope at the bladder neck to avoid any injury (e.g., enlarged prostate)	Rotate the scope 90°–180° at the UO to compensate for the scope's curved beak	Use a hydrophilic tipped wire—this can load the ureteric catheter to guide it in if struggling, and approach infero-laterally	Can use fluoroscopy to define the anatomy and identify any 'fish hooking' of the lower ureter	Can insert the ureteroscope itself into the UO and use this to insert the guidewire
Difficult within the ureter [5–7]	Place an additional navigating wire to open up the UO/ureter and allow passage of the scope	Increase the length of the 'floppy' tip of the wire or use an angled tip (J tip) wire to negotiate the ureter	An additional injection of fluoroscopic dye at the level of the obstruction can help identify a route	Use of balloon and plastic dilators to gradually stretch the ureter to enable advancement	If unable to advance the scope, place a JJ stent and delay the intervention
Stuck basket [7, 10, 19]	Avoid any forceful or blind	Fragmentation of the stone	If unable to dislodge the		
Impassable stone [7]				If unsuccessful, fragmentation of the stone under vision and then the scope can be advanced	If the stone causes 'Z' configuration of the upper ureter, use sequential advances of the wire to navigate the bends
Poor views [11]				If still unsuccessful, place a JJ stent and delay the intervention	



UO ureteric orifice

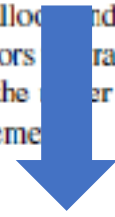


Técnica URS semirrígida:



Table 1 Summary of the 'tips and tricks' necessary for difficulties during semi rigid URS

	Step 1	Step 2	Step 3	Step 4	Step 5
Difficulty at the Bladder neck/ UO [7]	Be cautious with the scope at the bladder neck to avoid any injury (e.g., enlarged prostate)	Rotate the scope 90°-180° at the UO to compensate for the scope's curved beak	Use a hydrophilic tipped wire—this can load the ureteric catheter to guide it in if struggling, and approach infero-laterally	Can use fluoroscopy to define the anatomy and identify any 'fish hooking' of the lower ureter	Can insert the ureterscope itself into the UO and use this to insert the guidewire
Difficult within the ureter [5-7]	Place an additional navigating wire to open up the UO/ ureter and allow passage of the scope	Increase the length of the 'floppy' tip of the wire or use an angled tip (J tip) wire to negotiate the ureter	An additional injection of fluoroscopic dye at the level of the obstruction can help identify a route	Use of balloon and plastic dilators to gradually stretch the ureter to enable advancement	If unable to advance the scope, place a JJ stent and delay the intervention
Stuck basket [7, 10, 19]	Avoid any forceful or blind intervention with the basket (do not pull)	Fragmentation of the grasped stone may be required to freely remove the basket	If unable to dislodge the basket after stone fragmentation		
Impassable stone [7]	Should only be attempted by a competent Endourologist (not a novice procedure)	Gentle nudging with the ureteric catheter in attempt to dislodge the stone	Since it is difficult to pass the stone through the ureter		
Poor views [11]	Ensure the scope is focused, brightness of light is adjusted and the white balance is complete	Use smaller ancillary equipment as the narrower shafts will occlude the irrigant flow less	Close proximity of the stone to the ureteric orifice		



UO ureteric orifice



Técnica URS semirrígida:



Table 1 Summary of the 'tips and tricks' necessary for difficulties during semi rigid URS

	Step 1	Step 2	Step 3	Step 4	Step 5
Difficulty at the Bladder neck/ UO [7]	Be cautious with the scope at the bladder neck to avoid any injury (e.g., enlarged prostate)	Rotate the scope 90°–180° at the UO to compensate for the scope's curved beak	Use a hydrophilic tipped wire—this can load the ureteric catheter to guide it in if struggling, and approach infero-laterally	Can use fluoroscopy to define the anatomy and identify any 'fish hooking' of the lower ureter	Can insert the ureteroscope itself into the UO and use this to insert the guidewire
Difficult within the ureter [5–7]	Place an additional navigating wire to open up the UO/ureter and allow passage of the scope	Increase the length of the 'floppy' tip of the wire or use an angled tip (J tip) wire to negotiate the ureter	An additional injection of fluoroscopic dye at the level of the obstruction can help identify a route	Use of balloon and plastic dilators to gradually stretch the ureter to enable advancement	If unable to advance the scope, place a JJ stent and delay the intervention
Stuck basket [7, 10, 19]	Avoid any forceful or blind intervention with the basket (do not pull)	Fragmentation of the grasped stone may be required to freely remove the basket	If unable to dislodge the basket after stone fragmentation, consider cutting the basket wires to free it		
Impassable stone [7]	Should only be attempted by a competent endourologist	Gentle nudging with the ureteric catheter in attempt to dislodge the stone	Similarly, the ureteroscope itself can be used to shift the stone (Billiard Cue technique)	If unsuccessful, fragmentation of the stone under vision and then the scope can be advanced	If the stone causes 'Z' configuration of the upper ureter, use sequential advances of the wire to navigate the bends
Poor views [11]		smaller ancillary equipment as the narrower shafts occlude the irrigant flow less	Consider increasing irrigation pressures if any bleeding occurs to improve views	If still unsuccessful, place a JJ stent and delay the intervention	



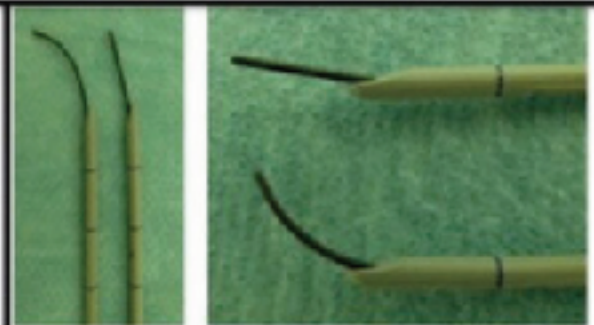
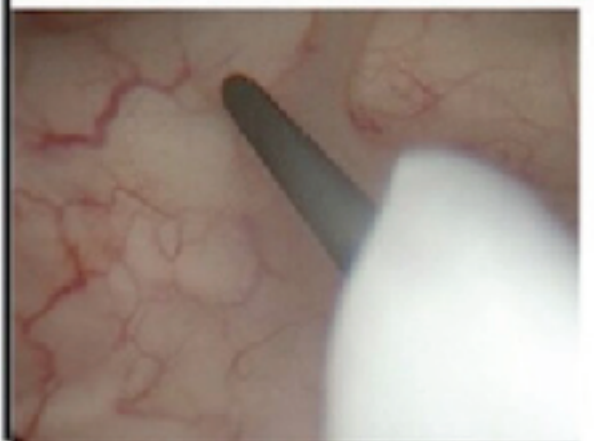
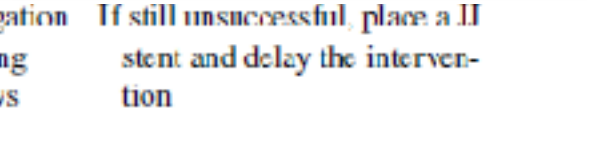
UO ureteric orifice



Técnica URS semirrígida:



Table 1 Summary of the 'tips and tricks' necessary for difficulties during semi rigid URS

	Step 1	Step 2	Step 3		
Difficulty at the Bladder neck/ UO [7]	Be cautious with the scope at the bladder neck to avoid any injury (e.g., enlarged prostate)	Rotate the scope 90°–180° at the UO to compensate for the scope's curved beak	Use a hydrophilic tipped wire—this can load the ureteric catheter to guide if struggling, and approach infero-laterally		Insert the ureterscope into the UO and use this to insert the guidewire
Difficult within the ureter [5–7]	Place an additional navigating wire to open up the UO/ureter and allow passage of the scope	Increase the length of the 'floppy' tip of the wire or use an angled tip (J tip) wire to negotiate the ureter	An additional injection of fluid at the ureteric orifice can help identify a route		In order to advance the scope, place a JJ stent and delay the intervention
Stuck basket [7, 10, 19]	Avoid any forceful or blind intervention with the basket (do not pull)	Fragmentation of the grasped stone may be required to freely remove the basket	If unable to dislodge the basket after stone fragmentation, consider cutting basket wires to free it		
Impassable stone [7]	Should only be attempted by a competent Endourologist (not a novice procedure)	Gentle nudging with the ureteric catheter in attempt to dislodge the stone	Similarly, the ureterscope itself can be used to shove the stone (Billiard Cue technique)		Stone causes 'Z' configuration of the upper ureter, use small advances of the scope to navigate the bends
Poor views [11]	Ensure the scope is focused, brightness of light is adjusted and the white balance is complete	Use smaller ancillary equipment as the narrower shafts will occlude the irrigant flow less	Consider increasing irrigation pressures if any bleeding occurs to improve views		If still unsuccessful, place a JJ stent and delay the intervention

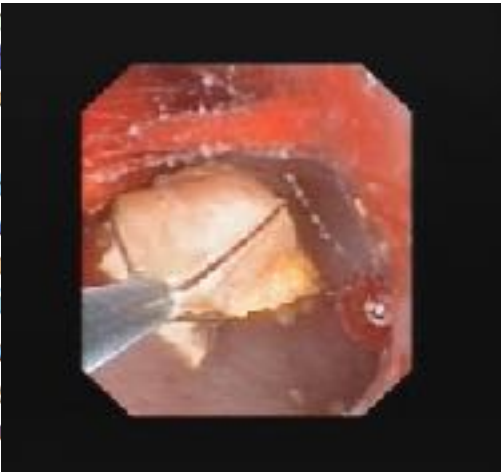
UO ureteric orifice



Técnica URS semirrígida:



Table 1 Summary of the 'tips and tricks' necessary for difficulties during semi rigid URS

	Step 1	Step 2	Step 3	Step 4	Step 5
Difficulty at the Bladder neck/ UO [7]	Be cautious with the scope at the bladder neck to avoid any injury (e.g., enlarged prostate)	Rotate the scope 90°–180° at the UO to compensate for the scope's curved beak	Use a hydrophilic tipped wire—this can load the ureteric catheter to guide it in if struggling, and approach infero-laterally	Can use fluoroscopy to define the anatomy and identify any 'fish hooking' of the lower ureter	Can insert the ureterscope itself into the UO and use this to insert the guidewire
Difficult within the ureter [5–7]	Place an additional navigating wire to open up the UO/ ureter and allow passage of the scope	Increase the length of the 'floppy' tip of the wire or use an angled tip (J tip) wire to negotiate the ureter	An additional injection of fluoroscopic dye at the site of the obstruction can help identify a route		If unable to advance the scope, place a JJ stent and delay the intervention
Stuck basket [7, 10, 19]	Avoid any forceful or blind intervention with the basket (do not pull)	Fragmentation of the grasped stone may be required to freely remove the basket	If unable to dislodge the basket after stone fragmentation, cutting the basket wires to free it		
Impassable stone [7]	Should only be attempted by a competent Endourologist (not a novice procedure)	Gentle nudging with the ureteric catheter in attempt to dislodge the stone	Similarly, the ureterscope itself can be used to dislodge the stone (Billiard's technique)		If the stone causes 'Z' configuration of the upper ureter, use sequential advances of the wire to navigate the bends
Poor views [11]	Ensure the scope is focused, brightness of light is adjusted and the white balance is complete	Use smaller ancillary equipment as the narrower shafts will occlude the irrigant flow less	Consider increasing irrigation pressures if any bleeding occurs to improve views	If still unsuccessful, place a JJ stent and delay the intervention	

UO ureteric orifice



Técnica URS semirrígida:



Table 1 Summary of the 'tips and tricks' necessary for difficulties during semi rigid URS

	Step 1	Step 2	Step 3	Step 4	Step 5
Difficulty at the Bladder neck/ UO [7]	Be cautious with the scope at the bladder neck to avoid any injury (e.g., enlarged prostate)	Rotate the scope 90°-180° to compensate for the scope's curved beam		Use fluoroscopy to define the anatomy and identify any 'fish hooking' of the lower ureter	Can insert the ureterscope itself into the UO and use this to insert the guidewire
Difficult within the ureter [5-7]	Place an additional navigating wire to open up the UO/ ureter and allow passage of the scope	Increase the length of the 'floppy' tip of the wire use an angled tip (J tip) to negotiate the ureter		Use of balloon and plastic dilators to gradually stretch the ureter to enable advancement	If unable to advance the scope, place a JJ stent and delay the intervention
Stuck basket [7, 10, 19]	Avoid any forceful or blind intervention with the basket (do not pull)	Fragmentation of the grasped stone may be required to freely remove the basket	If unable to dislodge the basket after stone fragmentation, consider cutting the basket wires to free it		
Impassable stone [7]	Should only be attempted by a competent Endourologist (not a novice procedure)	Gentle nudging with the ureteric catheter in attempt to dislodge the stone	Similarly, the ureterscope itself can be used to shift the stone (Billiard Cue technique)	If unsuccessful, fragmentation of the stone under vision and then the scope can be advanced	If the stone causes 'Z' configuration of the upper ureter, use sequential advances of the wire to navigate the bends
Poor views [11]	Ensure the scope is focused, brightness of light is adjusted and the white balance is complete	Use smaller ancillary equipment as the narrower shafts will occlude the irrigant flow less	Consider increasing irrigation pressures if any bleeding occurs to improve views	If still unsuccessful, place a JJ stent and delay the intervention	

UO ureteric orifice



Técnica RIRS:



- Anestesia “IDEAL”: mascarilla laríngea con sedación profunda (altas frecuencias + poco volumen).
- Posición de litotomía +/- pierna lado afecto rectificada.
- Toma de urocultivo.
- Pielografía retrógrada.
- Dilatación previa con URS semirrígido, en ocasiones dilatación con catéteres o balón.
- Uso de vaina de acceso en todos los pacientes cuando sea posible (EAU: pref cirujano).
- Mantener vía urinaria tutorizada ya sea con guía(EAU) o vaina.
 - Litiasis en sitios de difícil acceso (cáliz inferior) recolocar con cesta <2Fr.
 - Uso de fibras de pequeño calibre.
 - Analizar muestra litiásica.
 - Retirada de vaina bajo visión.
 - Colocación de DJ durante 5-7 días.





Técnica RIRS:

Review

› [Transl Androl Urol. 2019 Sep;8\(Suppl 4\):S371-S380. doi: 10.21037/tau.2019.06.04.](#)

Pictorial review of tips and tricks for ureteroscopy and stone treatment: an essential guide for urologists from PETRA research consortium

Bhaskar K Somani ¹, Achilles Plcumidis ², Athanasios Pappas ², Steeve Dcizi ³,
Omikunle Babawale ¹, Laurian Dragos ⁴, Emre Sener ⁵, Michele Talso ⁶, Tzevat Tefik ⁷,
Peter Kronenberg ⁸, Esteban Emilian ⁹, Luca Villa ¹⁰, Guido Kamphuis ¹¹, Silvia Proietti ¹²,
Olivier Traxer ³

Affiliations + expand

PMID: 31656743 PMID: PMC6790416 DOI: 10.21037/tau.2019.05.04

[Free PMC article](#)





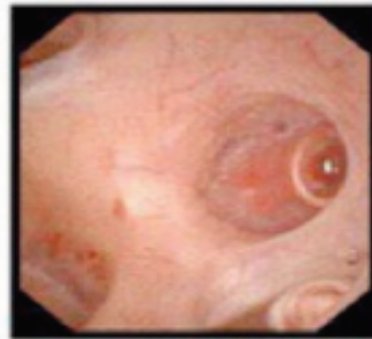
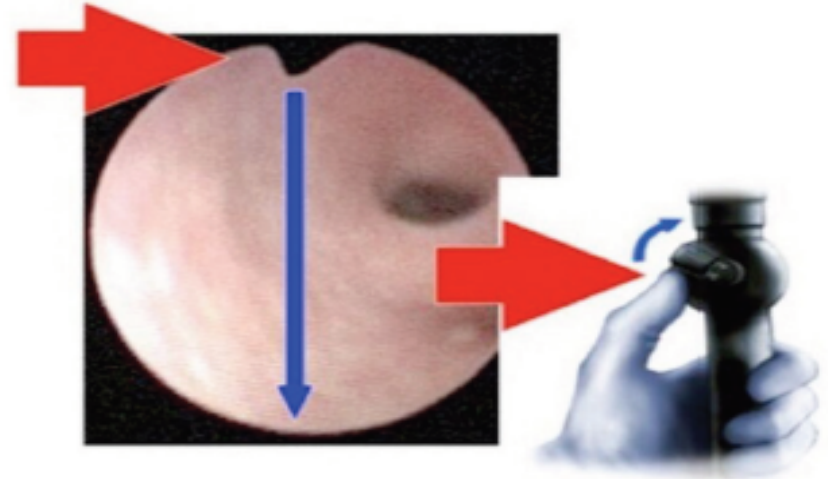
Técnica RIRS:



MACRO-Rotation



MICRO-Rotation



12h00!

THM: Bubbles always indicate Anterior calices, at 12h00!!!



Deflection
Up/Down





Técnica RIRS:



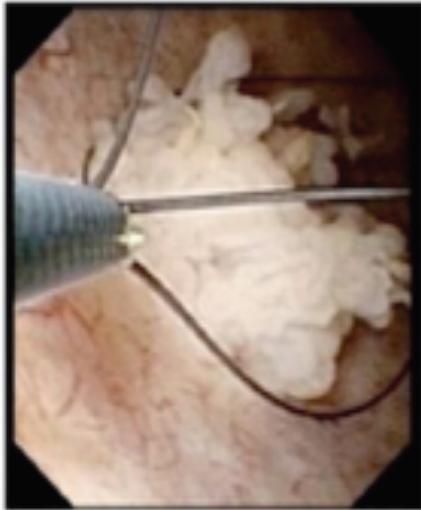


Técnica RIRS:

UTUC: Biopsies

- Biopsy forceps & basket:

For Diagnostic & For Treatment



UTUC: laser "no touch technique"





Técnica NLP:

EUJ-1084; No. of Pages 10

ARTICLE IN PRESS

EUROPEAN UROLOGY FOCUS XXX (2021) XXX–XXX

available at www.sciencedirect.com

journal homepage: www.europeanurology.com/eufocus



Review – Stone Disease

European Association of Urology Section of Urolithiasis and International Alliance of Urolithiasis Joint Consensus on Percutaneous Nephrolithotomy

Guohua Zeng^{a,†}, Wen Zhong^{a,†}, Margaret Pearle^b, Simon Choong^c, Ben Chew^d,
Andreas Skolarikos^e, Evangelos Liatsikos^f, Shashi Kiran Pal^g, Sven Lahme^h, Otas Durutovicⁱ,
Yasser Farahat^j, Sanjay Khadgi^k, Mahesh Desai^l, Thomas Chi^m, Daron Smith^c, Andras Hoznekⁿ,
Athanasios Papatsoris^o, Janak Desai^p, Giorgio Mazzon^q, Bhaskar Somani^r, Brian Eisner^s,
Cesare Marco Scoffone^t, Dong Nguyen^u, Stefania Ferretti^v, Guido Giusti^w, Iliya Saltirov^x,
Marcus Vinicius Marocolo^y, Mehmet Ilker Gökçe^z, Michael Straub^{aa}, Norberto Bernardo^{bb},
Pedro Laki Lantin^{cc}, Sherjeel Saulat^{dd}, Wael Gamal^{ee}, John Denstedt^{ff}, Zhangqun Ye^{gg,**},
Kemal Sarica^{hh,*}



Técnica NLP:



- Colocación de catéter retrógrado (administración de contraste, azul de metileno, evitar migración ureteral).
- Fluoroscopia/ecografía o ambos.
- Selección de sitio de punción (planificación previa). Papilar y garantizar trayecto para la mayor carga litiásica.
- Selección del tamaño del tracto de trabajo (>tamaño: < tiempo y > riesgo complicaciones). Uno o múltiples tractos.
- Dilatación: balón de presión, Amplatz o Alken.
- Métodos fragmentación: láser (Holmium o Thulium), neumático, ultrasónico.
- **Indicaciones para NPC:** litiasis residual, extravasación urinaria, sangrado significativo, obstrucción ureteral, pionefrosis o planificación de quimiólisis posterior.
 - **Colocación de DJ:** previsión de tto ureteral posterior, extravasación urinaria, obstrucción ureteral o lesión ureteral iatrógena.



Técnica NLP:



- *Posición prono:*





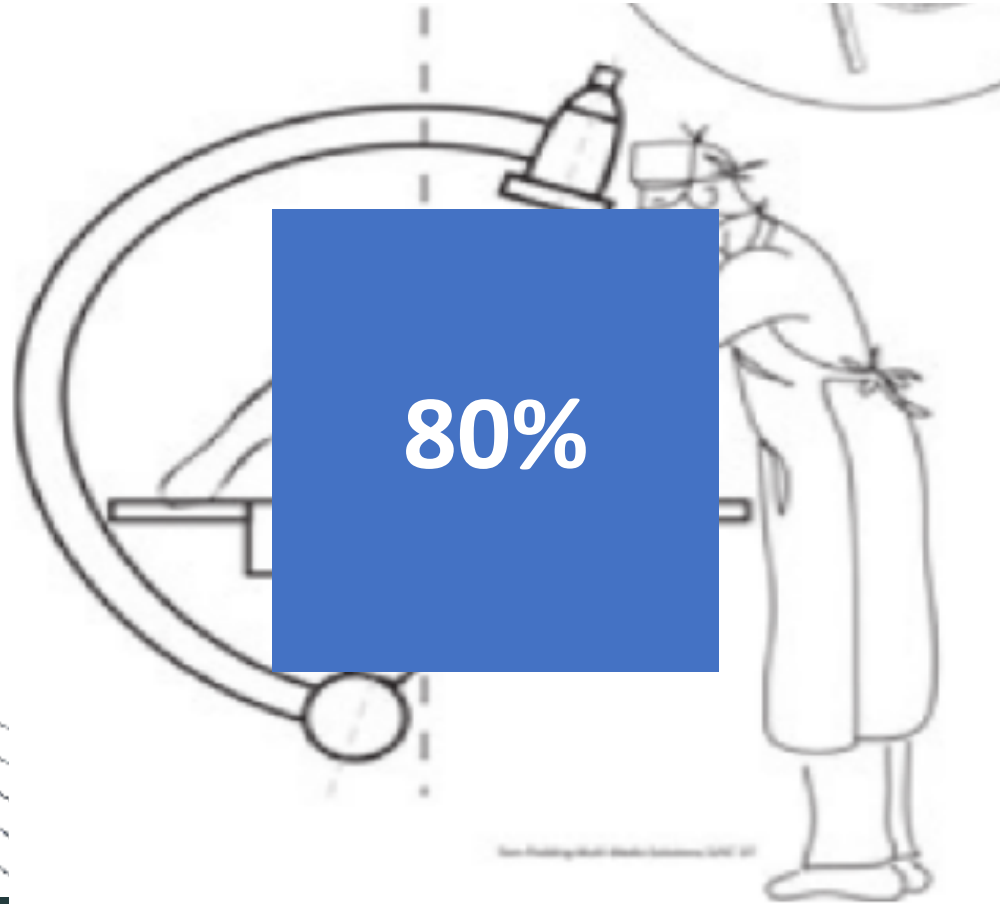
Técnica NLP:

- *Posición supino:*

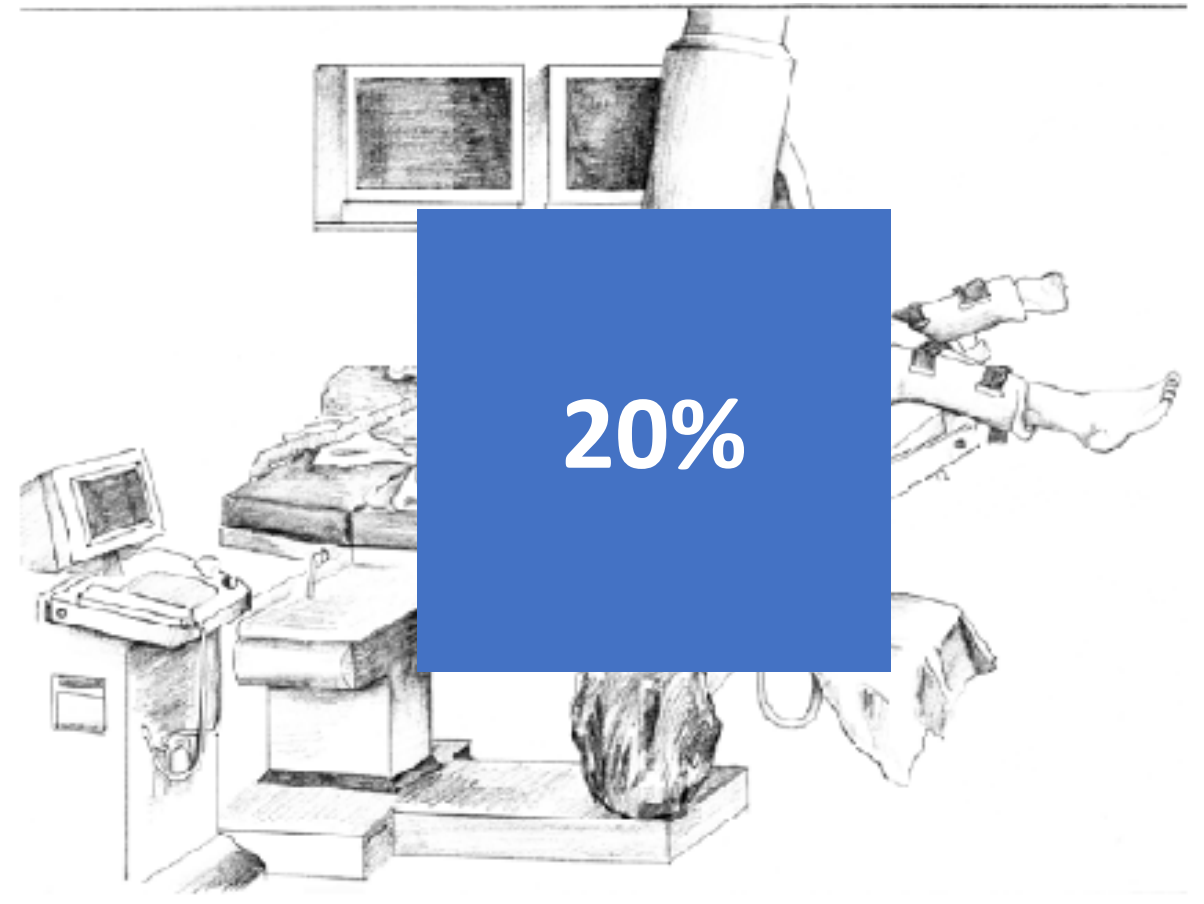


Posición Valdivia modificada en Galdakao

Técnica NLP:



80%



20%



Técnica NLP:





Técnica NLP:

- ***Punción renal:***

TÉCNICA TRIAGULACIÓN:

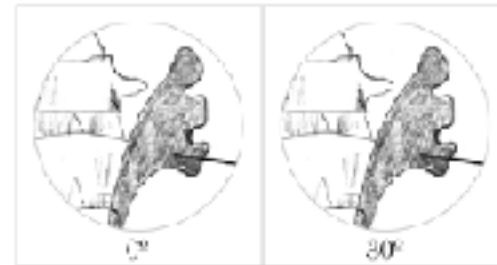
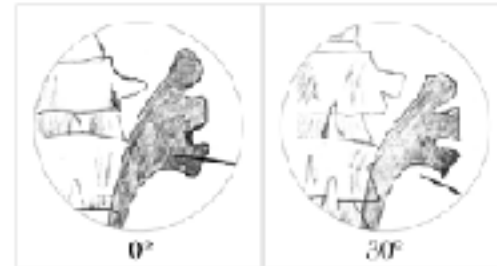
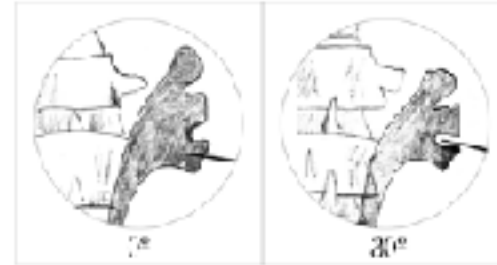
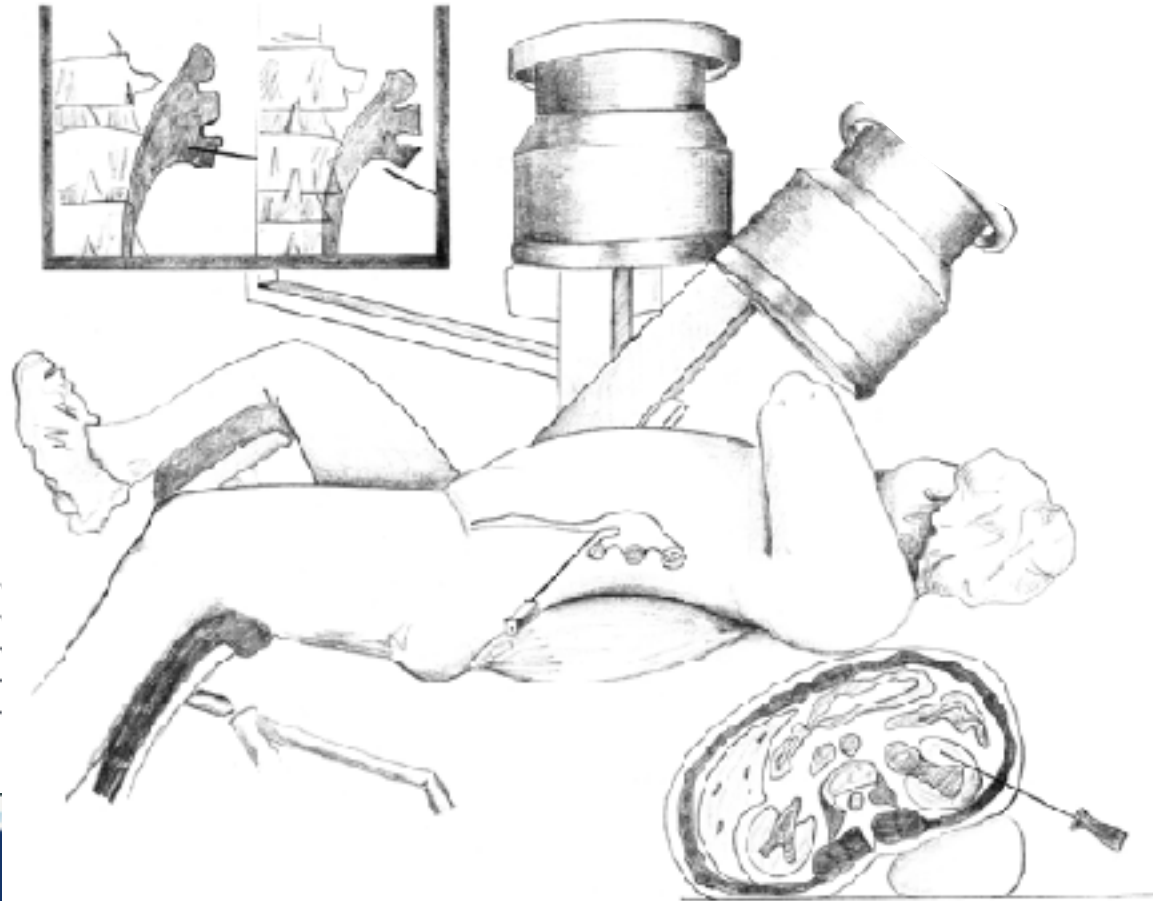
- Arco en C en posición AP (10-15° en supino).
- Se selecciona el cáliz.
- Se introduce la aguja en pequeños golpes siguiendo el eje longitudinal del cáliz hasta llegar cerca de la papila.
- Se gira el arco en C hacia el cirujano en posición oblicua (0°) o en 20-30° hacia la cabeza del paciente. Para ver si hay que hacer correcciones hacia arriba o hacia abajo de la aguja.
- Si la aguja por debajo del cáliz - está anterior, si esta por arriba- está posterior
- Se avanza la aguja en pequeños golpes hacia la papila para lograr el efecto de fóvea sobre la copa del cáliz hasta introducir la aguja en el cáliz.





Técnica NLP:

- **Técnica triangulación:**





Técnica NLP:

- ***Técnica ecoguiada:***



Técnica NLP:

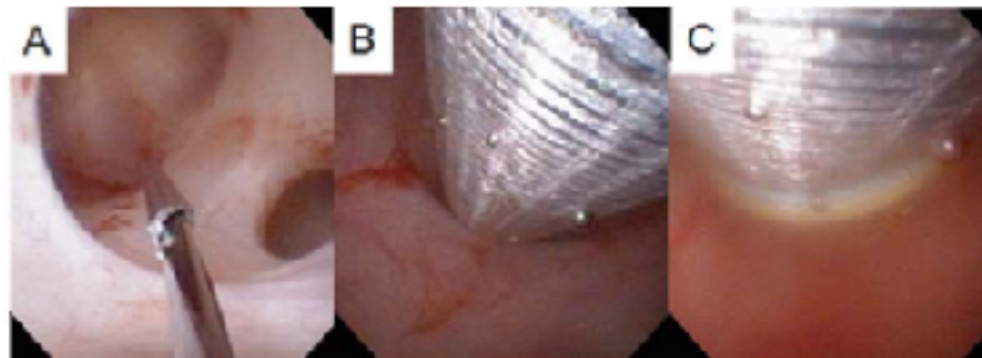
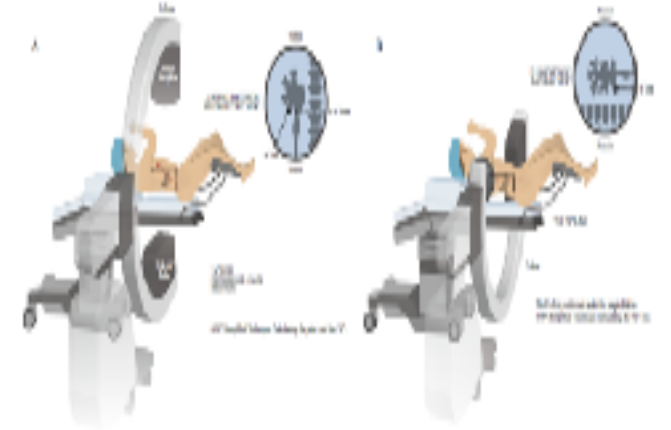


Técnica NLP:



- **Otras técnicas**

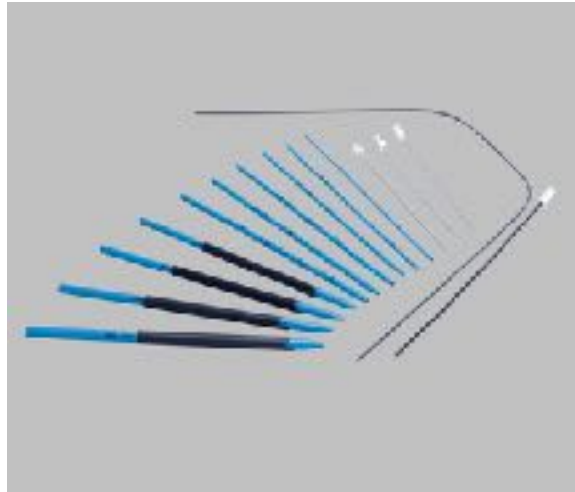
- Otras proyecciones fluoroscópicas(90°)
- TAC/RMN.
- Laparoscopia.
- Endovisión (ECIRS).





Experiencia con la técnica

Dilatación del trayecto percutáneo:



ALKEN

Económicos
Fibrosis
Control profundidad
Mayor tiempo
Exposición Rx

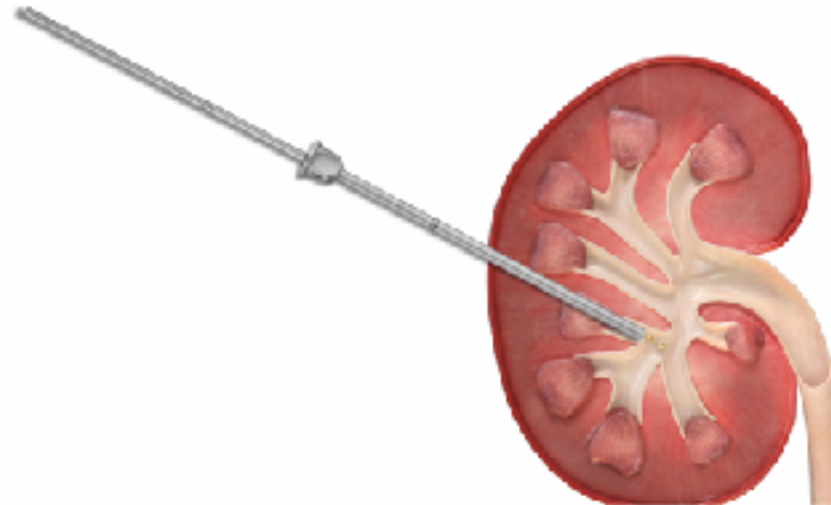
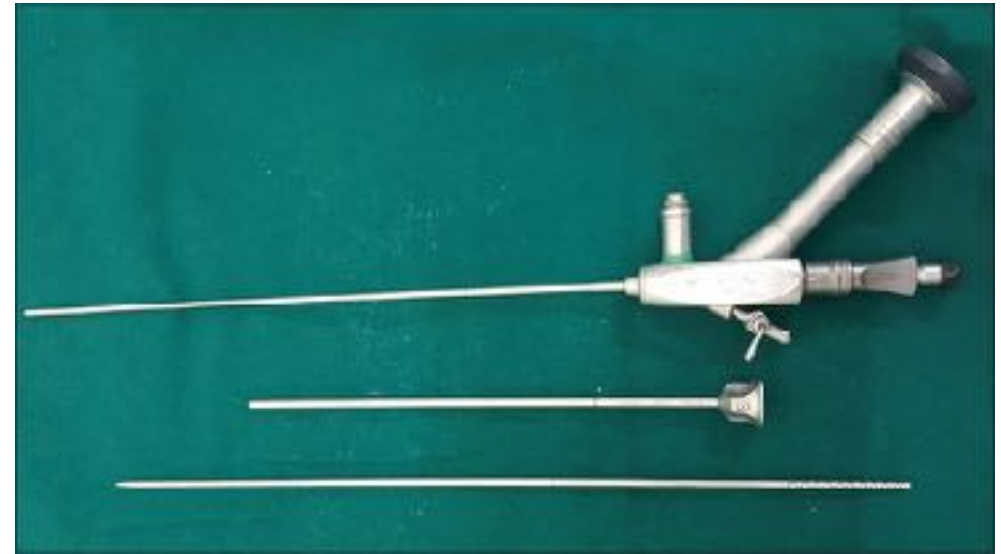
AMPLATZ

Menor exposición Rx
Fibrosis
Control profundidad
Movilidad renal

BALONES A. PRESIÓN

Rapidez
Menor daño renal
Costo
* Fibrosis

Miniperc (one-step):



TÉCNICAS PARA EL ACCESO PERCUTÁNEO DURANTE LA NEFROLITOTOMÍA PERCUTÁNEA

Daniel Pérez-Fentes.

Unidad de Endourología y Litiasis. Servicio de Urología. Complejo Hospitalario Universitario de Santiago de Compostela. Santiago de Compostela. A Coruña. España.

**Dominio de todas
adaptarlas a cada caso**



Balón: 66.5%,
Amplatz: 18.1%
Alken: 15.4%





¡Muchas



Gracias!