



TMU-Research Center of Urology and Kidney

Monthly Meeting

Times : **2023/8/18(Friday) 14:00-15:00**

Google meet link : <https://meet.google.com/pop-tckf-ppx>

Meeting Chairperson : Kuan-Yu Hung

Participant :

【TMUH】Ming-Che Liu、Yao-Chou Tsai、Shauh-Der Yeh、Chien-Chih Wu、Hsiao-Yu Lin、Jeng-Cheng Wu、Ching-Hsin Chang、Wei-Chieh Chen、Fang-Yu Ku、Shih-Hsiu Lo、Te-Chao Fang、Hsi-Hsien Chen、Yen-Chung Lin、Yueh-Lin Wu、Chih-Chin Kao、Ching-Yi Chen、Shu-Ching Yeh、TING-EN TAI

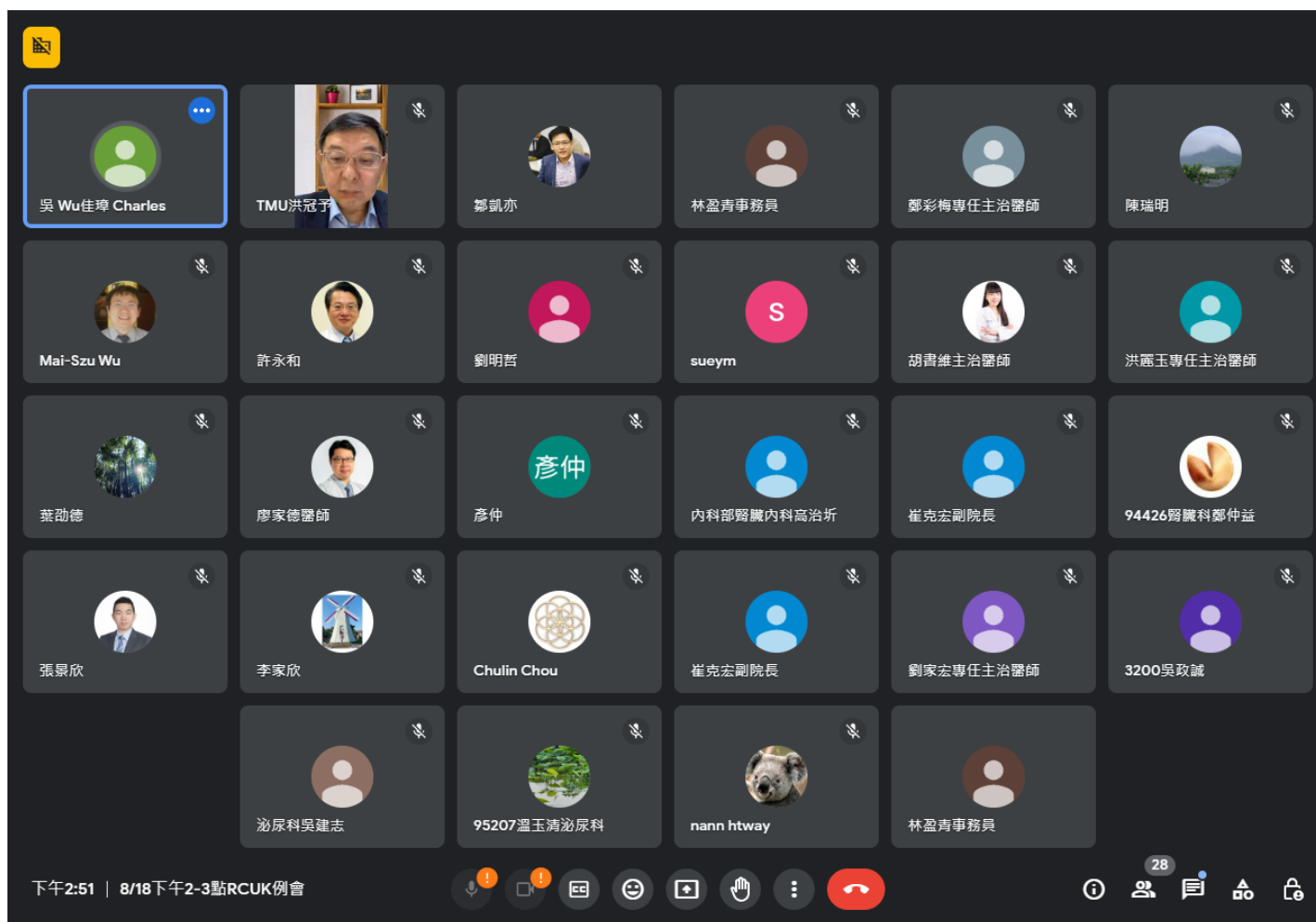
【WFH】Yu-Ching Wen、Liang-Ming Lee、Ke-Hsun Lin、Yung-Wei Lin、Chi-Hao Hsiao、Syuan-Hao Syu、Chung-Howe Lai、Chih-Chen Hsu、Tso-Hsiao Chen、Yuh-Mou Sue、Chung-Yi Cheng、Chung-Te Liu、Yun-Hong Yang、Ming-Che Lee、Cho-Hsing Chung

【SHH】Mai-Szu Wu、Chia-Chang Wu、Chia-Hung Liu、Yi-Te Chiang、Kai-Yi Tzou、Wei-Tang Kao、Su-Wei Hu、Wen-Ling Wu、Mei-Yi Wu、Lie-Yee Hung、Cai-Mei Zheng、I-Jen Chiu、Yu-Wei Chen、Chia-Te Liao、Cheng-Hsien Chen、Hui-Wen Chiu、Po-Han Yu

【SKMH】Yung-Ho Hsu、Chu-Lin Chou

Chief : Mai-Szu Wu (President, TMU)、Yen-Hua Huang (Dean, Research and Development, TMU)、Chih-Cheng Hsu (Professor, NHRI)、Ke-Hung Tsui (Vice President, SHH)

Agenda : 1. Chronic kidney disease team
2. Urology Innovation Technology and Surgical Team



**Explore the influence of malnutrition-inflammation biomarkers
on hip fracture among dialysis patients:
A study from association to prediction medicine**

Dr. Cai-Mei Zheng

TMU-RCUK, CKD Division

- 1.萬芳: 鄭仲益 (組長) 、蘇裕謀
- 2.北醫: 林彥仲、葉曙慶、陳靜怡、邵月珠
- 3.雙和: 鄭彩梅、廖家德、高芷華、宋立勤
- 4.新國民: 鄒居霖



萬芳

北醫

雙和

新國民

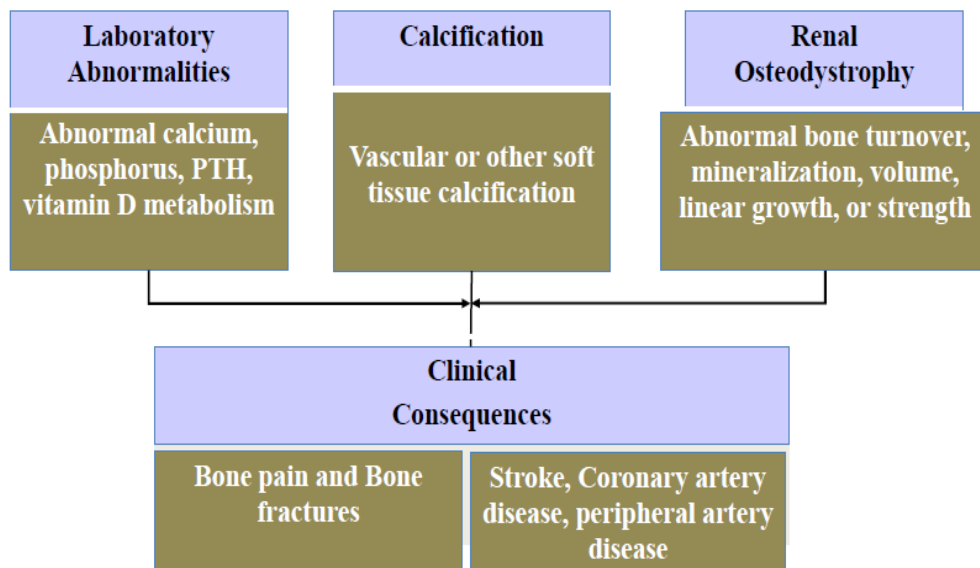
TMU-RCUK CKD Division 合作

- 校級: 基礎: 臨床醫學研究所 邱惠雯教授
臨床: 醫學資訊研究所 張資昊教授、
醫學科技學院 黃芝瑋
- 院外: 基礎: 成功大學體育健康研究所
黃滄海 教授兼所長
臨床: 台灣大學腎臟科吳允升 教授
- 國際: 基礎: 日本自治醫科大學抗老化醫學中心
黑尾誠教授兼所長

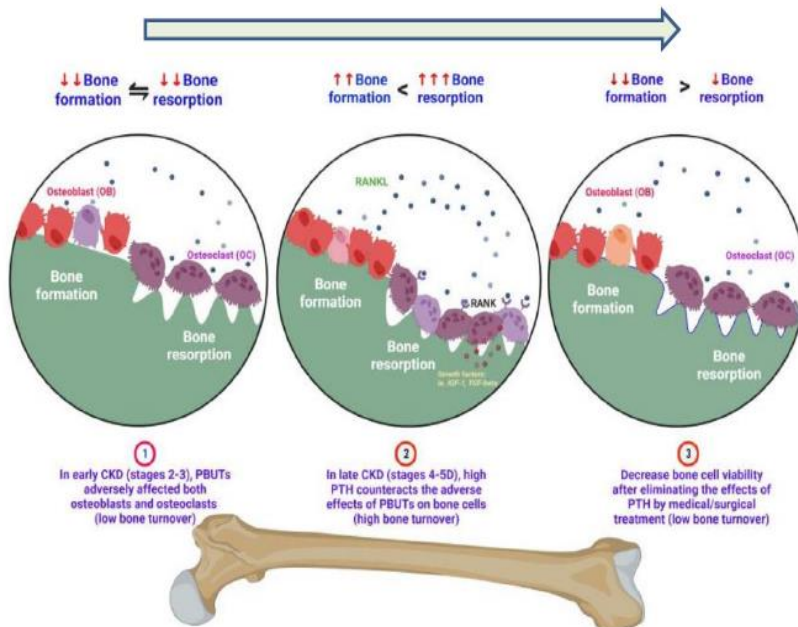
TMU-RCUK, CKD-MBD Group

- **Background:** no available collaborative platform in TMU-CKD research teams
- **Current status:** Collaborative work on CKD-MBD using current available clinical data and basic research
- **Target:** Integrate clinical data & collaborative work on CKD related studies across TMU-affiliated hospitals, grant applications & publications

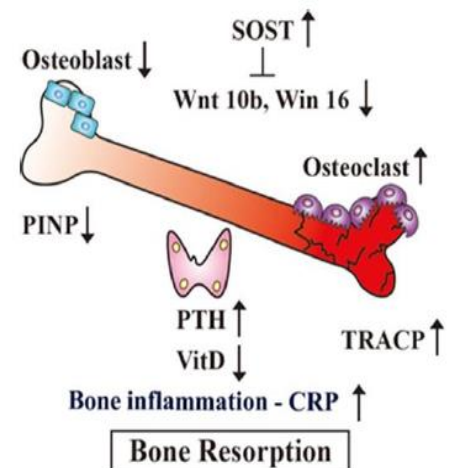
Chronic Kidney Disease-Mineral and Bone Disorder



PTH levels determine bone metabolism at different stages of CKD



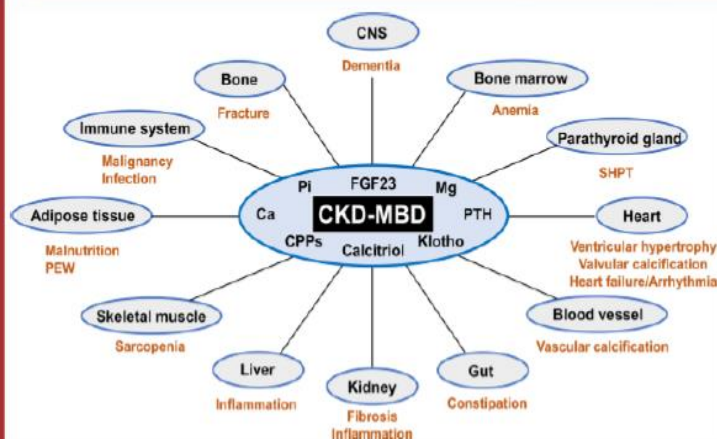
Bone turnover markers vary with different PTH levels



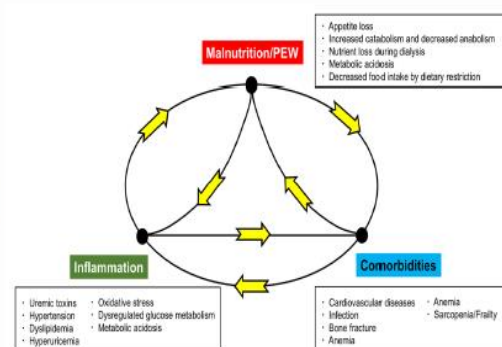
Zheng CM, et.al., Int J Mol Sci. 20200

TMU66 北醫六十 通商榮耀

Emerging cross-talks between CKD-MBD and malnutrition-inflammation complex syndrome (MICS) in dialysis patients



Clin Exp Nephrol. 2022;26(7):613-29



Hypoalbuminemia differently affects the serum bone turnover markers in hemodialysis patients accordingly with PTH levels

Zheng CM, et.al., Int J Med Sci. 2019;16(12):1583-1592

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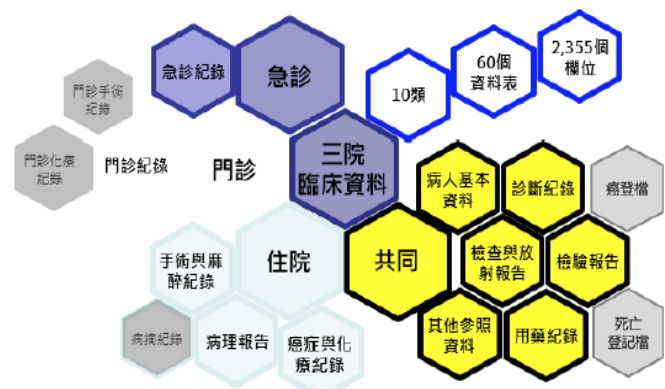
Data collection



Data structure and variables in TMUCRD

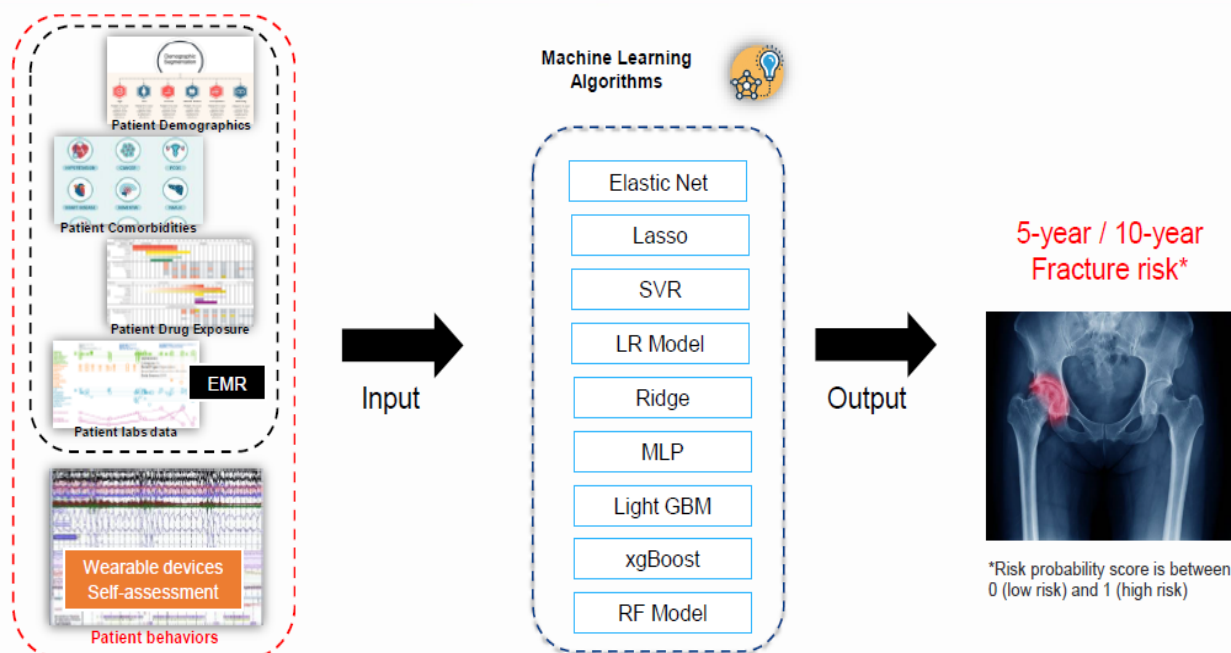


Data structure

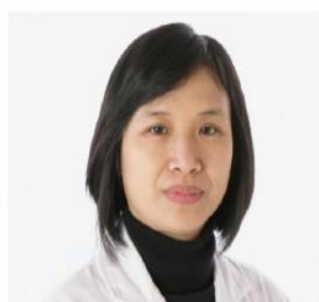


Data variables

Prediction Model Development

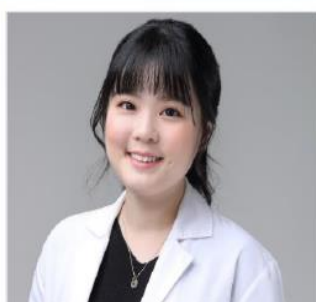


Research team



雙和醫院 腎臟內科

鄭彩梅 副教授



北醫大 健康資訊科技國際研究中心

黃芝瑋 副研究員



北醫大 數據處

阮逢英 助理研究員



衛生福利部雙和醫院
(委託臺北醫學大學興建經營)
Taipei Medical University - Shuang Ho Hospital,
Ministry of Health and Welfare

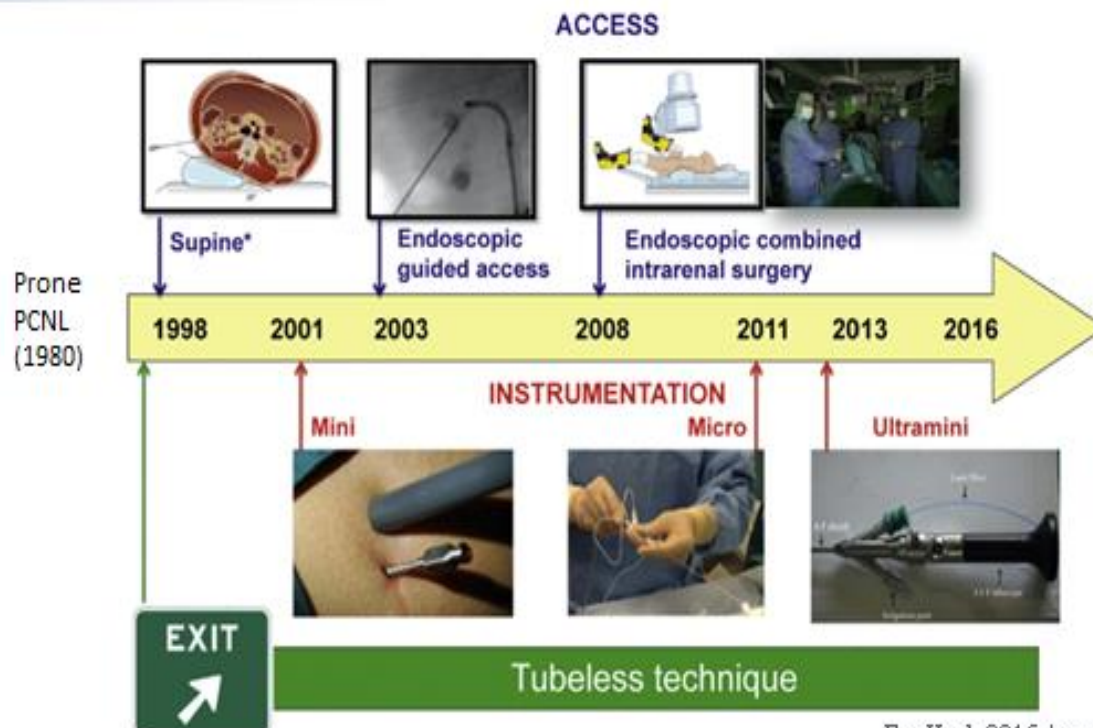


Needle perc: a new instrument and clinical application

鄒凱亦醫師

Taipei Medical University Shuang-Ho Hospital

Innovations in PCNL surgery





Complicated renal stones



Multiple tracts

Multi-Standard

Stand + mini tracts

Standard + needle perc



Combined multiple endoscopy

ECIRS

PCNL + antegrade fURS

RIRS + needle perc

Needle-perc-assisted Endoscopic Surgery (NAES)

7

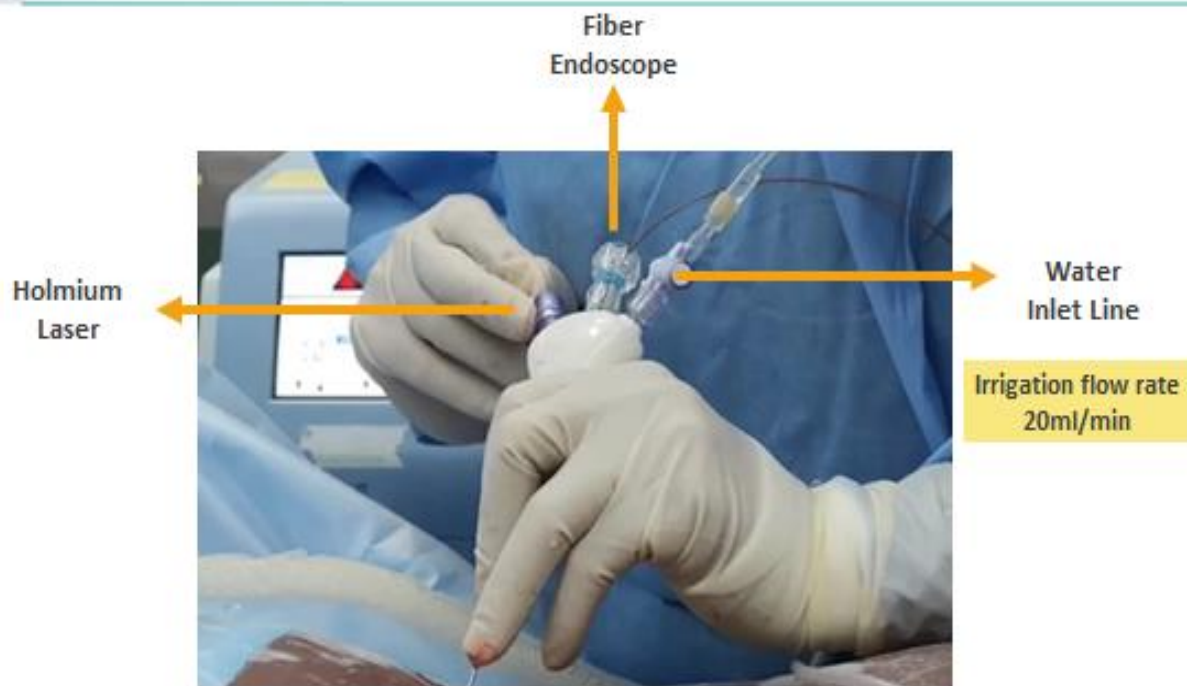
發明人 – 李建興



醫師介紹：

- 北京清華長庚醫院外科部部長，泌尿外科主任
- 現任中國醫師協會泌尿外科分會副會長兼總幹事
- 中國人體健康科技促進會泌尿系結石防治專委會主任委員
- 中華醫學會泌尿外科分會結石學組秘書長
- 中國泌尿系結石聯盟副主席
- 中國泌尿系結石聯盟兒童泌尿系結石診療協作中心主任委員
- 先後於BJUI、IJU、WJU、JE、Urology、CMJ等期刊發表多篇SCI文章，以及發表多篇中文核心期刊文章
- 獲得發明專利及實用新型專利10餘項

Real world practice



Easy to operate

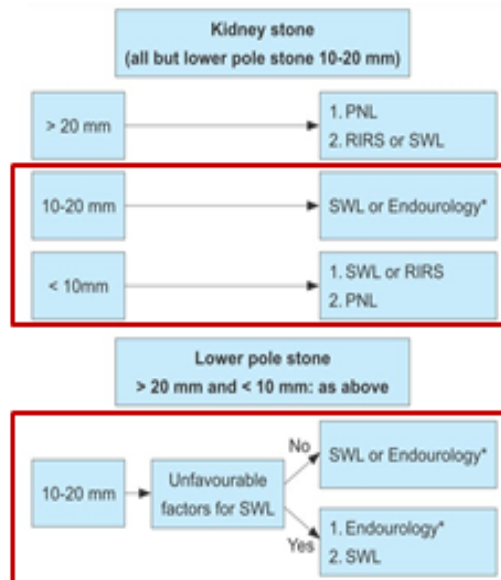


One hand use



The Needle-Perc components can withstand a static axial tensile force of 40N for 15 seconds without breaking or falling off

The treatment choice of small renal stone



For small renal stone < 2cm
EAU guideline suggest ESWL and RIRS

However

Above suggestion is poor treatment efficacy in the following situation:

1. Hard stone
2. Low pole stone
3. Sharp angle of IPA
4. Ureteral stricture

For the renal stones that cannot be treated by RIRS and ESWL



For the hard stone (CT> 1000 HU) can not be broken by ESWL

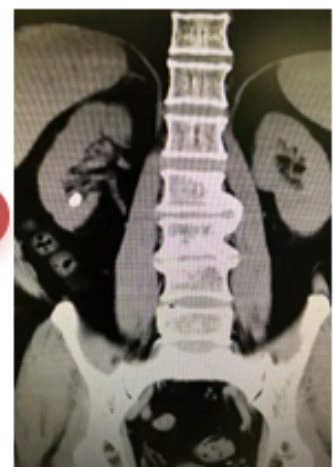
For the stone is located in the inferior calyx,
The calyceal neck is very deep, narrow, and thin, and despite the
flexible nature of the RIRS, it is sometimes difficult to reach



Hard to break, Hard to reach, Too risky for Standard PCNL



**Needle-Perc can effectively clear these renal stones
with minimal damage to the kidneys**



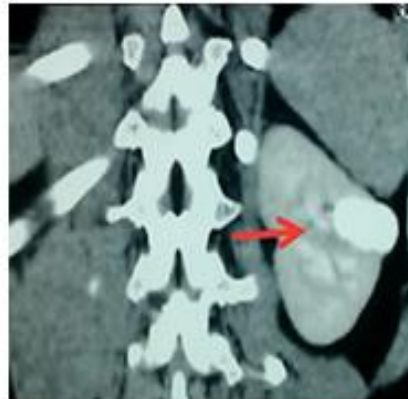
下盏结石
Lower calyx stone



Renal caliceal diverticular stone

- Calyceal diverticulum is a small semi-closed space into which urine can flow, but stone can not pass
- If there is mild or no obvious symptom, suggest follow up and observation
- If there is severe flank pain, infection, surgical intervention is indicated

Characteristics	Types	
	I	II
Site of communication with Pelvicalyceal system	Minor calyx	Renal Pelvis/Major Calyx
Location of lesion	Polar	Midzone
Symptoms	Rare	Common



PCNL should be considered the first line treatment



- SFR : 70-100%

- Symptom free : 77-100%

- PCNL : 77-100%

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PCNL could be the first line treatment, but there are some difficulties

1. Few fluid accumulation within diverticulum, difficult to puncture into
2. Even the success of the puncture cannot be judged by whether the puncture needle comes out of water
3. Small capacity of diverticulum and narrow of opening => difficult to place guidewire long enough

easy fulguration of the diverticular lining, and dilation of the diverticular neck if visible and desired. Ultrasound or CT guidance can

A

B

C



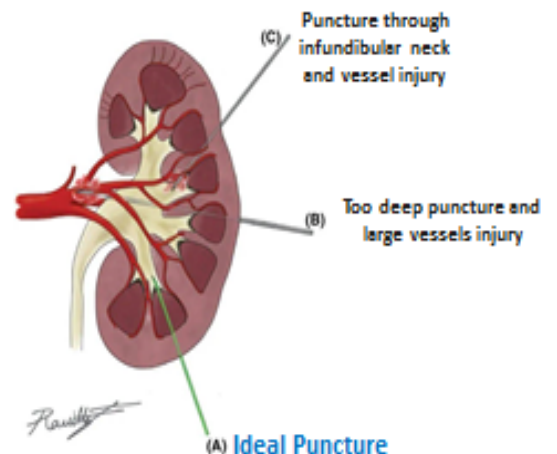
Key points of kidney puncture

Successful renal puncture is the key to PCNL surgery

● Key points of renal puncture :

1. Calyceal fornix puncture
2. Angle and direction
3. Depth
4. Dilation

Calyceal fornix puncture to collecting system is the safest, less invasive, less bleeding



The recommendation to puncture directly onto the calyceal fornix, in line with the infundibulum

Current Opinion in Urology 29(4):p 472-473, July 2019



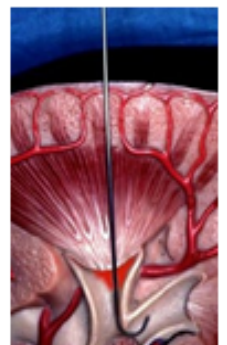
Difficulties in renal puncture when no hydronephrosis

For the most complete staghorn stone without hydronephrosis,

Puncture needle can not puncture through hard stone, even no enough space to place guidewire => Easy to loss tract during dilatation



In this situation, more traumatic injury happens



Complicated renal stones

The necessary and shortcoming of Multiple tract PCNL

For complicated renal stone: Staghorn stone, multiple, narrow infundibulum, abnormal structure

- The stone free rate of **Single tract** PCNL is limited

AUA guideline: Multiple tract PCNL for staghorn stone

More tracts or larger tracts mean:
More injury, more hemorrhage, more scar



But how to minimize damage to the kidneys?



多通道穿刺

Needle-perc decrease the injury of Multiple tract-PCNL



For complicated renal stone (Staghorn stone), multiple tract PCNL is necessary

Although we can not decrease number of tract,
We can decrease **size** of tracts



The size of Needle-perc is only 4.2fr
Effectively reduce the number of large channels and
reduce kidney damage



Scar of standard PCNL



Wound of Needle-perc



Diverse applications of Needle-perc for complicated renal stone



NP + SD



NP + MINI



NP + SD+ MINI



ECIRS : NP + RIRS

Needle perc is very flexible in the application of multiple combinations of complex stones

Personalized renal stone surgery



Echo-guided renal puncture





Take home message

- Needle perc alone is suitable for small size, low pole calyceal stones, esp., pediatric patient
- For complicated renal stone or large volume renal stones, combination of needle perc and mini-PCNL(16-18 Fr.) or fURSL (needle ECIRS) could achieve higher stone free rate