



## Dialysis Access Care- The benefit of the integrated roles with Clinical nephrologist and Interventional Nephrologists in Taiwan

Department of Nephrology  
Zuoying Armed Forces General Hospital  
**Dr. Hsiu-Chien Yang**

2025.12.6



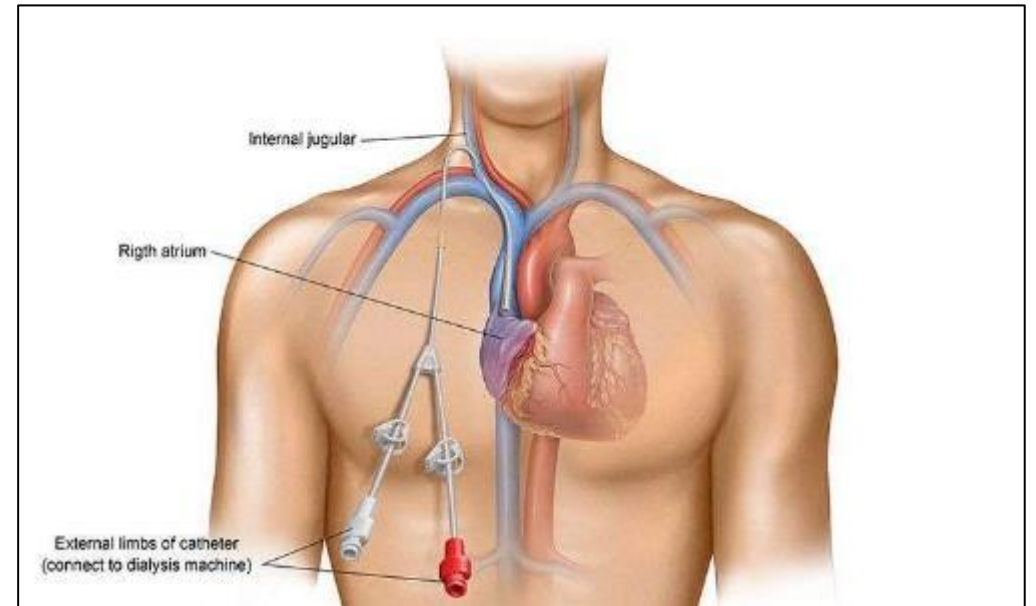
# Daily work

- Dialysis patients care
- OPD patients and inpatients care
- Consultation
- Research
- Teaching



# Daily work

- Kidney sonography
- Double lumen insertion
- Sono. guide biopsy
- Renal transplant ultrasound



# Technique...




For **fellows** in training & young **nephrologist** ....

- CVC catheter insertion
- Double lumen insertion
- Kidney sono & biopsy
- POCUS / VExUS .....
- ?

**That's all ? Can we do more ?**



**Table 1 | List of procedures that a nephrologist can learn to improve patient care**

Procedure	Description
Clinical assessment skills	Proficiency in evaluation of arteriovenous access and peritoneal dialysis catheter for maturation/function, signs of infection, and non-infectious complications
Hemodialysis	
• Central vein catheter	 Non-tunneled catheter placement Tunneled catheter placement Tunneled catheter removal
• Arteriovenous access	
Endovascular procedures (basic)	Diagnostic angiography  Percutaneous angioplasty
Endovascular procedures (advanced)	Stent placement  Coil embolization Ligation of accessory veins Identifying central vein stenosis Endovascular arteriovenous fistula creation
Surgery (basic)	Creation of arteriovenous fistula at conventional site (radiocephalic and brachiocephalic)
Peritoneal dialysis	Acute non-cuffed catheter placement Cuffed tunneled catheter placement Cuffed tunneled catheter removal
 Kidney biopsy	Native kidney Transplant kidney (where available)
 Ultrasonography	Fundamentals of bedside point-of-care ultrasonography

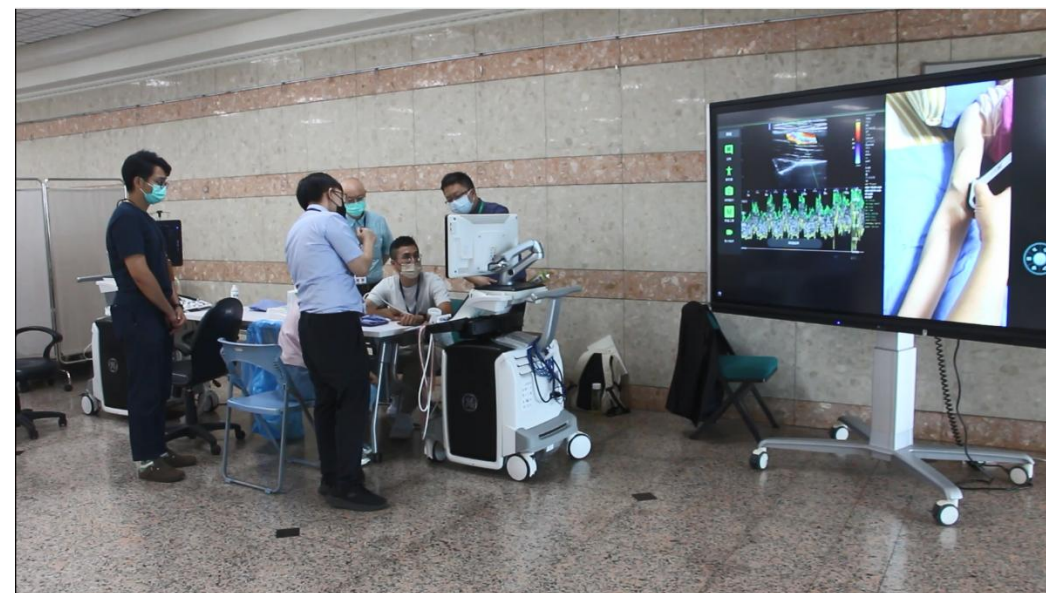
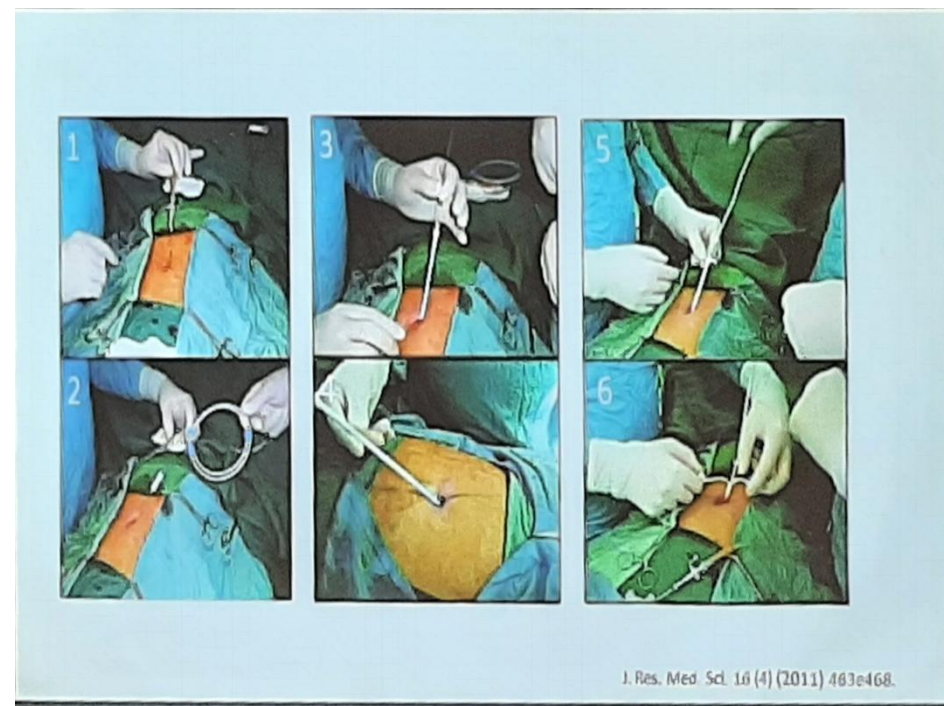
## 2022年台灣腎臟醫學會 Interventional Nephrology 工作坊

➤ 日期：111年10月30日(日) 9:00~12:30

➤ 地點：高雄榮總第三及四會議室

➤ 議程：

時間	內容	講師	主持人
08:45~09:00	報到		
09:00~09:05	開幕致詞	黃尚志理事長 台灣腎臟醫學會	
09:05~09:10	開幕致詞	陳金順副院長 高雄榮民總醫院	
09:10~09:20	PD catheter Insertion	鄭本忠醫師 高雄長庚醫院	吳逸文主任
09:20~09:30	Sonography of AV fistula and Graft	吳重寬主任 新光紀念醫院 傅崇銘醫師 高雄長庚醫院 陳靜怡醫師 臺北醫學大學附設醫院	吳逸文主任
09:30~09:40	Native & Transplant kidney biopsy	李明峰醫師/陳信佑醫師 高雄榮民總醫院	方華章主任
09:40~09:50	Permcath insertion	李明峰醫師/陳建良醫師 高雄榮民總醫院	方華章主任
09:50~10:00	Tea Break		
10:00~12:20	實作		
Team-1 (25 mins)		Team-2 (25 mins)	Team-3 (25 mins)
Team-4 (25 mins)			
PD catheter insertion		Sonography - AV fistula and Graft	Sonography-guide Renal biopsy
Permcath insertion			
12:20~12:30	Q&A		
12:30	賦歸		



# Training program

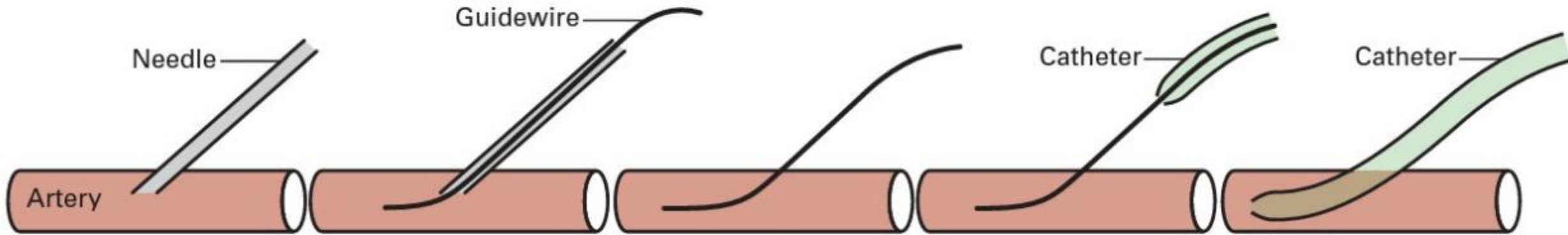
- Learn PTA/ thrombectomy/ PICC skill from radiologist in VGH-KS every W1 afternoon/ W5 morning.
- Learn Perm-cath/ PD tube insertion from CV doctor in our hospital every W4/W5 afternoon.
- Perform interventional procedure independently under the supervisor instruction.

PTA: percutaneous transluminal angioplasty

PICC: peripherally inserted central venous catheter

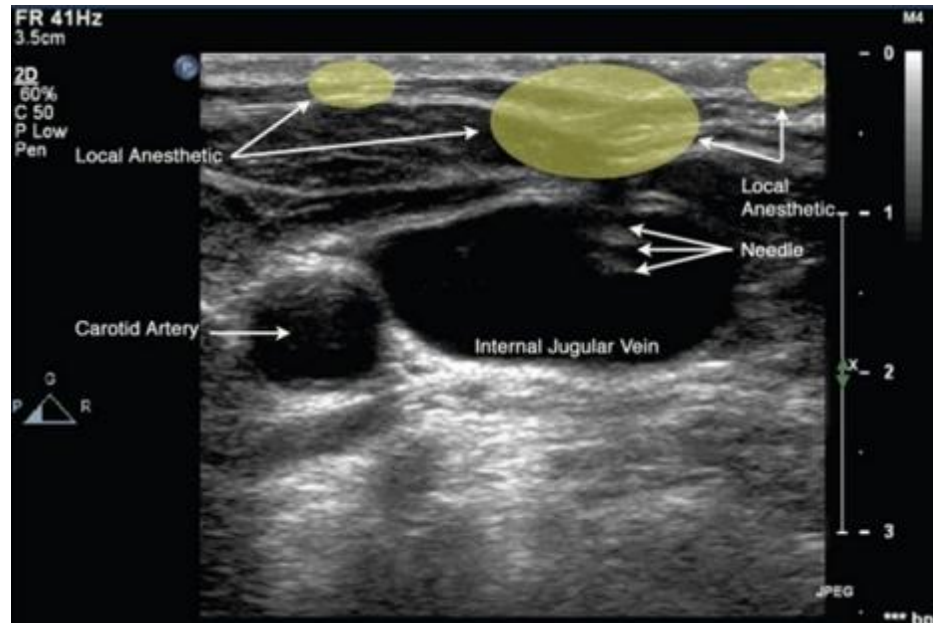
**Clinical nephrologist → interventional nephrologist**

# Seldinger technique

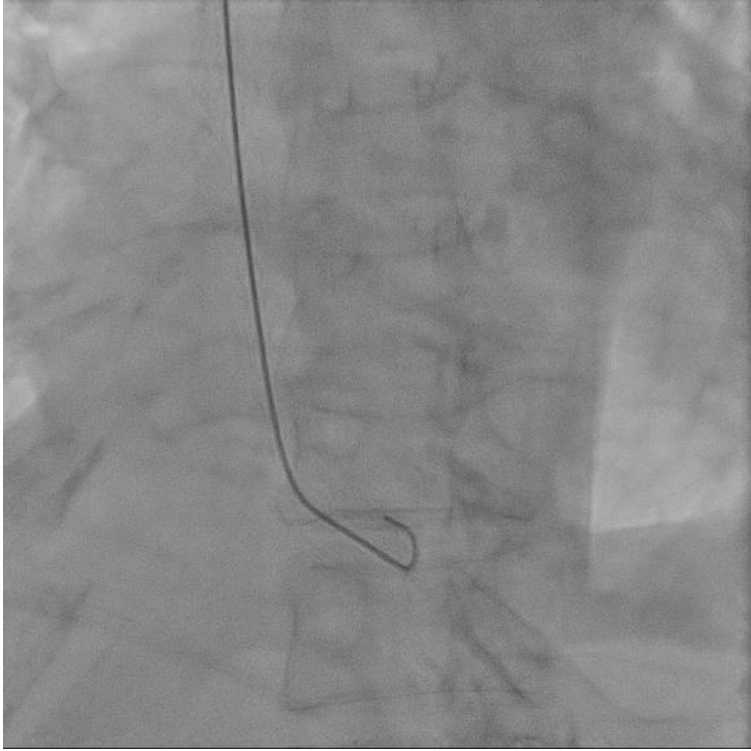


**Fig. 17.1** Seldinger technique for catheterizing blood vessels. The femoral artery or vein are the usual vessels used. (a) A needle is inserted through the skin into the blood vessel. (b) A guidewire is passed through the needle into the lumen of the vessel. (c) The needle is withdrawn, leaving the guidewire in the lumen of the vessel. (d) A catheter is threaded over the guidewire and passed into the lumen of the vessel. (e) The guidewire is withdrawn, leaving the catheter in position in the lumen of the vessel.

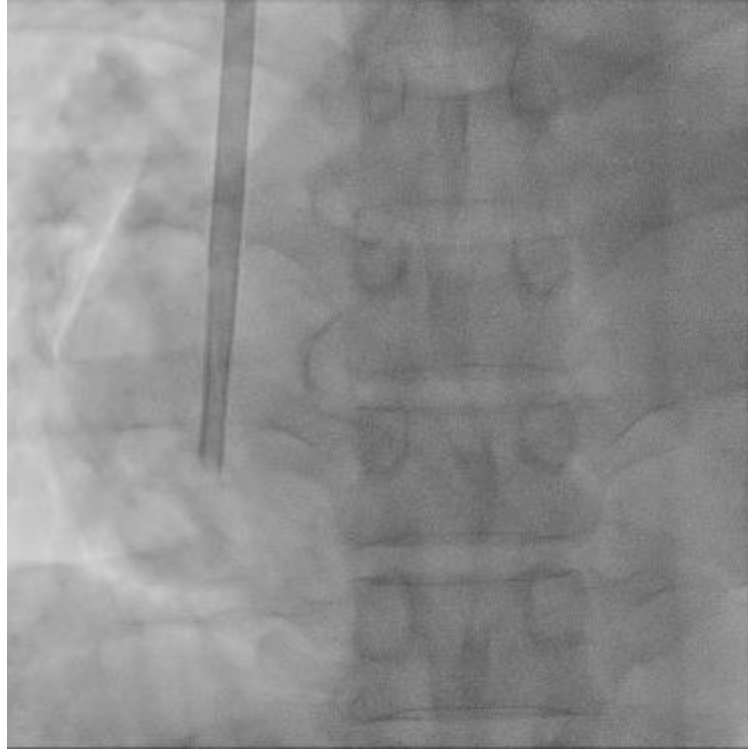
# Perm-cath implantation



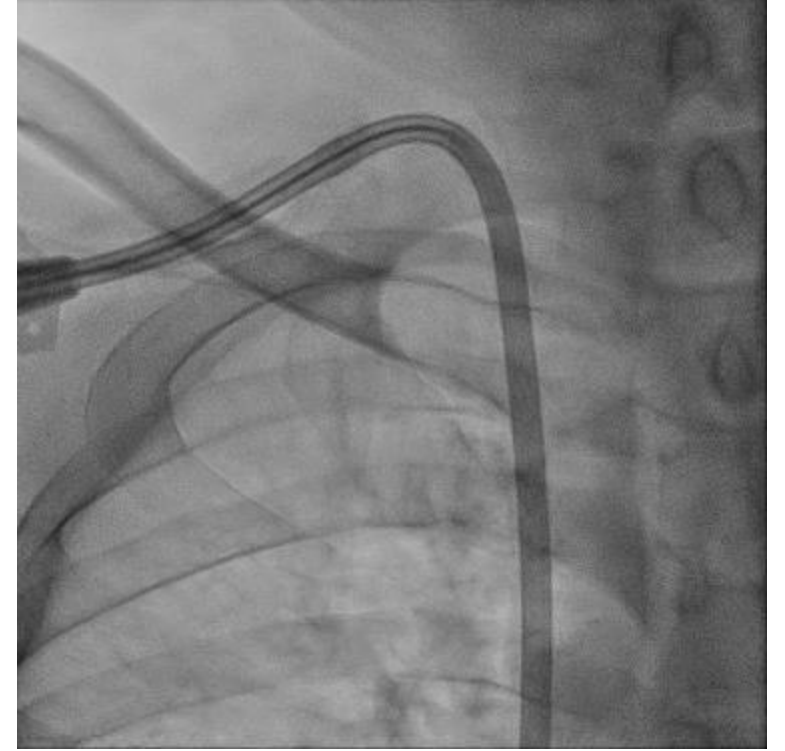
# Perm-cath implantation



Check the tip of guidewire



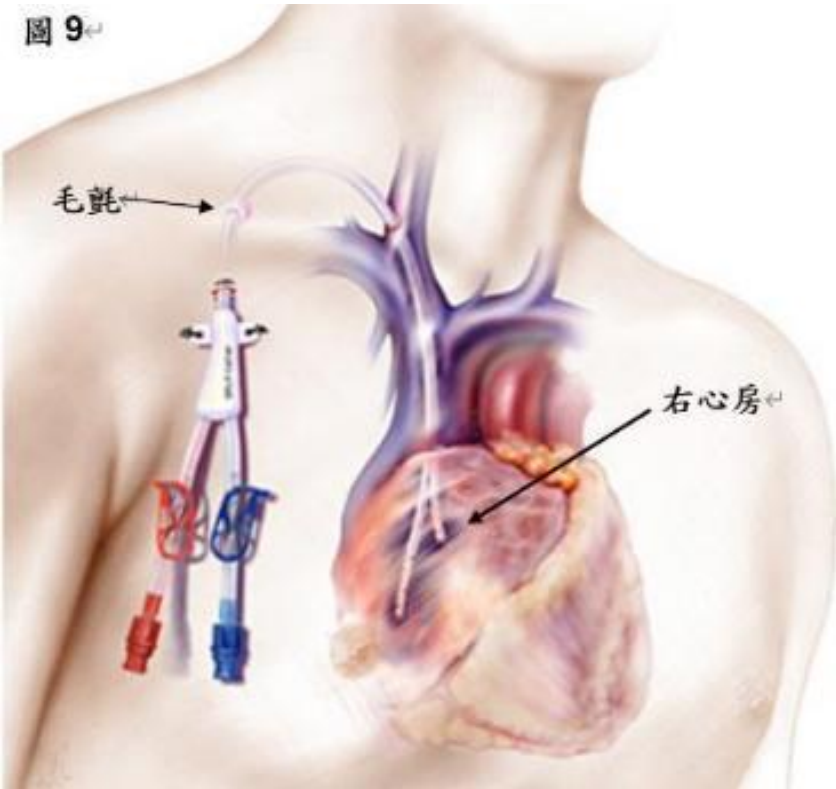
Check the tip of perm-cath



Observe any twisting of tube

# Perm-cath implantation

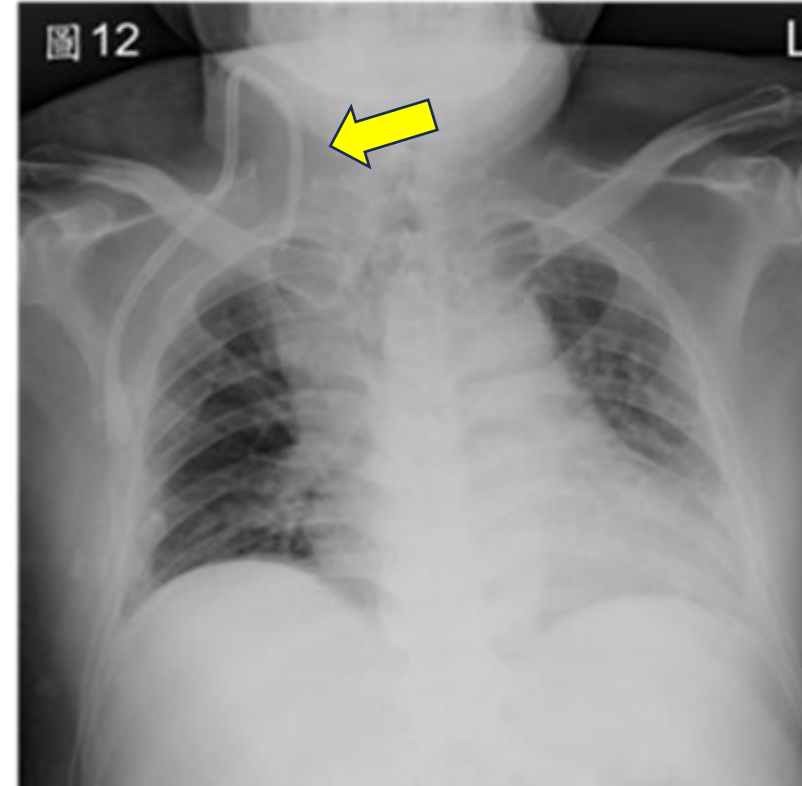
圖 9



10



圖 12



# Perm-cath removal

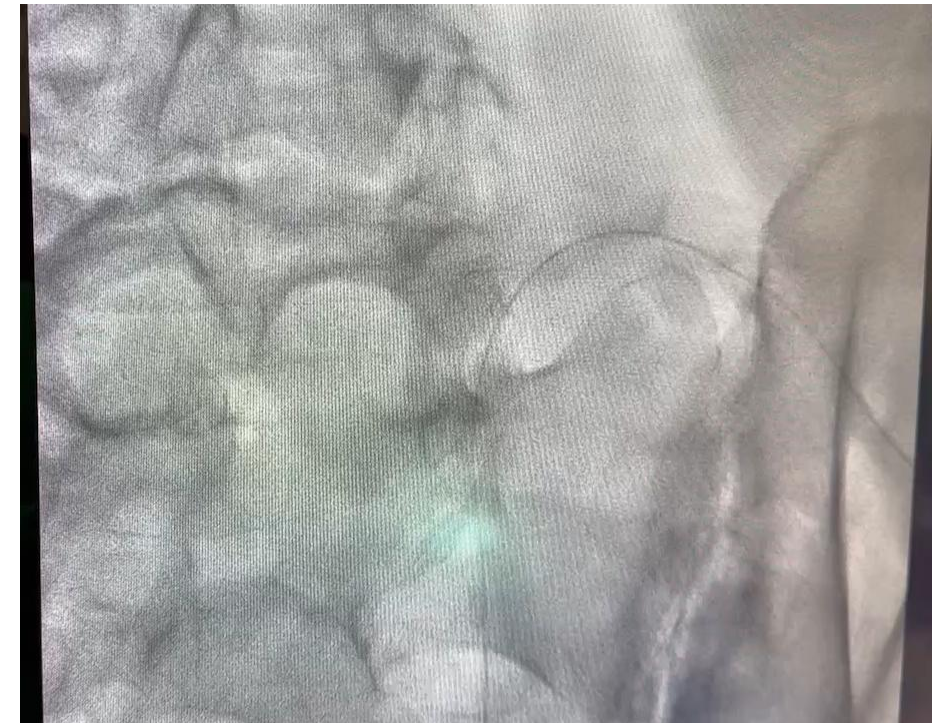
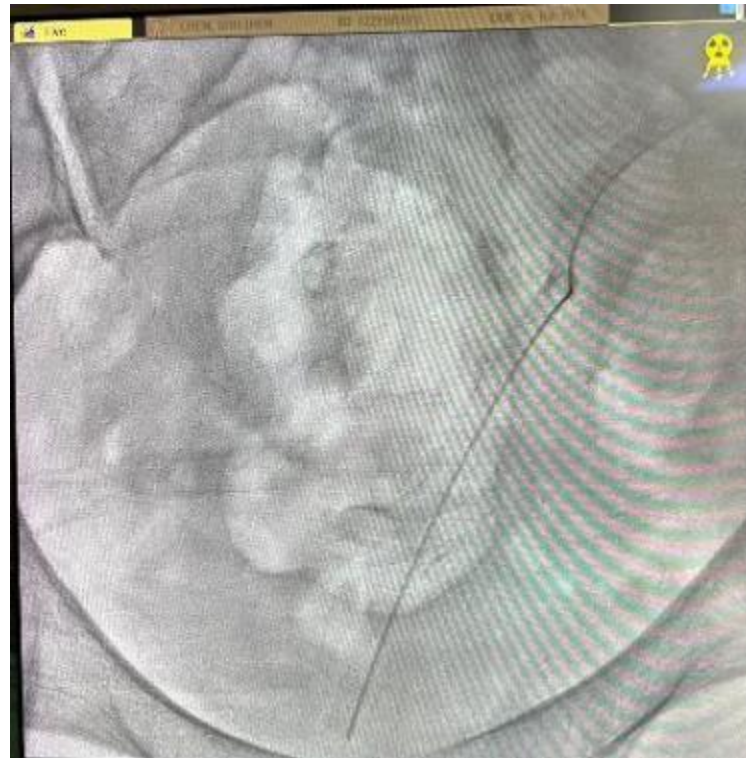
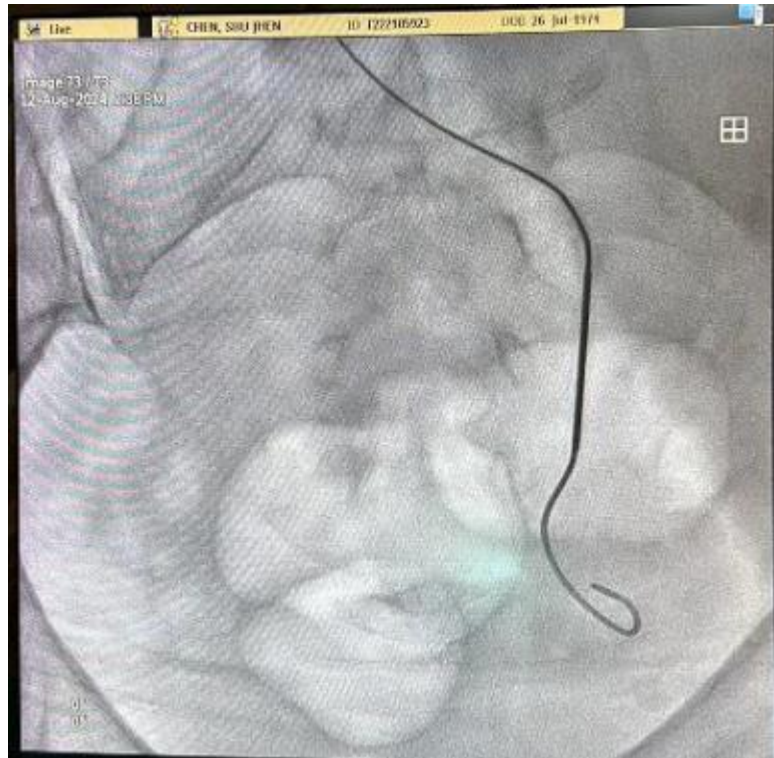




<https://app.shadowmoon.com.tw/pdpercutaneous/index.htm> 本教材係由

Meditating on surgical scenarios can help reduce panic.

# Peritoneal tube insertion



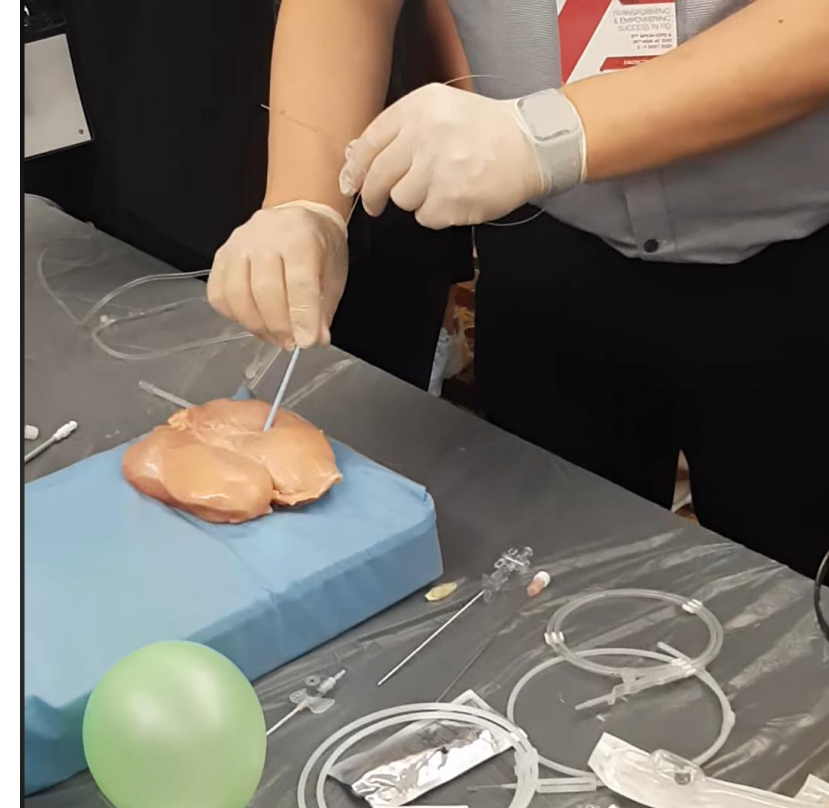
# Peritoneal tube insertion

APCM-ISPDP 2025  
PRE-CONGRESS: PD ACCESS

## PROGRAMME

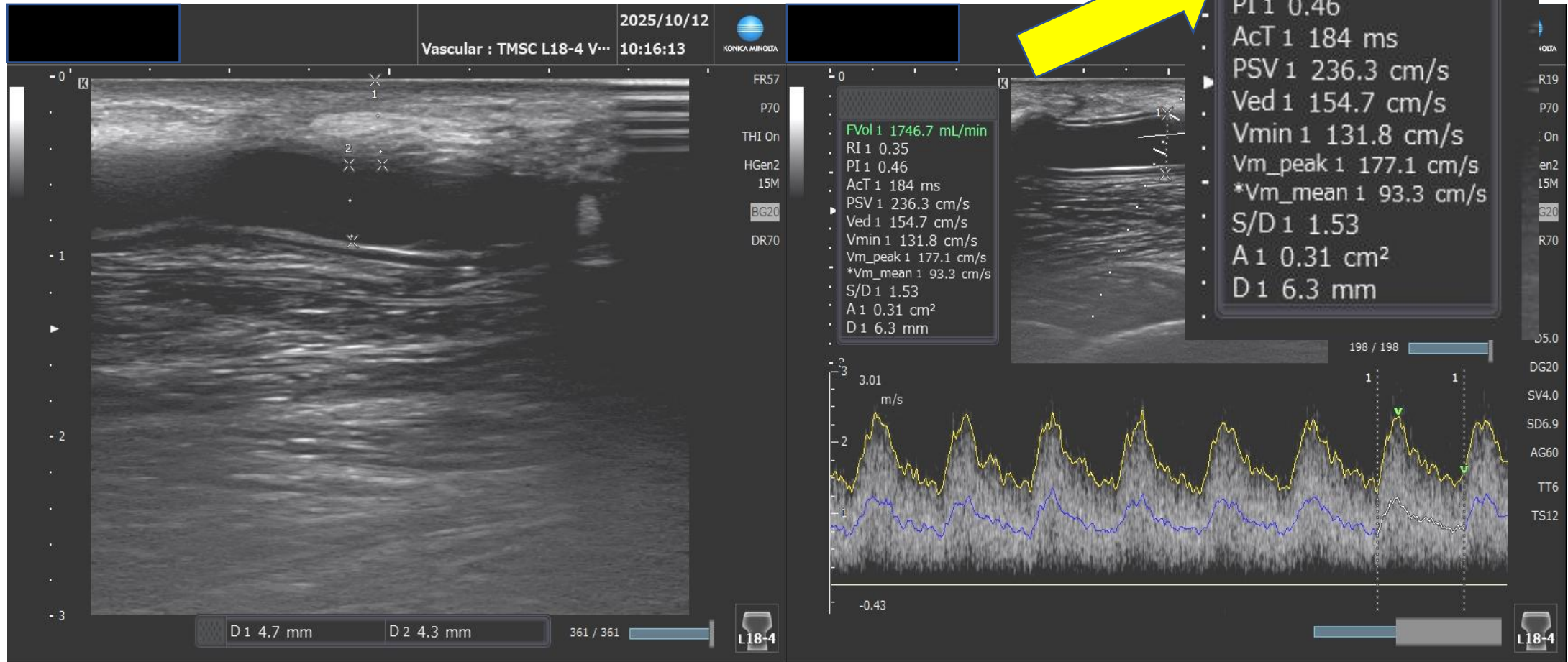
0730 - 0900	<b>REGISTRATION</b>
0900 - 1045	<b>PD Catheter Insertion Techniques</b> <i>Chaired by Afierin MAKMUN (Indonesia) &amp; Nor Fadhlina ZAKARIA (Malaysia)</i>
0900 - 0930	<b>PD Catheter Insertion: History &amp; Technique</b> Mohd Kamil AHMAD (Malaysia)
0930 - 1000	<b>Pre-Operative Assessment &amp; Preparation of Patients</b> Christopher LIM (Malaysia)
1000 - 1030	<b>Paediatric &amp; Special Group Considerations</b> Hui-Kim YAP (Singapore)
1030 - 1045	<b>Q&amp;A</b>
1045 - 1115	<b>COFFEE BREAK</b>
1115 - 1300	<b>Troubleshooting of PD Catheter Complications</b> <i>Chaired by Eddie TAN (New Zealand) &amp; Hui-Kim YAP (Singapore)</i>
✓ 1115 - 1145	<b>Dealing with PD Access Complications</b> Bee-Boon CHEAK (Malaysia)
1145 - 1215	<b>Post-Operative Care of the PD Catheter</b> Wan Zul Haikal Hafiz WAN ZUKIMAN (Malaysia)
1215 - 1245	<b>Advanced Approach in Difficult Catheter Insertion</b> Vinath KASI RAJAN (Malaysia)
1245 - 1300	<b>Q&amp;A</b>
1300 - 1400	<b>LUNCH BREAK</b>
1400 - 1610	<b>Demonstration of Techniques</b> <i>Chaired by Wan Hazlina WAN MOHAMAD (Malaysia) &amp; Nor Fadhlina ZAKARIA (Malaysia)</i>
	<b>Hands-on Session on PD Catheter Placement Techniques</b> Brett CULLIS (South Africa) Eddie TAN (New Zealand) Bak-Leong GOH (Malaysia) Vinath KASI RAJAN (Malaysia)
1610	<b>END OF PRE-CONGRESS</b>

TRANSFORMING & EMPOWERING SUCCESS IN PD

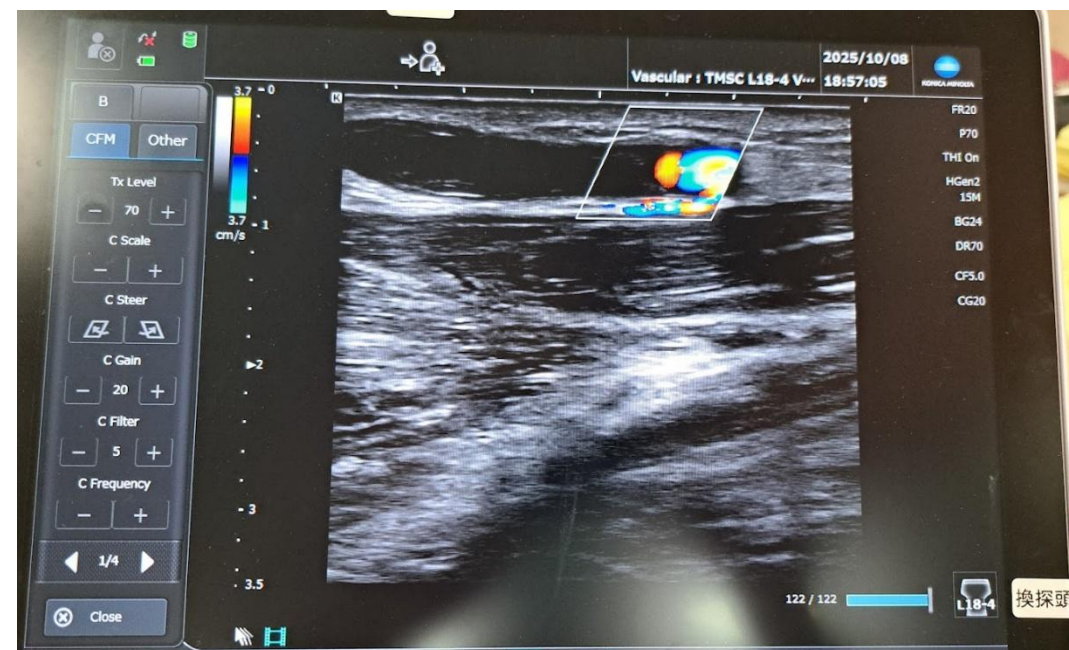


<https://photos.app.goo.gl/SFd9tefuLTvJfN4q6>

# Vascular ultrasound



# Vascular ultrasound



診別：門診  
主治醫師：[REDACTED]  
姓名：[REDACTED] 病歷號：01218463 身份證：R103183145 科別：腎臟內科  
申請序號：465 男 70歲 申請醫師：楊秀謙 判讀醫師：楊秀謙 醫字第040033號  
申請日期：114/07/30 10:20 報到日期：114/09/17 10:34 報告日期：114/09/18 19:38

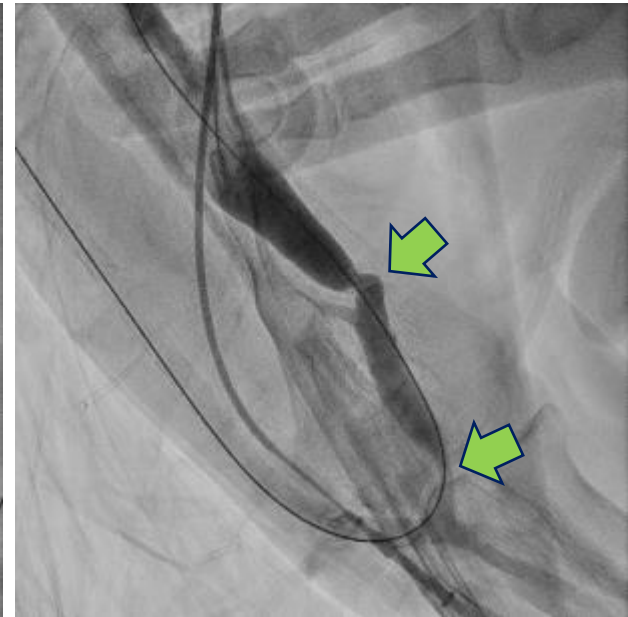
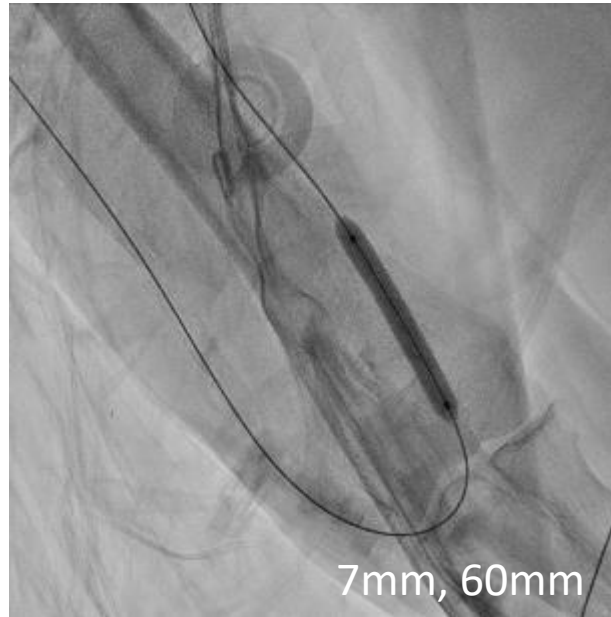
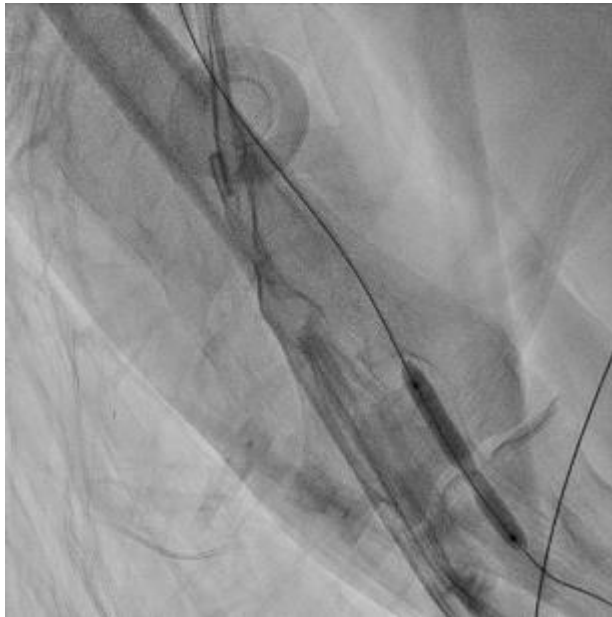
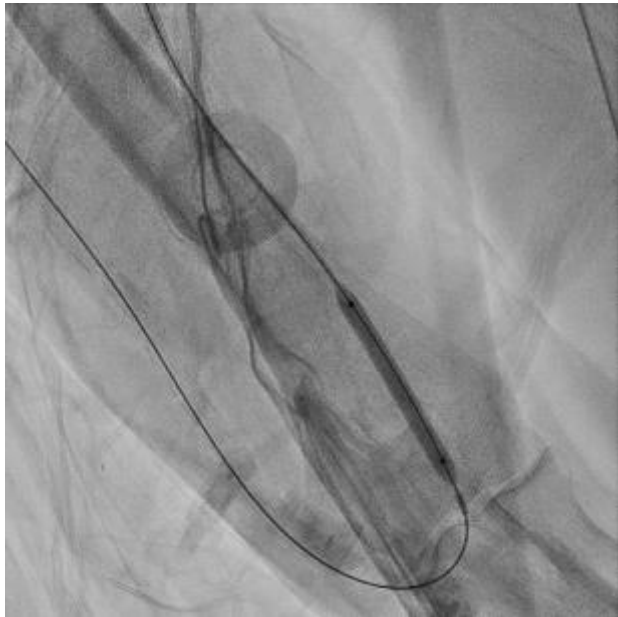
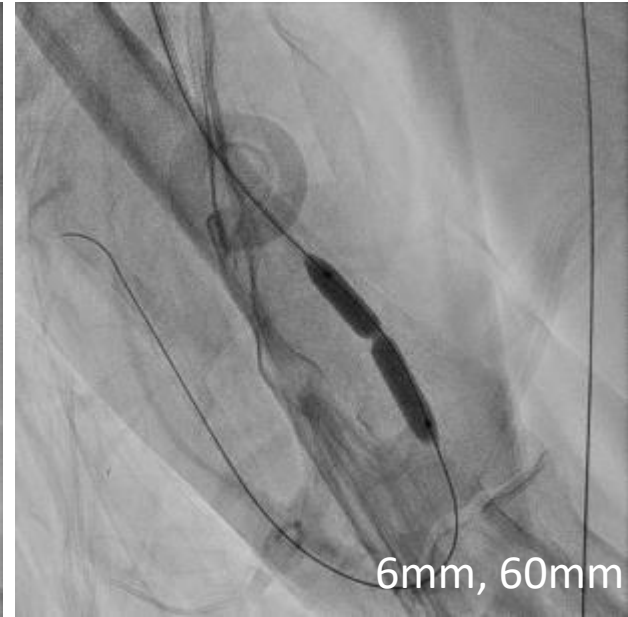
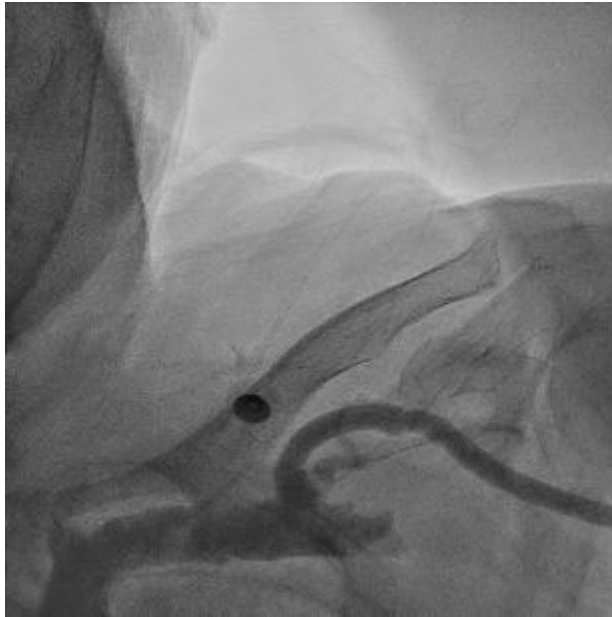
13.5  
診斷：883.1\_OPEN WOUND OF FINGER(S),COMPLICATED  
#####  
報告內容：  
周邊透析瘻管超音波檢查  
Problem: (V)Dysfunction; (V)low flow; (V)arm swelling; (V)puncture site check-up  
Location: (V)R't; (V)L't (V)Forearm; (V)upper arm; (V)other site:  
Shunt: (V)AVF; (V)AVG  
Anastomosis: radial A. to cephalic V.  
Flow: ml/min  
Width: 0.26-0.3 mm  
(V) Stenosis: near A-V anastomosis region  
(V) Blood clot:  
(V) Aneurysm:  
Plan:  
(V) Check up every 3 months.  
(V) PTA with balloon dilatation by CV/CVS doctor.  
(V) Suggest AV shunt revision.  
(V) AV shunt maturation exercise with squeeze/release ball.  
Nephrologist: Hsiu-Chien, Yang 腎專醫字S1468號 (Phone: 806-7627)

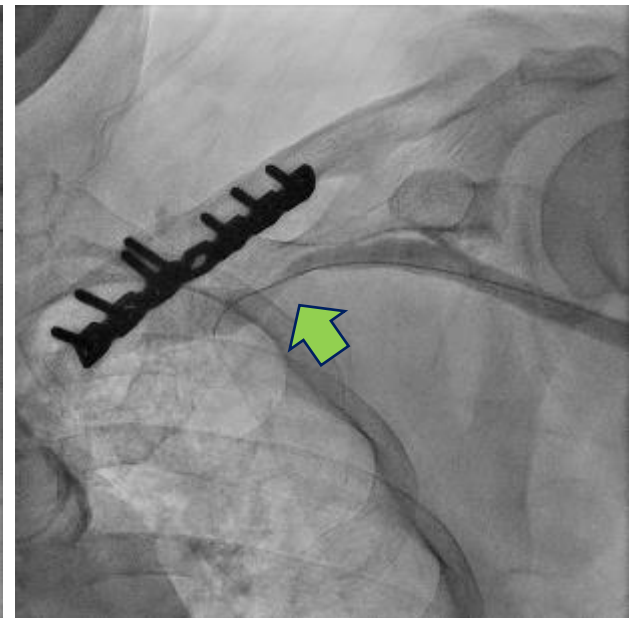
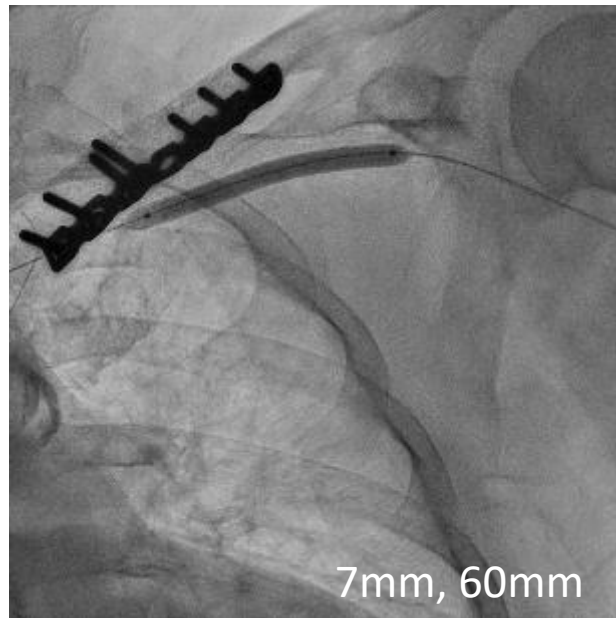
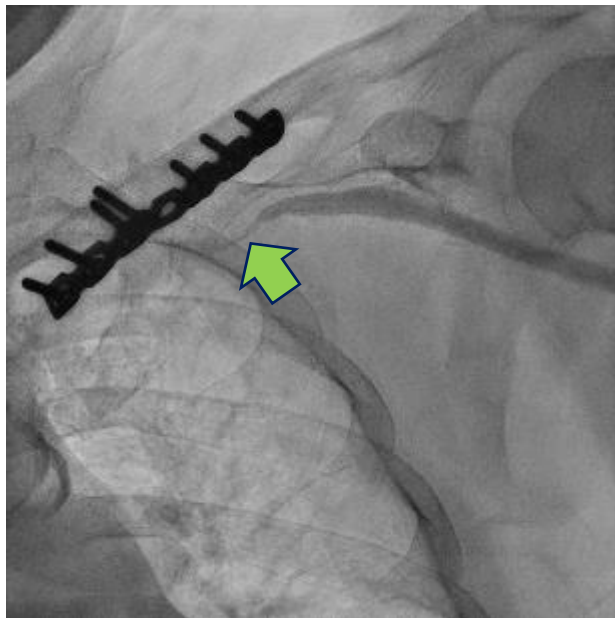
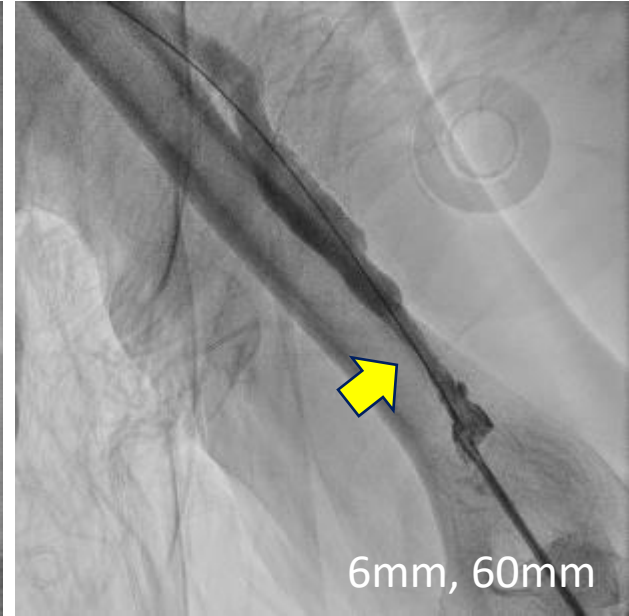
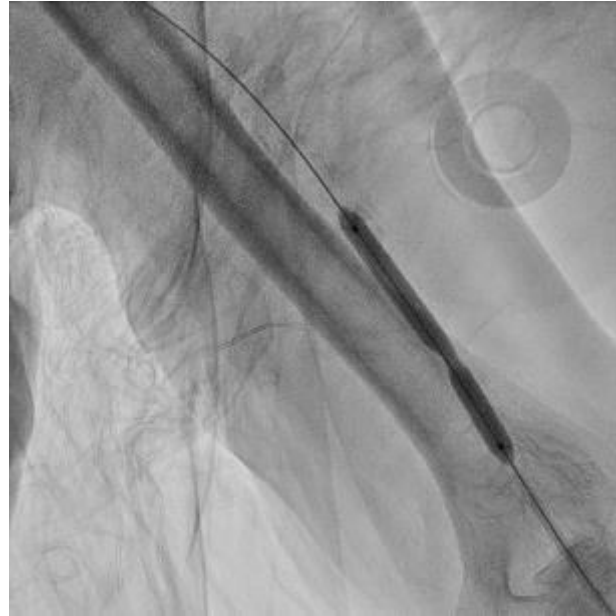
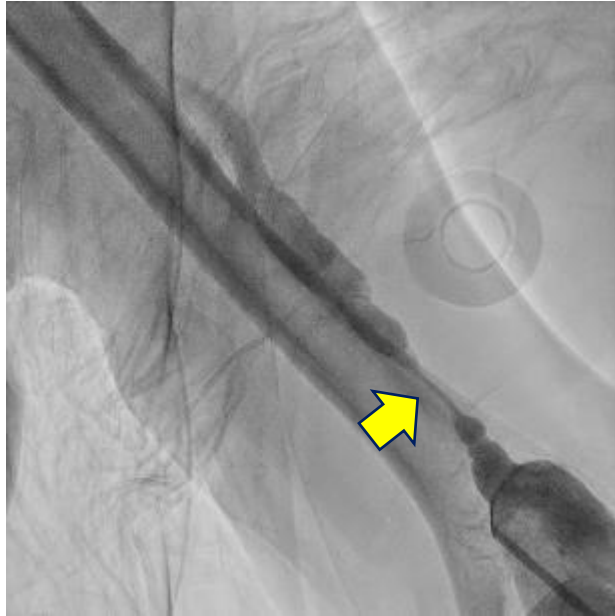
# Percutaneous transluminal angioplasty



# PTA (Percutaneous transluminal angioplasty)

李簡淑眸 T201236512 F/73

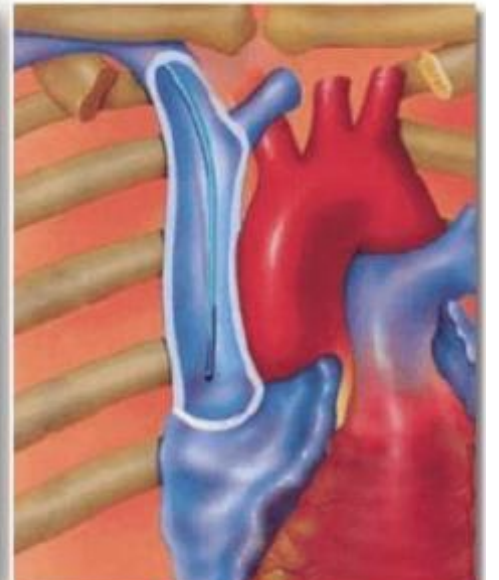
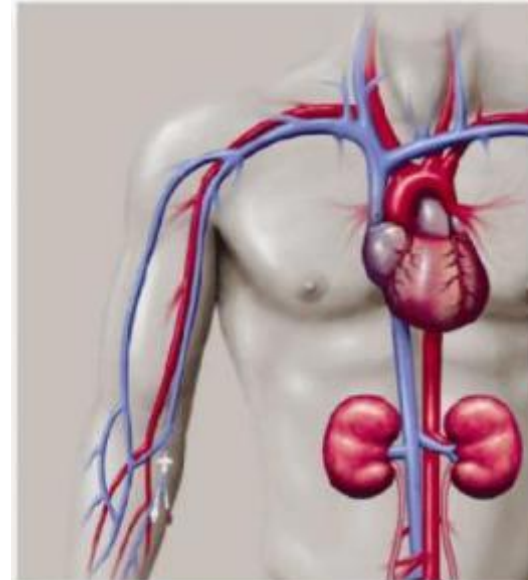




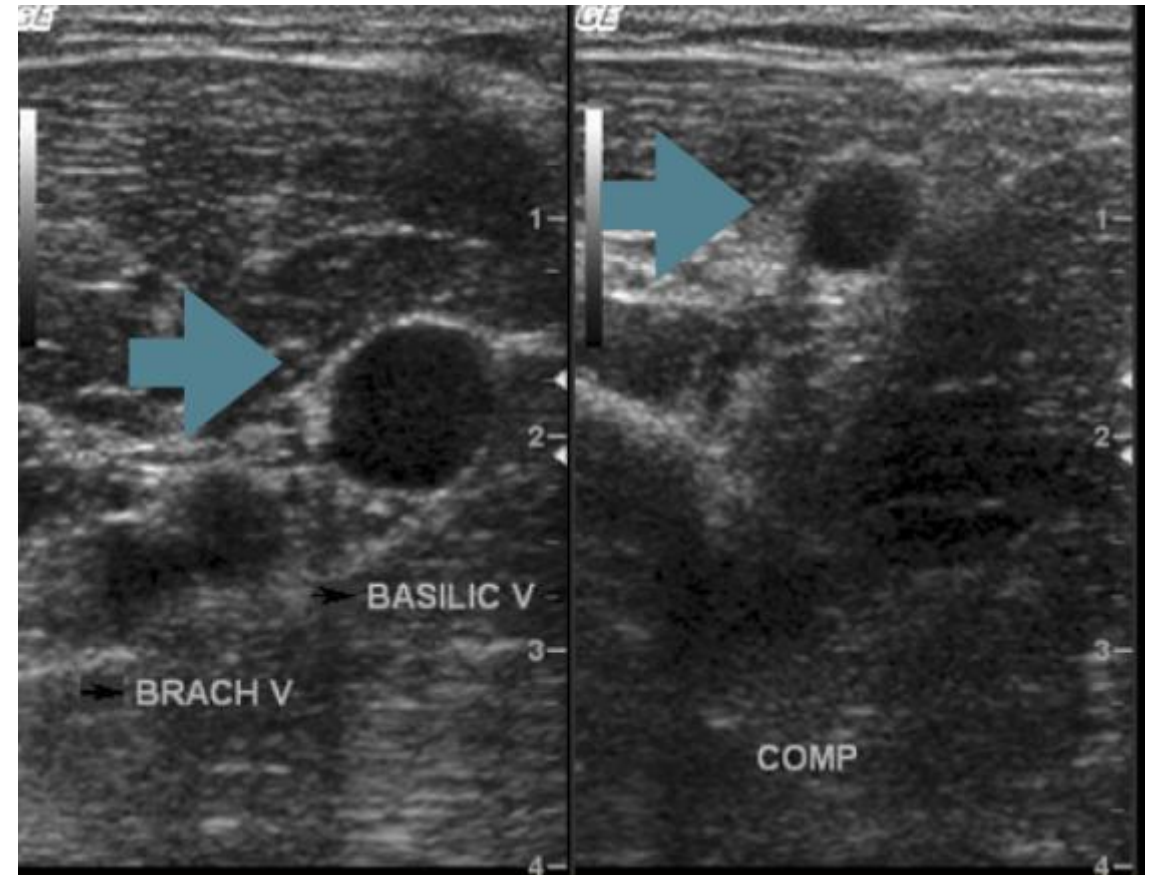
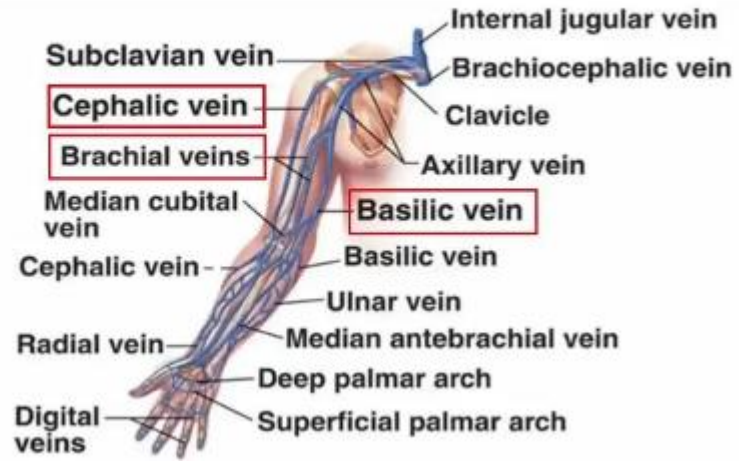
# Peripherally inserted central catheter, **PICC**

## Indications:

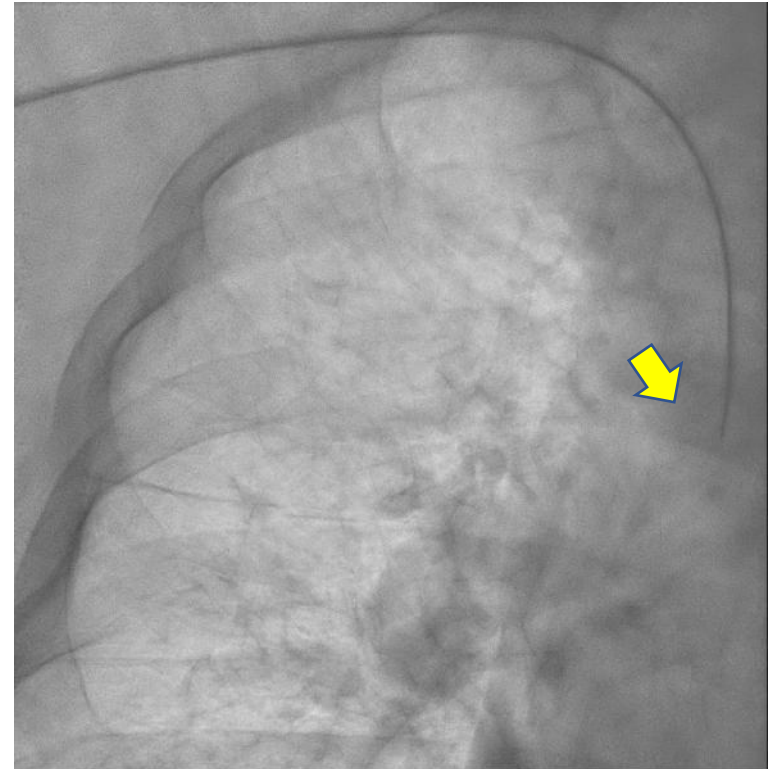
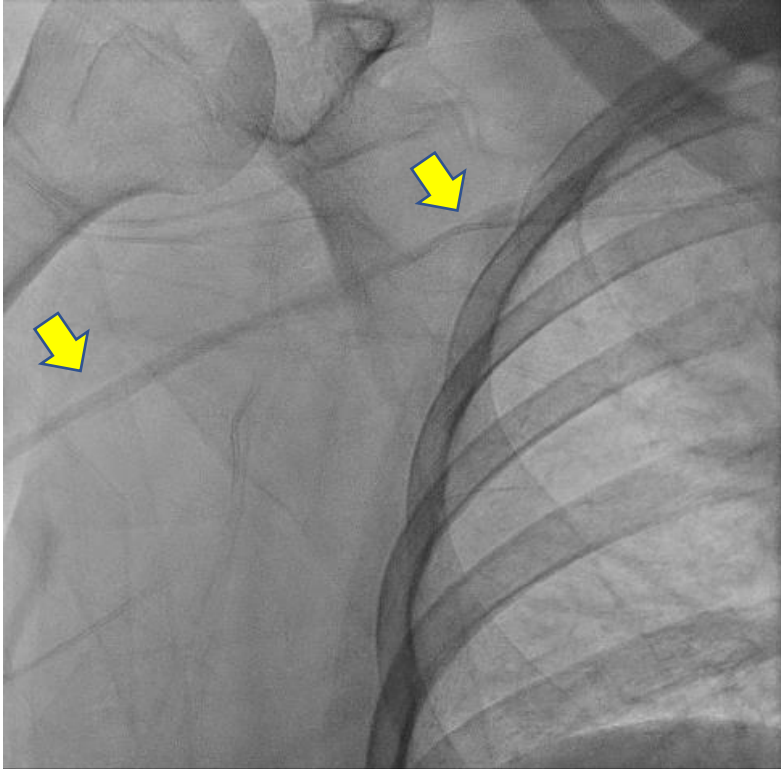
- Chemotherapy drugs or intravenous nutrition
- Long-term intravenous medication is required when peripheral superficial veins are in poor condition.
- Suitable for blood draws.



## Landmarks



# Antegrade venography



# Malaysia Society of Diagnostic Interventional Nephrology




**16TH ANNUAL DIAGNOSTIC AND INTERVENTIONAL NEPHROLOGY MEETING**

**ULTRASOUND in NEPHROLOGY (POCUN) : BASICS to ADVANCED**

**EVENT 22nd NOVEMBER 2025**

VENUE : **SUNWAY MEDICAL CENTER DAMANSARA**

**HOT! TOPICS**

- Managing AKI in Critical Care with POCUS
- POCUS Guided AVF Cannulation
- VIRGIN Collaborative Care in Dialysis Access Intervention
- Ultrasound Guided Fistuloplasty When and Where
- POCUS in Nephrology: Lectures and hands-on sessions
- AVF Care
- In conjunction with POW WINDOW, WINFOCUS

**Endorsed by:**



**Organized by**

Malaysian Society of Diagnostic and Interventional Nephrology



In collaboration with **SUNWAY MEDICAL CENTRE**

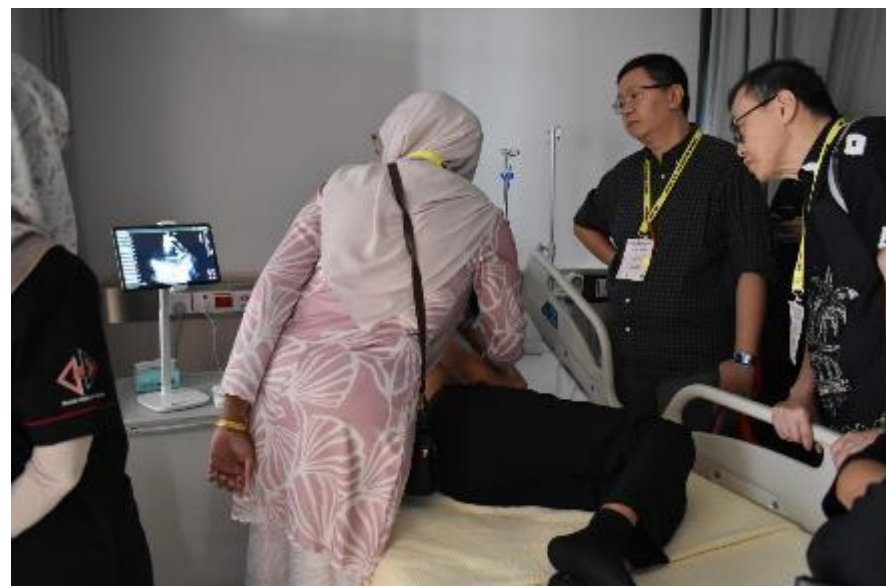


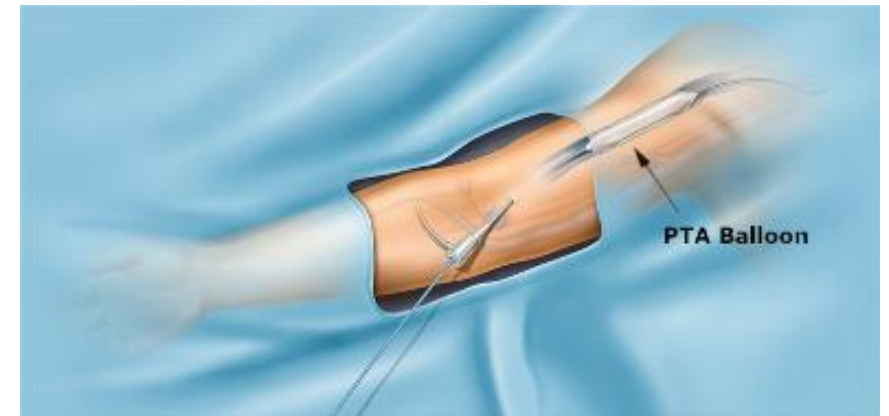
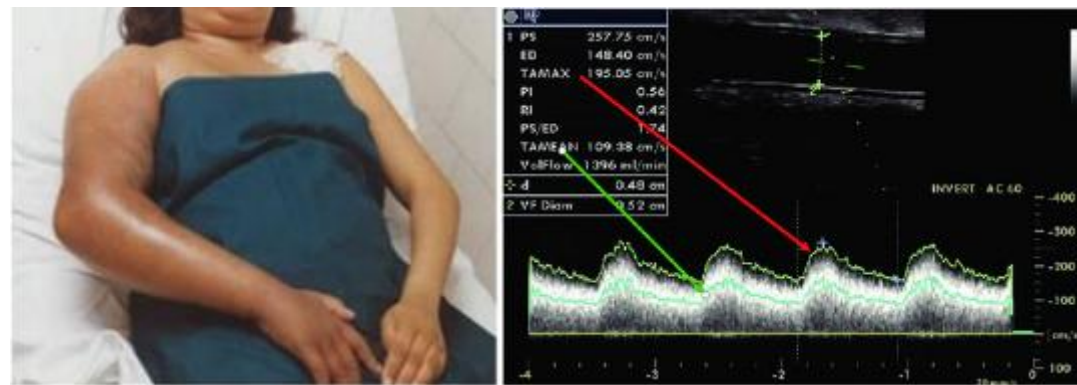


UTILIZATION of ULTRASOUND in NEPHROLOGY: BASICS to ADVANCED					
0730-0800	REGISTRATION				
0800-0815	Welcoming Speech from President MSDIN				
0815-0830	Opening Remarks from SMCD				
0830-0900	Managing AKI in Critical Care Beyond Hydronephrosis with POCUS <i>Nurul Zaynah Nordin</i>				
0900-0930	Plenary 1: POCUS Guided AVF/AVG Cannulation by Paramedics: A Paradigm Shift <i>Suryati Yakob</i>				
0930-1000	VIRGIN: Collaborative Care in Dialysis Access Interventions Between Vascular, Interventional Nephrology and Interventional <i>Gan Chye Chung</i>				
1000-1030	Sponsored Morning Tea Talk				
1030-1100	Plenary 2: US Guided Fistuloplasty: The Selection Criteria and The Japanese Experience <i>Masanori Wakabayashi, Bosei Daiichi Clinic, Japan</i>				
	Physician		Paramedic		
1100-1300	POCUS Didactic Lectures		AVF /AVG Assessment/Dialysis Lectures		
Time	Title	Speaker	Time	Title	Speaker
1100-1115	Basic US Principles	<i>Nurfariyah Abdul Ghani</i>	1100-1120	Types of AVF and AVG: Pros and Cons	<i>Datuk Hanif Hussein</i>
1115-1130	POCUS Abdomen +KUB				
1130-1145	Lung US	<i>Poh Yee Han</i>	1120-1140	AVF Examination: Clinical and Basic US	<i>Eddie Wong Fook Sem</i>
1145-1200	Basic Cardiac US (FoCUS)	<i>Hidayah Shafie</i>			
1200-1220	US Guided HD Catheter Insertion	<i>Mohd Kamil Ahmad</i>	1140-1200	Cannulation and Decannulation Technique	<i>Siti Fatimah Khalid</i>
1220-1240	AVF Duplex: Preop-mapping and Normal	<i>Vinoth Kasi Rajan Athmalingam</i>	1200-1230	Managing Non-Infective HD Catheter Complication	<i>Kong Boon Huei</i>

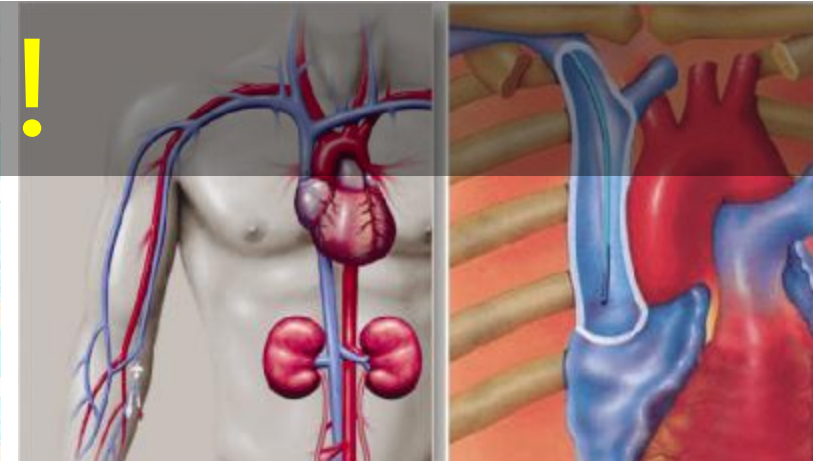
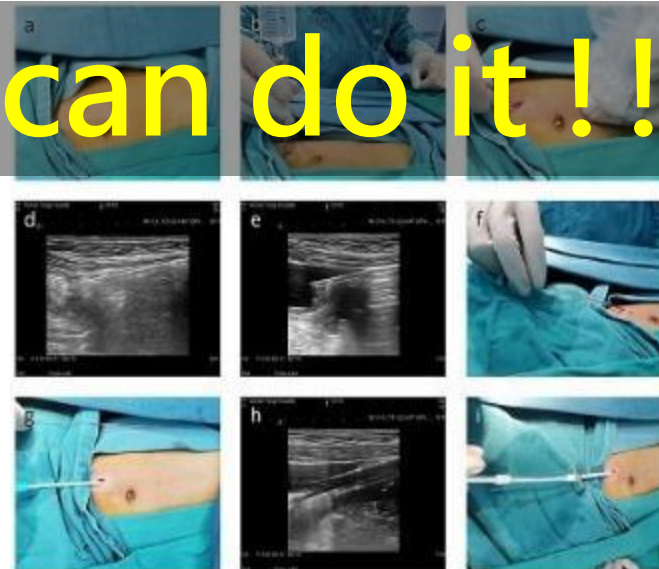
UTILIZATION of ULTRASOUND in NEPHROLOGY: BASICS to ADVANCED					
1240-1300	AVF Duplex: Abnormal	<i>Putra Mas Pian</i>	1230-1300	US Guided AVF Cannulation	<i>Dato Zaiha Harun</i>
1300-1400	Sponsored LUNCH Talk				
	HANDS ON SESSION				
1400-1700	Physician		Paramedic		
	Title & Facilitator	Group	Time	Title & Facilitator	Group
1400-1430	Lung US <i>Poh Yee Han</i>	1	1400-1445	USG Guided AVF Cannulation	A
1430-1500	Abdomen+KUB <i>Yudisthra M Ganeshadeva</i>	2		<i>Dato' Zaiha Harun Hansen J Kalil</i>	
1500-1530	Cardiac US <i>Hidayah Shafie</i>	3	1445-1530	Plastic Cannulation	B
				<i>Siti Fatimah Khalid Noorayuni</i>	
1530-1550	Sponsored Evening Tea Talk				
1550-1620	US Guided Fistuloplasty <i>Masanori Wakabayashi and Gan Chye Chung</i>	4	1530-1615	Dialysis Catheter, Guidewire Type and care <i>Danny Ong Yu Chen Nur Zuhafifah Nurhamziah</i>	C
1620-1640	AVF Duplex (Normal & Abnormal) <i>Wan Haikal Putra Mas Pian</i>	5		AVF Clinical Examination <i>Kong Boon Huei</i>	D
1640-1700	AVF Duplex (Pre-op Mapping) <i>Vinoth Kasi Rajan Athmalingam</i>	6	1615-1700	AVF US Examination <i>Suryati Yakob</i>	
1700	Closing Ceremony and Bon Voyage				
1800-1900	AGM 2024 and 2025				
2000	Faculty Dinner by invitation				

# Malaysia Society of Diagnostic Interventional Nephrology





We can do it !!!

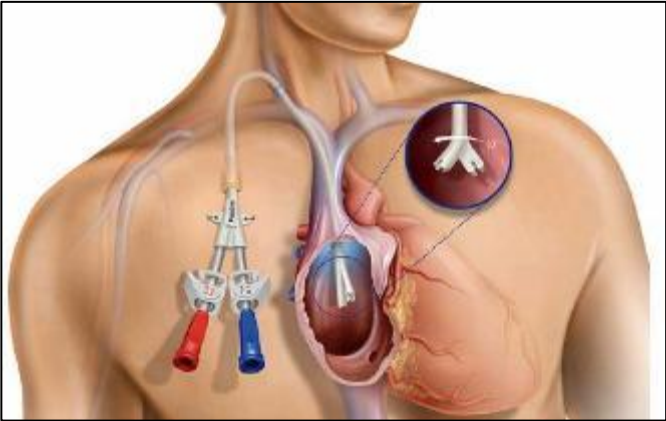


# The cumulative number of cases

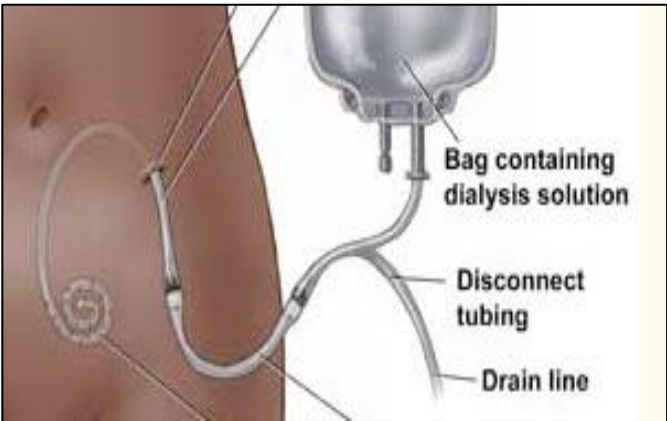
41 cases



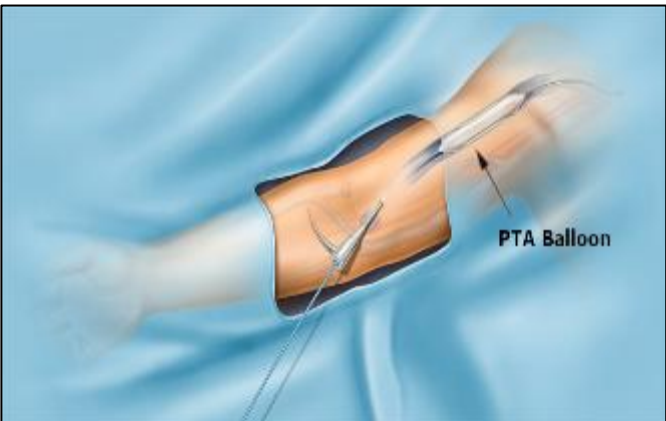
68 cases



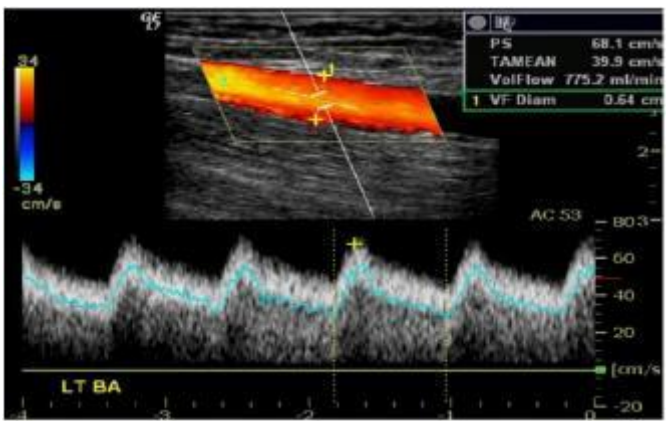
10+ cases



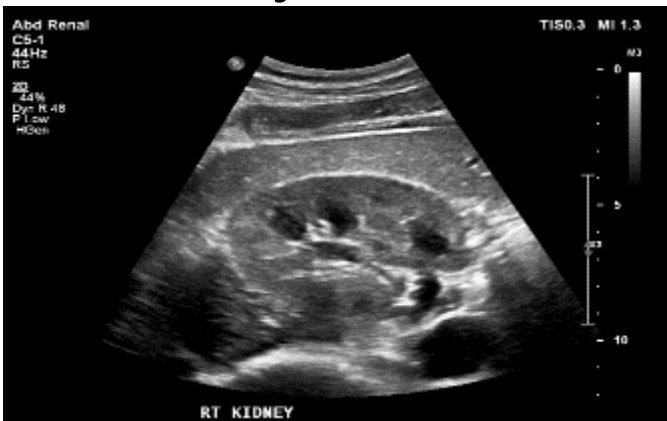
34 cases



32 cases



Daily work

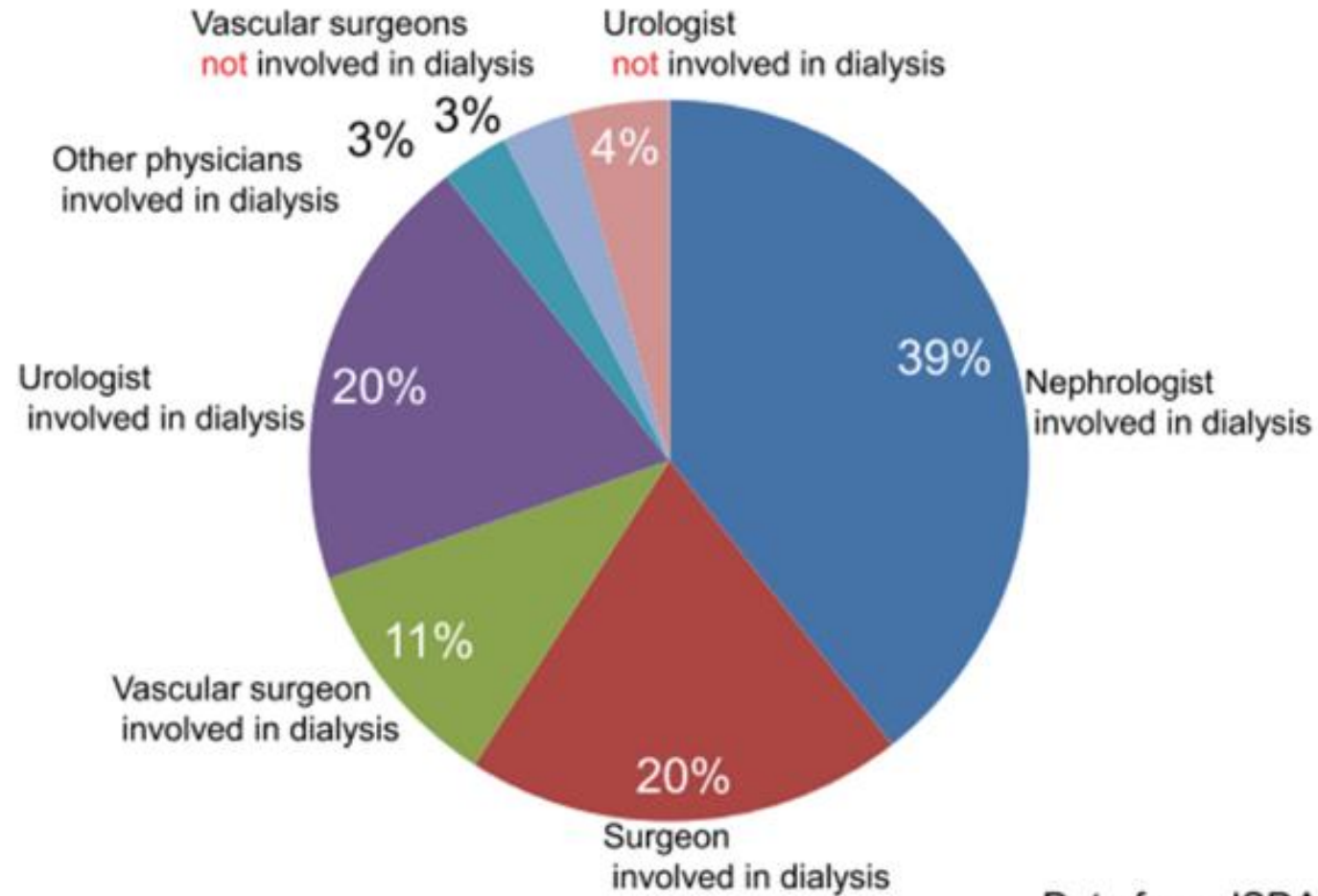


# Current state of dialysis treatment and vascular access management in Japan

The Journal of Vascular Access  
2019, Vol. 20(1S) 10–14  
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DOI: 10.1177/1129729819838183  
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JVA | The Journal of  
Vascular Access

Takashi Sato<sup>1,2</sup>, Hiroshi Sakurai<sup>2</sup>, Kentaro Okubo<sup>2</sup>,  
Risa Kusuta<sup>2</sup>, Takeshi Onogi<sup>2</sup> and Masato Tsuboi<sup>2</sup>



Data from JSDA, 2015

Distribution in % of specialties involved in endovascular treatment of vascular access in **Japan**.

# Interventional nephrology: current status and clinical impact in Japan

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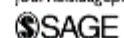
**Table 3** Frequencies of procedure performance and involvement to procedure by nephrologists, non-nephrologists or their collaboration

	PD catheter insertion	PD catheter removal	PD catheter unroofing	Vascular access surgery	Endovascular intervention	Kidney biopsy
Total performing institutions	250 (76.2)	250 (76.2)	250 (76.2)	316 (96.3)	290 (88.4)	309 (94.2)
Nephrologists <sup>a</sup>	75 (30.0)	72 (28.8)	89 (35.6)	110 (34.8)	113 (39.0)	263 (85.1)
collaboration <sup>a</sup>	44 (17.6)	38 (15.2)	26 (10.4)	61 (19.3)	41 (14.1)	27 (8.7)
Non-nephrologists <sup>a</sup>	131 (52.4)	140 (56.0)	135 (54.0)	145 (45.8)	136 (46.9)	19 (6.1)

## Current state of dialysis access management in Korea

Yong-Soo Kim<sup>1</sup>, Yaeni Kim<sup>2</sup>, Seok Joon Shin<sup>2</sup>, Hyung Seok Lee<sup>3</sup>,  
Sung Gyun Kim<sup>3</sup>, Seong Cho<sup>4</sup>, Ki Ryang Na<sup>5</sup>, Jin Kuk Kim<sup>6</sup>,  
Seung Jung Kim<sup>7</sup>, Young Ok Kim<sup>8</sup> and Dong-Chan Jin<sup>9</sup> on behalf of  
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### Procedure

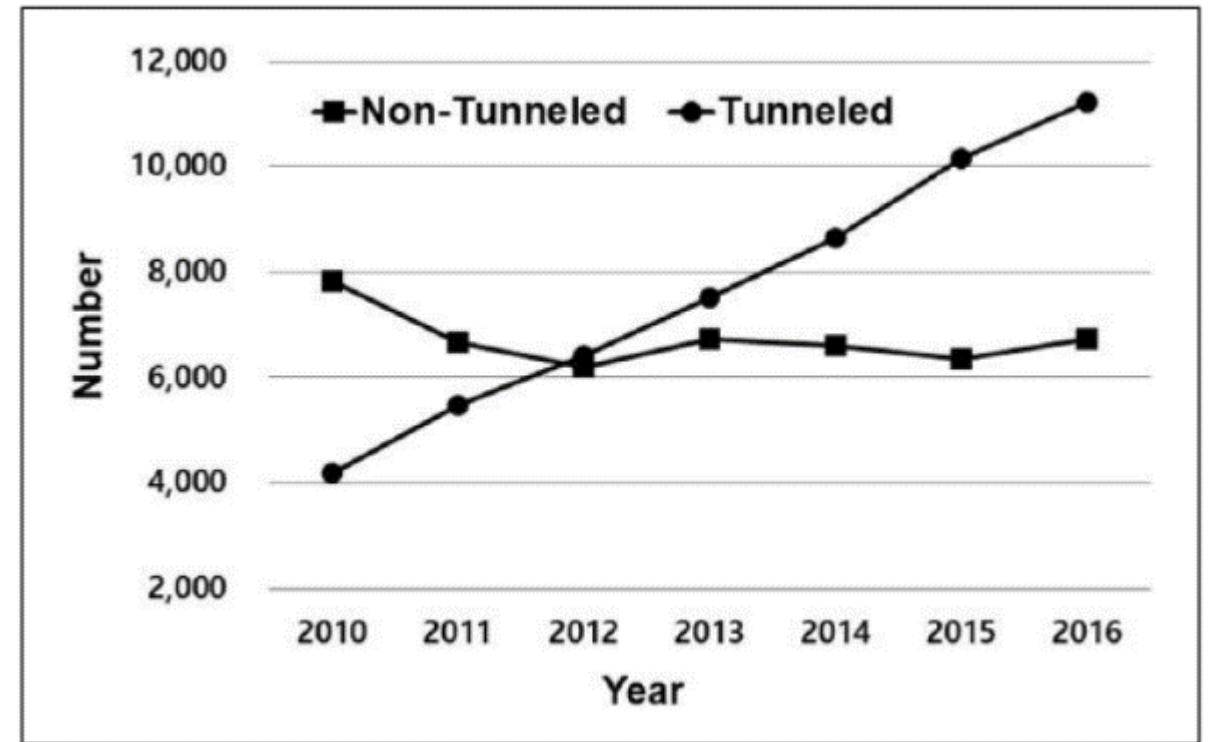
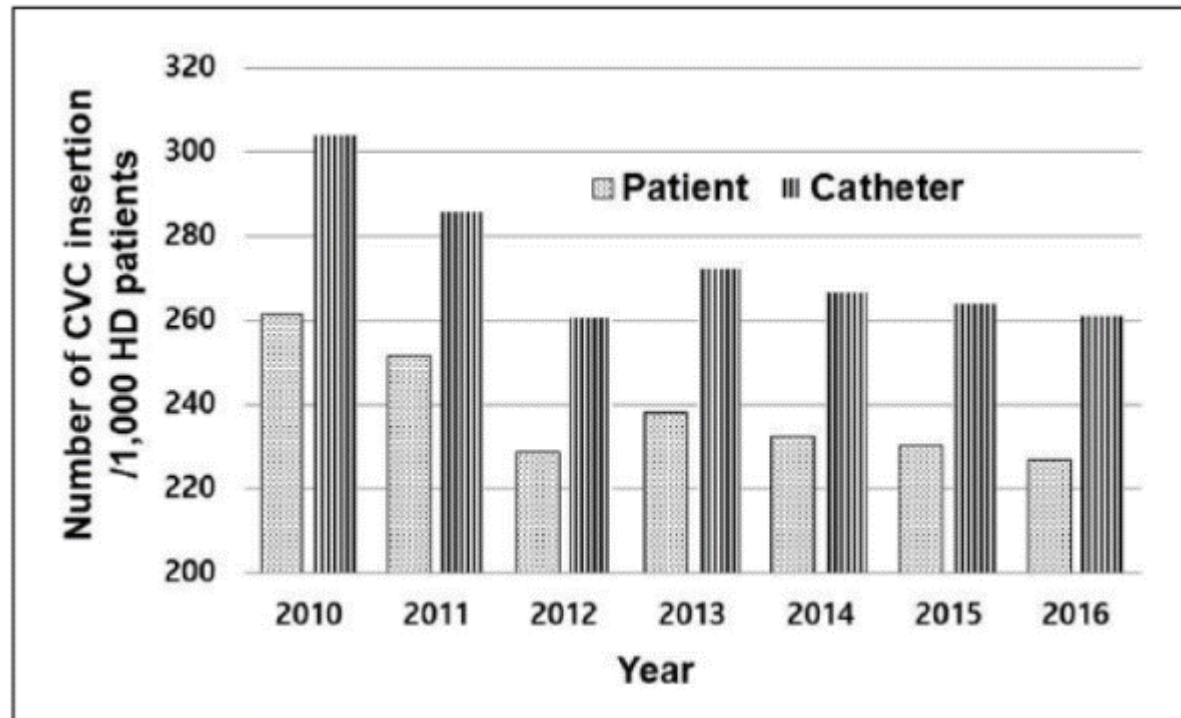
### Year

	2011 (%)			2017 (%)		
	N	R	S	N	R	S
Non-tunneled HD catheter insertion (central vein or femoral vein)	61	35	4	62	33	5
→ Tunneled HD catheter insertion (central vein)	7	71	21	18	70	9
Endovascular intervention (PTA or thrombectomy)	2	71	22	7	68	22
PD catheter insertion	26	1	73	19	3	78

## Current state of dialysis access management in Korea

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# Interventional Nephrology: Opportunities and Challenges

ACKD  
Advances in Chronic Kidney Disease

NATIONAL KIDNEY  
FOUNDATION.

## Interventional nephrology



Subspecialty of nephrology



Diagnosis and procedures in patients with kidney disease



Establishment and maintenance of dialysis access

## Past



Dialysis access placement and education has decreased considerably



Nephrologist focused on the delivery of dialysis and care of vascular access was deferred to other specialties



No formal training: "see one – do one"

## Present



ASDIN offer interventional nephrology certifications (didactic training and hands-on experience)



Better outcomes of procedures performed by interventional nephrologist



Interventional nephrologist is responsible for the patient, plan, and manage dialysis access

## Future



Nephrology training programs should include vascular access knowledge and training experience



"Train the trainer"



Development of facilities designed, equipped, supplied, and staffed for the management of dialysis access

**Summary:** Success of interventional nephrology as an independent discipline depends on building on the vision and strong foundation that has been laid by the pioneers in this field. The nephrologist has a pivotal role as the leader of multi-disciplinary teams to optimize care of the patient on dialysis, and to promote collaboration in research, training and education.

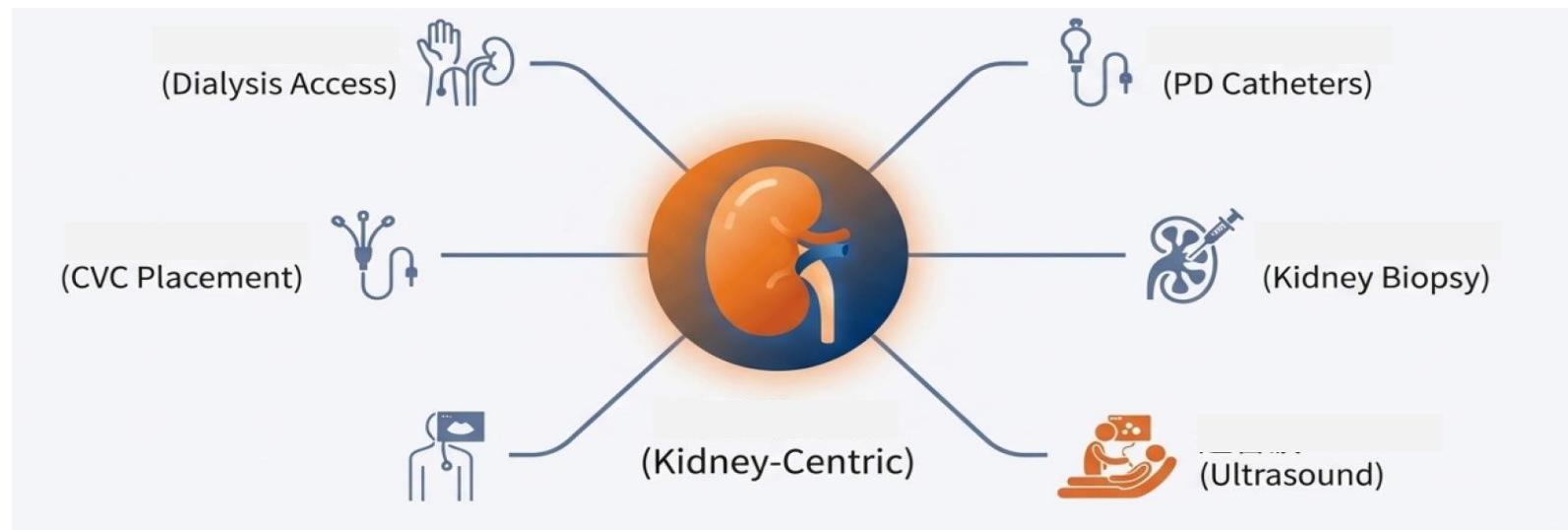
**Reference:** Niyar VD, Beathard G.  
Interventional Nephrology: Opportunities and Challenges.  
*Advances in Chronic Kidney Disease*, 2020.

**Visual abstract:** Denisse Arellano, MD

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# Next step of IN in Taiwan...

- Program- Set the training program
- Specialist- Cooperate with radiologist, surgeon and cardiologist
- Space- Book the time of Angiography room / Catheterization room
- Interest – Survey the intention to IN in our clinical nephrologist



# The **benefit** of **interventional nephrologist**

- Early detect and manage the lesion of AV shunt
- Reduce the need of temporary dialysis catheter
- Increase the willingness and proportion of PD
- Improve the quality of dialysis care in hospitals
- Our role in disaster nephrology, ex: acute PD for AKI.



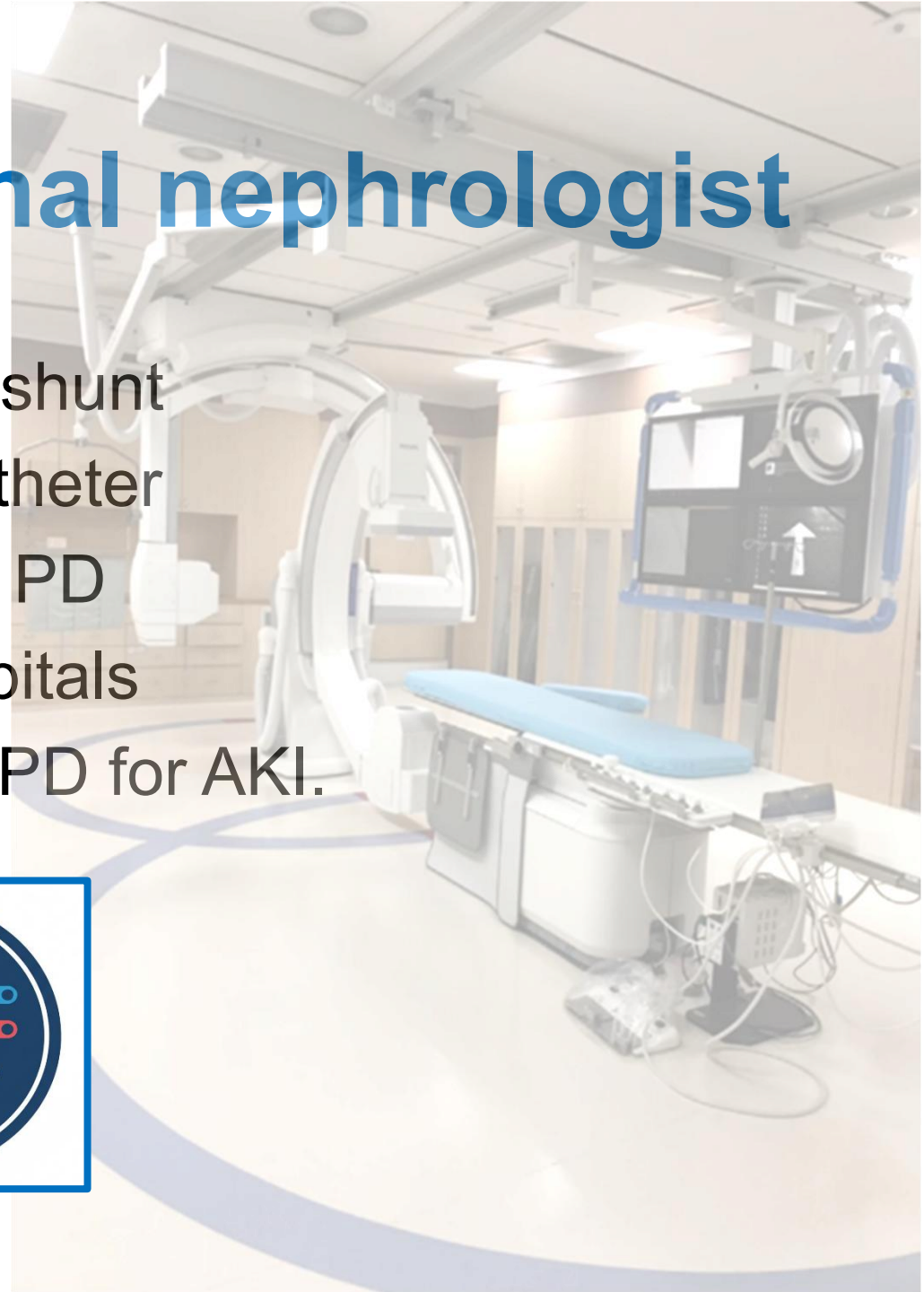
Teaching



Research



Clinical care



A close-up photograph of a baby with light brown hair and blue eyes, wearing a green and white shirt. The baby has a pouting expression and is holding a small object in their hand. The background is a blurred outdoor setting.

**Be an Interventional Nephrologist !!!**

**You Can Do It !**

**Thank You**