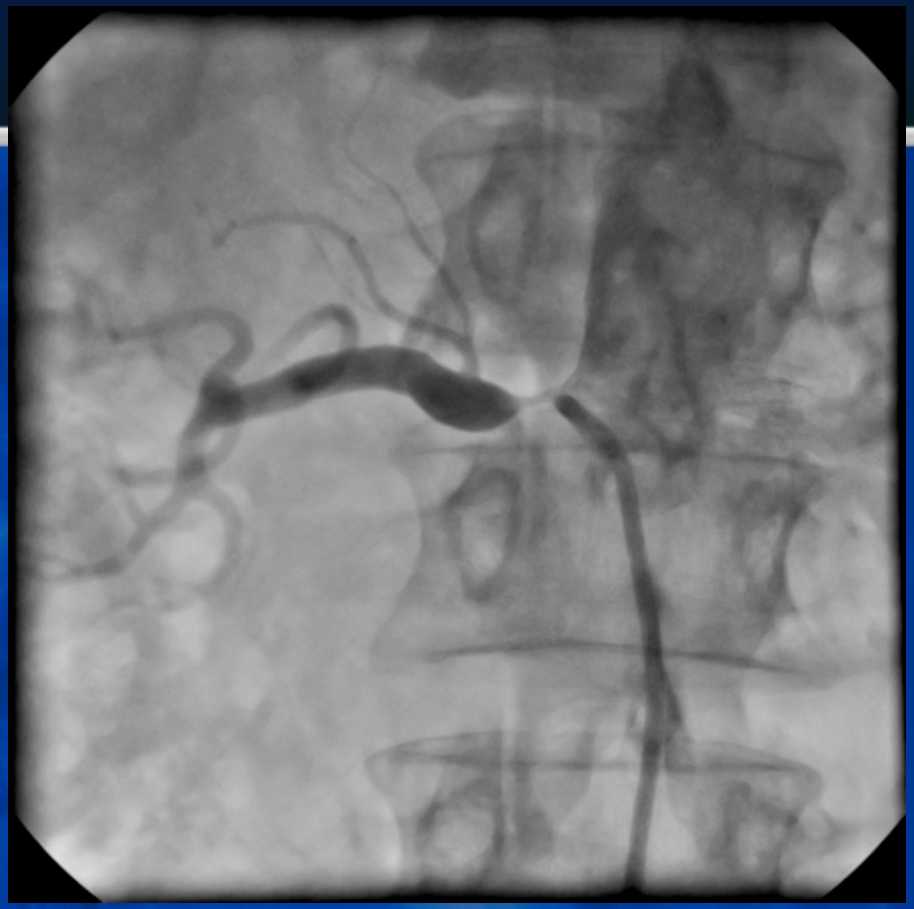
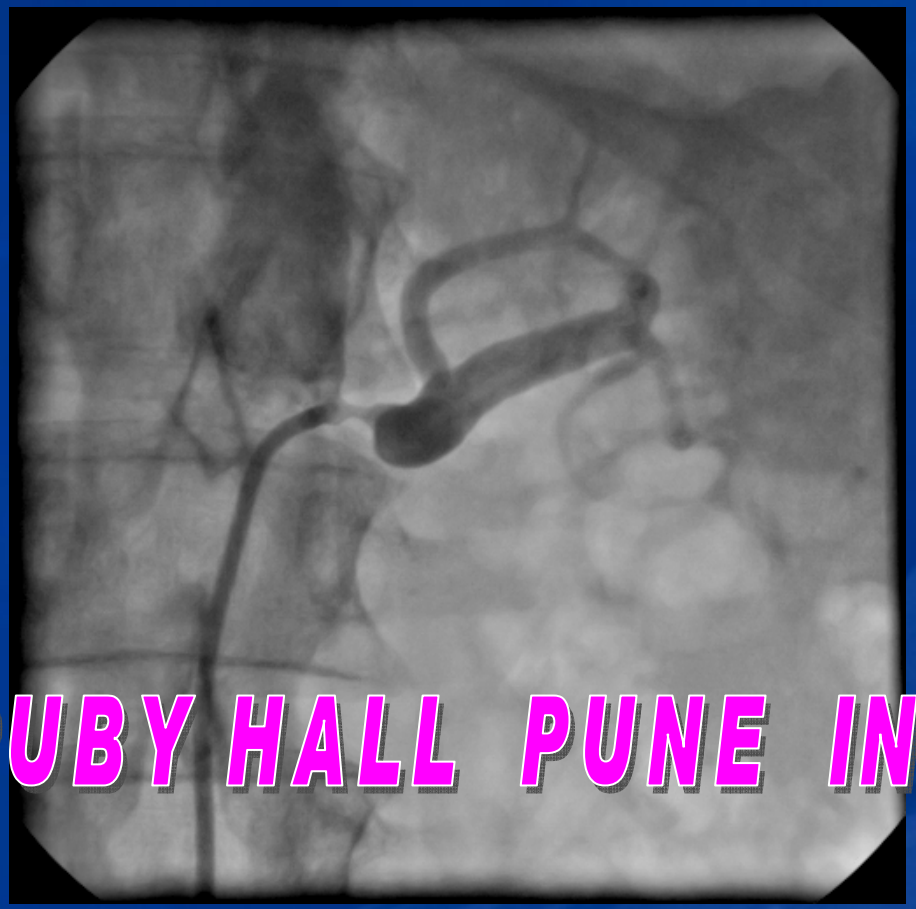
Renal Stents : Complexities

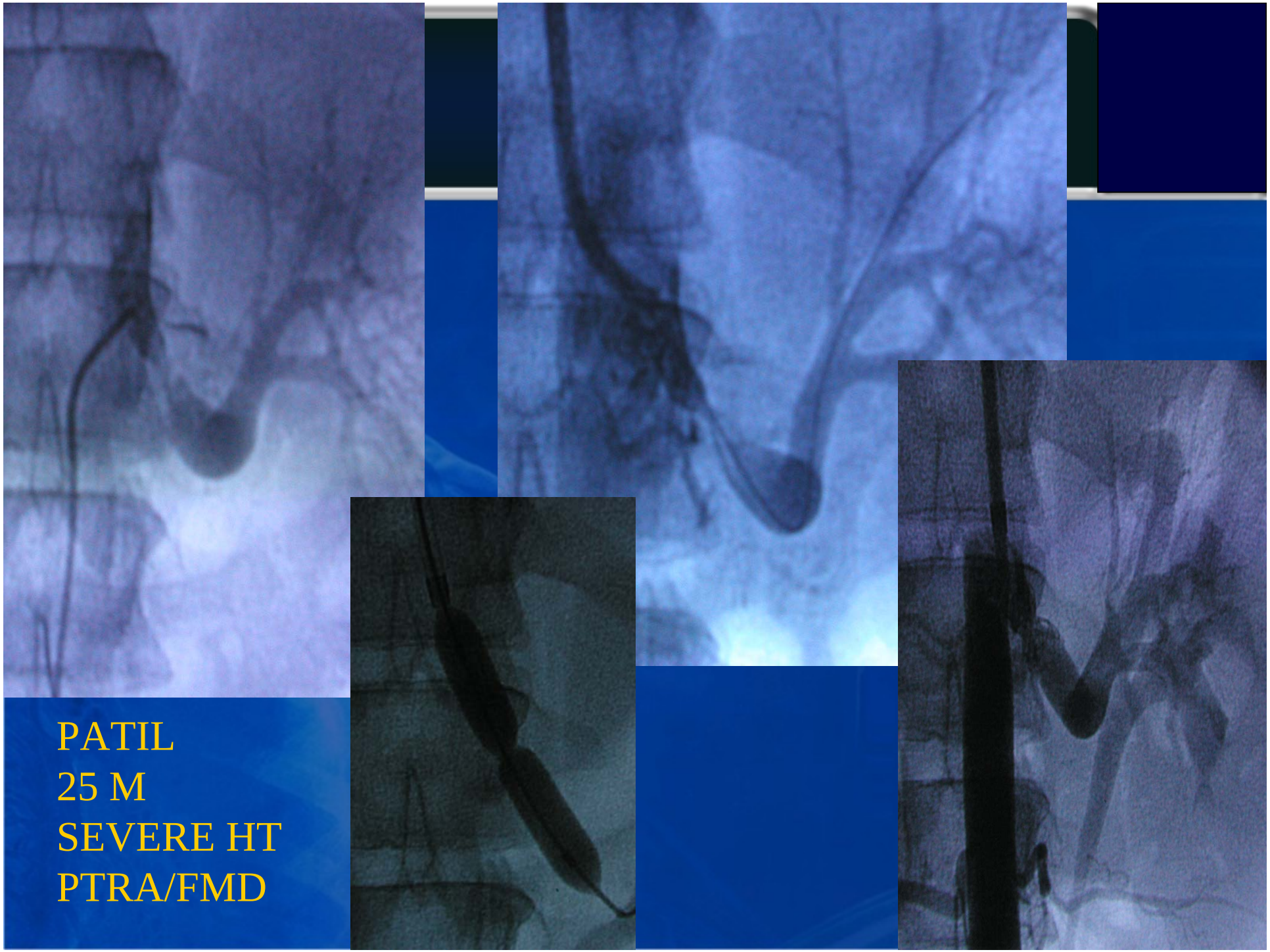




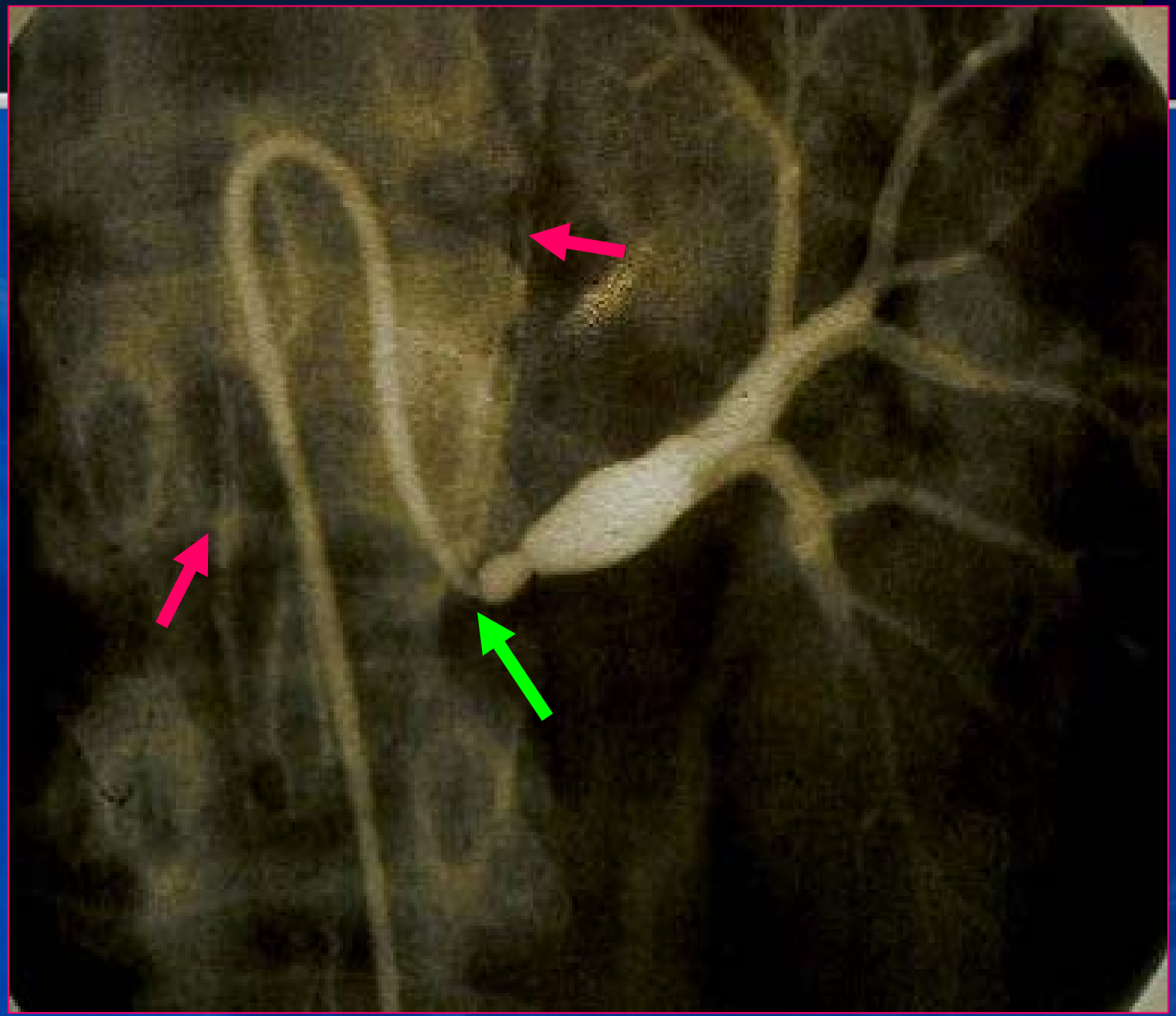
SHIRISH HIREMATH RUBY HALL PUNE IND

TCT Asia Pacific : 2009

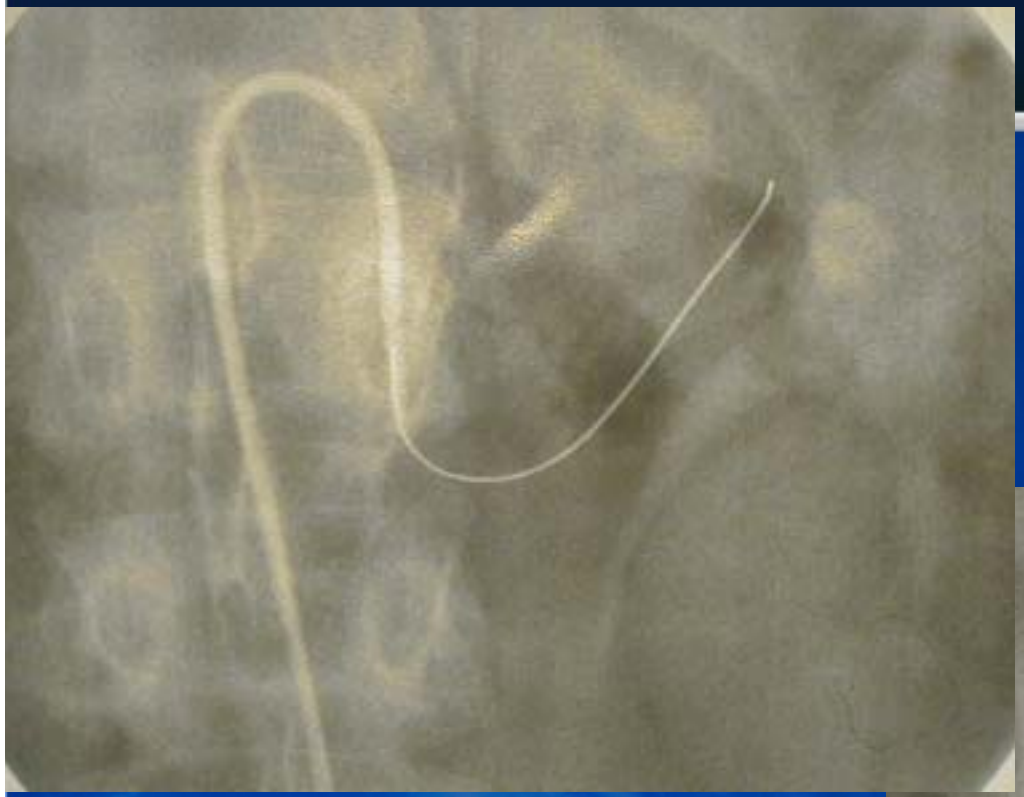

INDIA

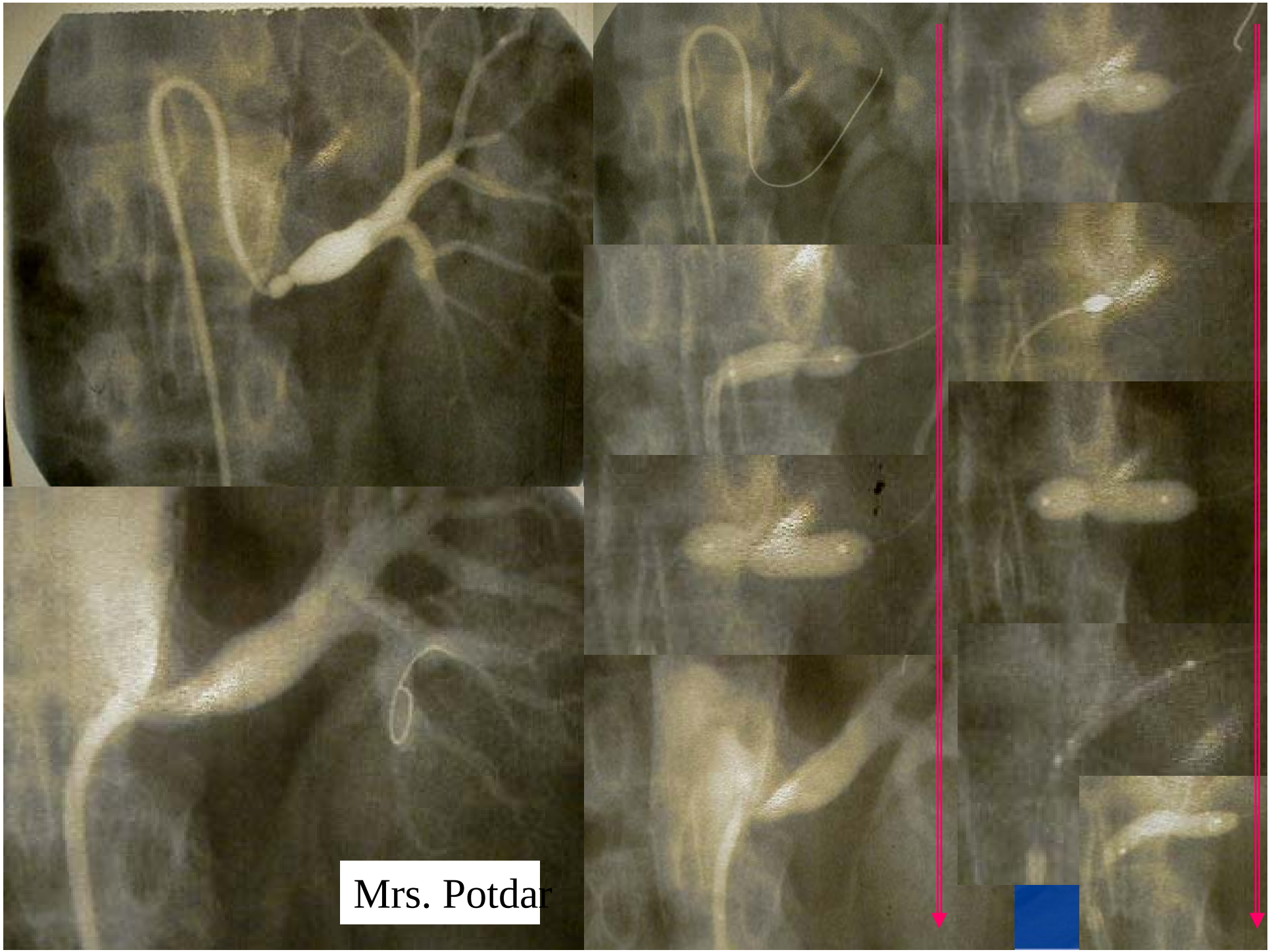

PATIL
25 M
SEVERE HT
PTRA/FMD

Mrs. Potdar: 26 F, Multiple abortions, found HTN, AortoArteritis, Extensive aortic calcification, PTRA to LRA with balloon, cutting balloon, Rota and Stent



Potdar




Mrs. Potdar

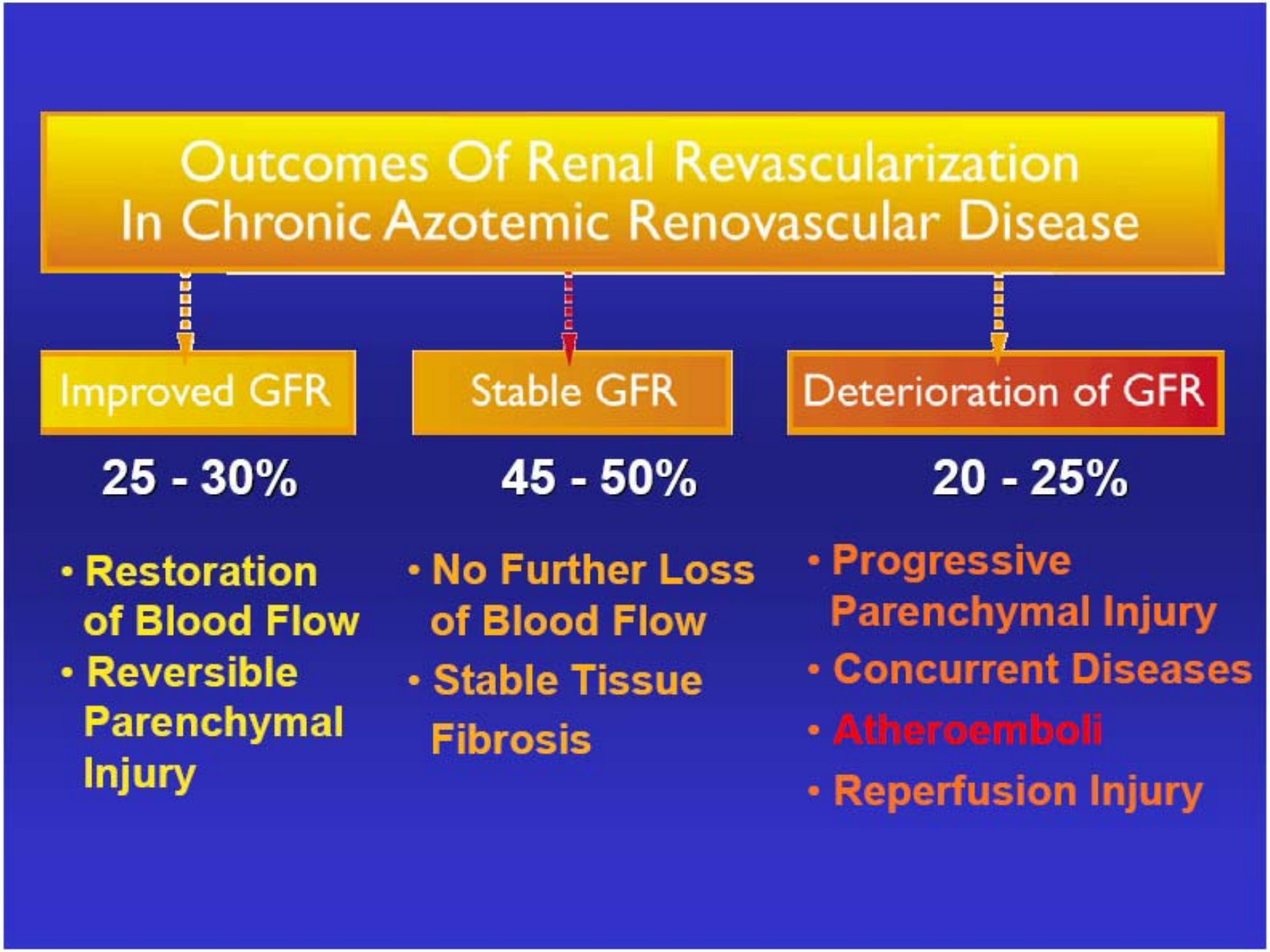
Potdar

Dugane : Renal bruit 8 y → carotid stenosis 10y →
Death 13y advanced CAD Severe familial hyperchol. / premature CAD

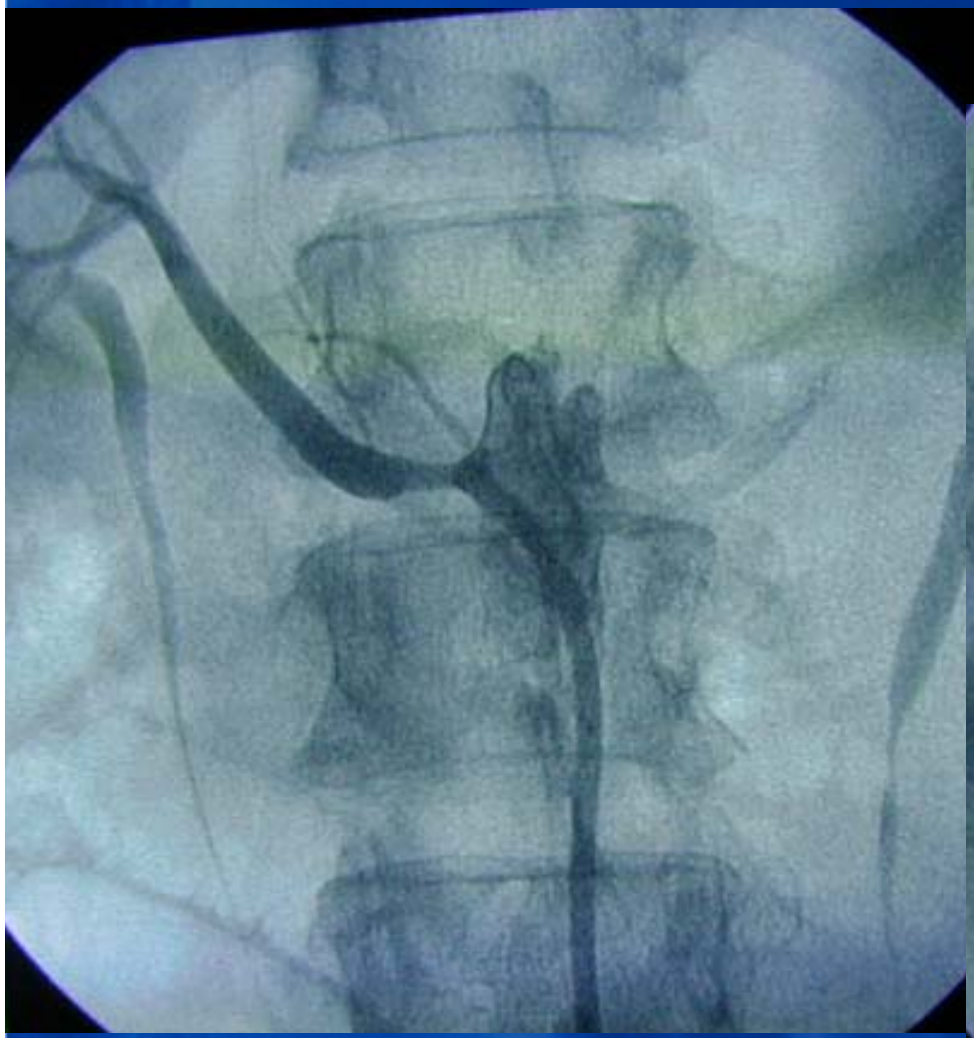
Renal Stent Related Complications: ASPIRE II

Major Adverse Events – 9 mos.	10.6%
Stent Thrombosis	1.8%
Significant Embolic Event	5.3%
Target Lesion Revascularization	4.8%
Access Site Complication	4.8%
Worsening Renal Function	3.8%
Complication Requiring Surgery	2.1%
Complication Requiring Nephrectomy	0.0%
30-day Mortality	0.5%

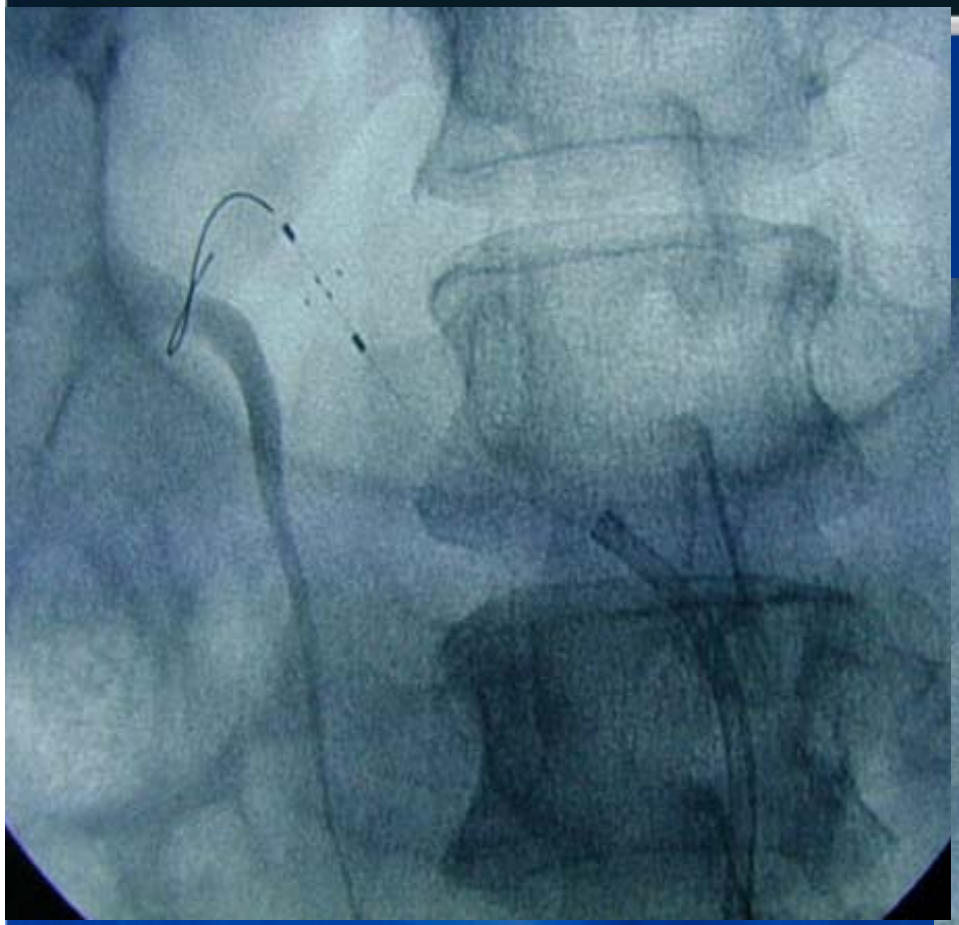
Rosenfield '00


Outcomes Of Renal Revascularization
In Chronic Azotemic Renovascular Disease
Improved GFR
Stable GFR
Deterioration of GFR
25 - 30%
45 - 50%
20 - 25%
• Restoration of Blood Flow
• Reversible Parenchymal Injury
• No Further Loss of Blood Flow
• Stable Tissue Fibrosis
• Progressive Parenchymal Injury
• Concurrent Diseases
• Atheroemboli
• Reperfusion Injury

Bedgiri

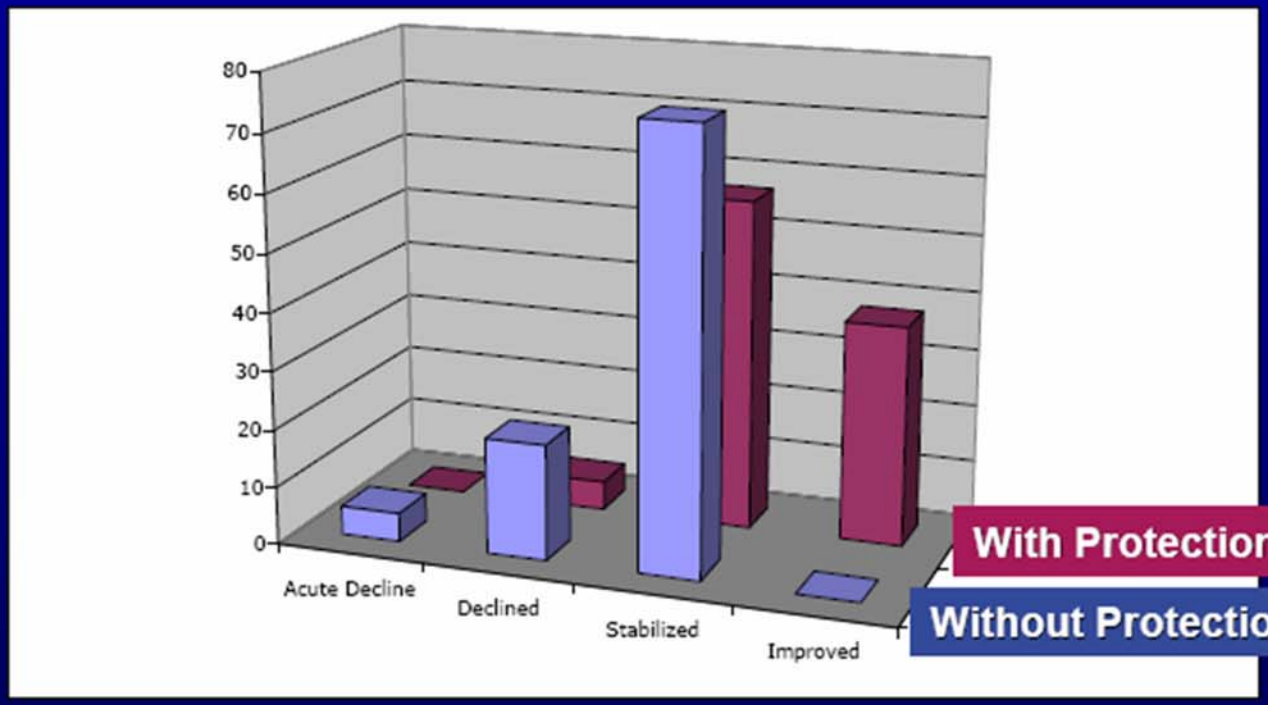


Bedgiri



Bedgiri

Atheroembolic Protection: Holden et al



- Retrospective review of patients prior to and with embolic protection
  - 20 before, and 37 after
- Mean follow up 1 year

JVS 2003;38:962-968.

Renal artery stent revascularization with embolic protection in patients with ischemic nephropathy

A Holden[1], A Hill[2], MR Jaff[3] and H Pilmore[4]

RESULTS at 6 months

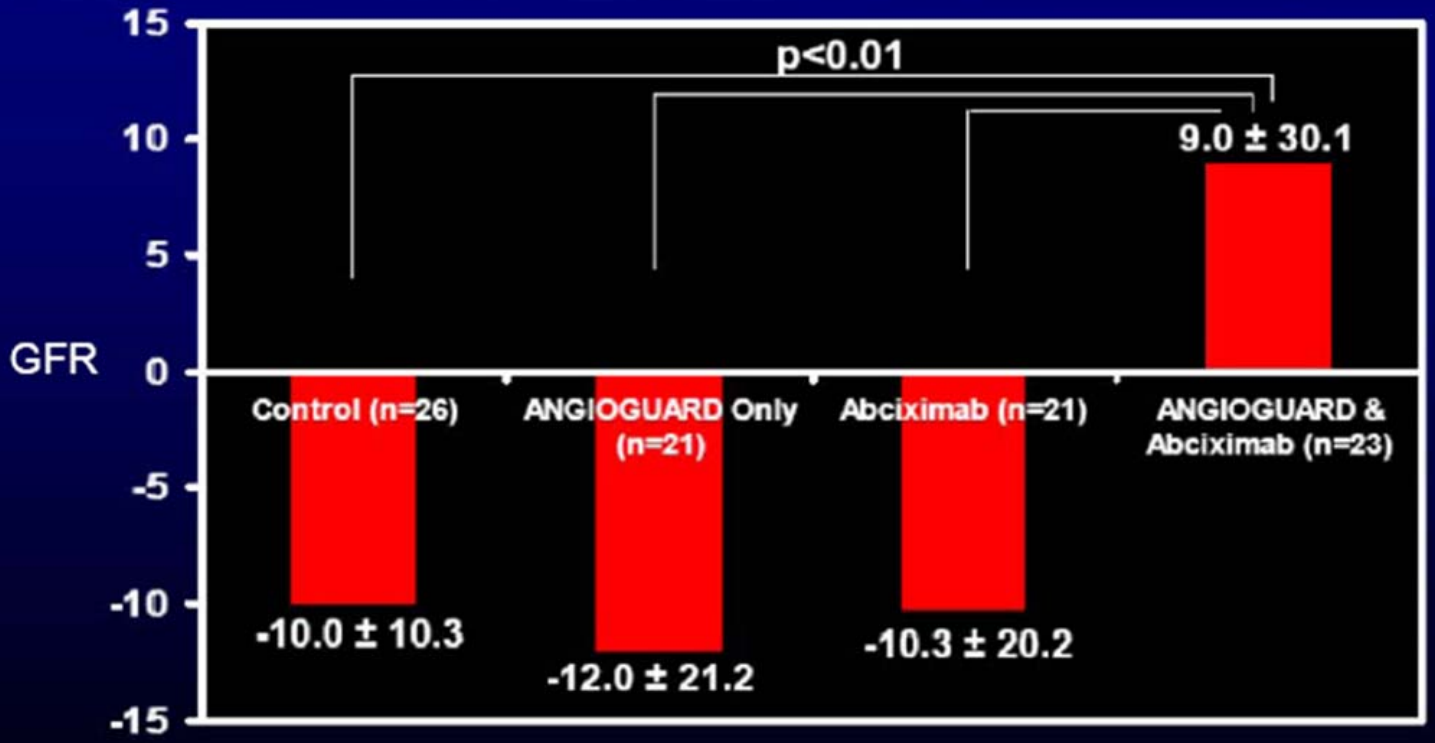
Level of pre-intervention CRI

	K-DOQI 3A	K-DOQI 3B	K-DOQI 4	Total
Improved	12(52%)	8(32%)	5(33%)	25(40%)
Stabilized	11(48%)	15(60%)	10(67%)	36(57%)
Unchanged decline	0(0%)	2(8%)	0(0%)	2(3%)
Total	23	25	15	63

97% of patients had renal function improved or stabilized at 6months

RESIST Trial (n=100)

Significant Interaction: ANGIOGUARD® & Abciximab



Net benefit in patients allocated to both ANGIOGUARD & Abciximab

Cooper C., et al., Oral Presentation, ACC 2007

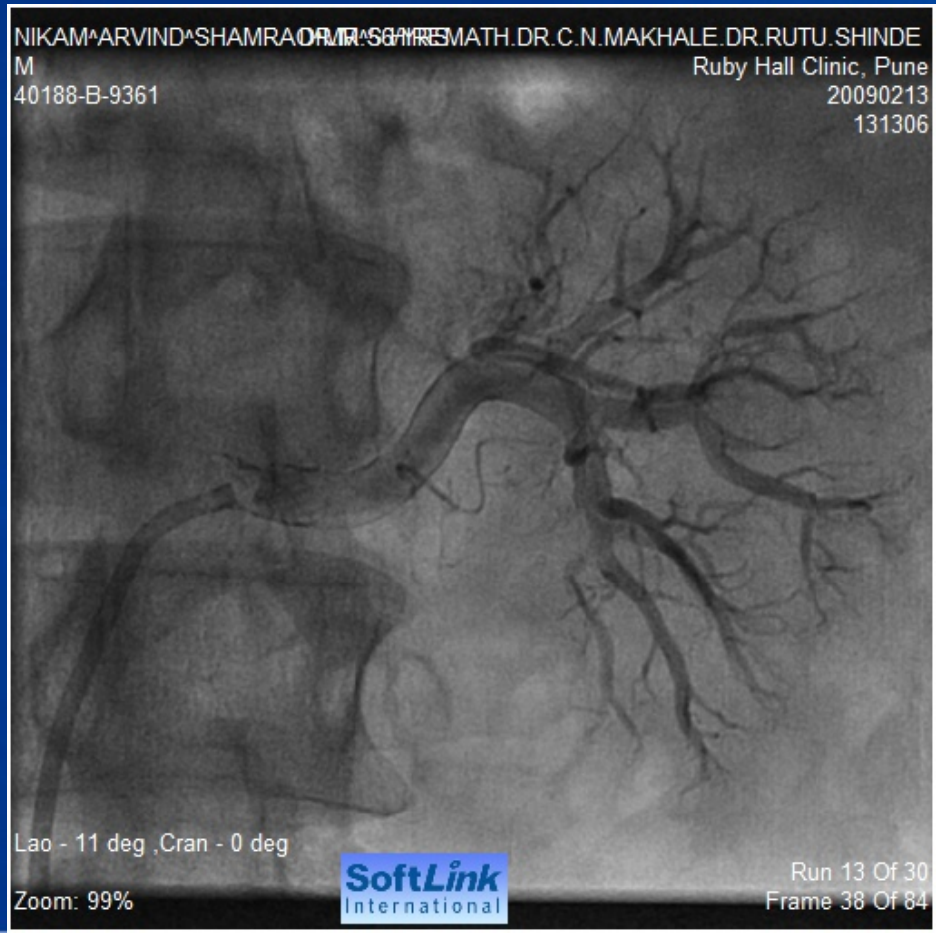
RK…7.5 n 3.7 LK 10.0 n 5.1

		LK	RK
Pre PTCA	Split Function		
	GFR	5.4	4.7
Post PTCA	Split Function	78.6	21.3
	GFR	16.9	4.6


NIKAM^ARVIND^SHAMRAO^MR^SGMATH.DR.C.N.MAKHALE.DR.RUTU.SHINDE
M
Ruby Hall Clinic, Pune
40188-B-9361
20090213
131306
Lao - 12 deg ,Cran - 0 deg
Zoom: 99%
SoftLink International
Run 7 Of 30
Frame 24 Of 26

POST

PRE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20090213
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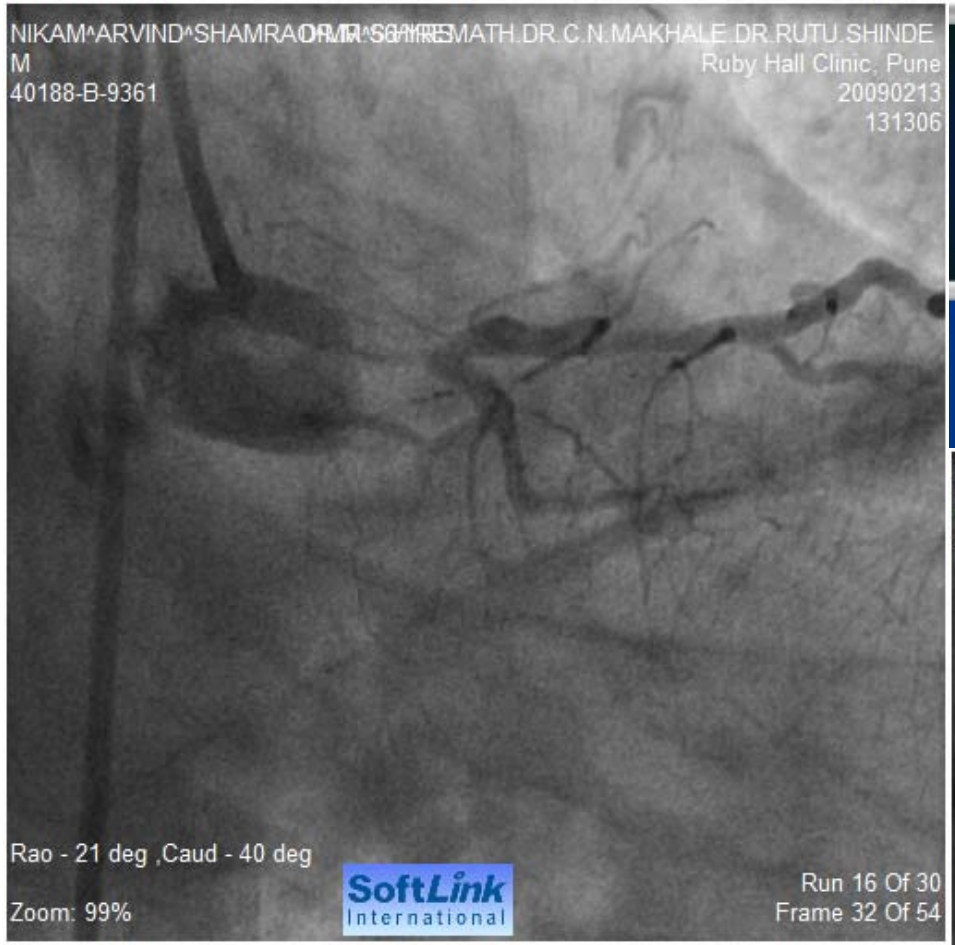
Frame 38 Of 84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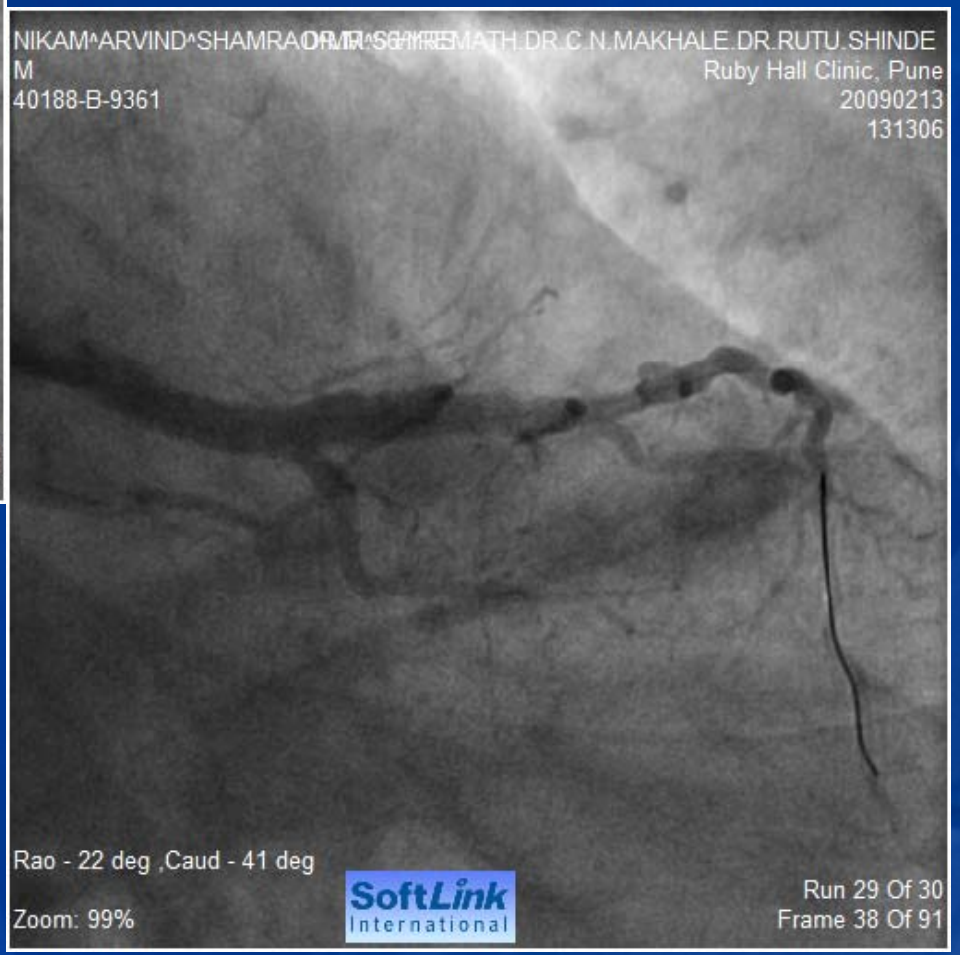
M
Ruby Hall Clinic, Pune
40188-B-9361
20090213
131306
Rao - 21 deg ,Caud - 40 deg
Zoom: 99%
SoftLink International
Run 16 Of 30
Frame 32 Of 54

POST


NIKAM^ARVIND^SHAMRAO MR^SHRIMATH.DR.C.N.MAKHALE.DR.RUTU.SHINDE
M
Ruby Hall Clinic, Pune
40188-B-9361
20090213
131306
Rao - 22 deg ,Caud - 41 deg
Zoom: 99%
SoftLink International
Run 29 Of 30
Frame 38 Of 91

PRE

CMS: CHF and Unstable Angina

- Percutaneous revascularization is indicated for patients with hemodynamically significant RAS and recurrent, unexplained congestive heart failure or sudden, unexplained pulmonary edema.

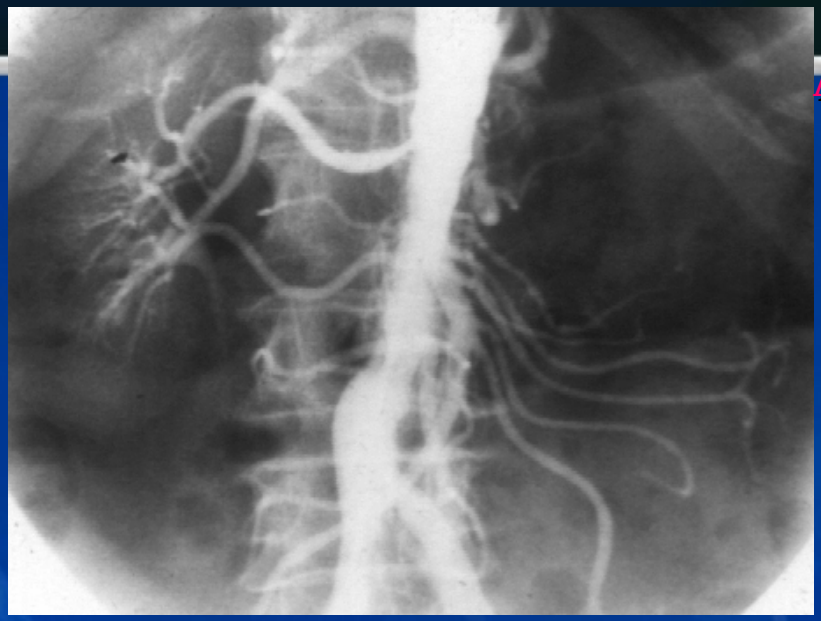
(*Class I, Level of Evidence: B*)

- Percutaneous revascularization is reasonable for patients with hemodynamically significant RAS and unstable angina.

(*Class IIa, Level of Evidence: B*)

Chitale : 83 F
Flash Pulm. Edema
Normal coronaries

Initial Angiogram



At PTRA

Balloon in Place

Mrs. Godbole

Severe HT, Flash Pul Oedema
Calcified Aorta

Stepped dilatation with B

CMS: CHF and Unstable Angina

- Percutaneous revascularization is indicated for patients with hemodynamically significant RAS and recurrent, unexplained congestive heart failure or sudden, unexplained pulmonary edema.

(*Class I, Level of Evidence: B*)

- Percutaneous revascularization is reasonable for patients with hemodynamically significant RAS and unstable angina.

(*Class IIa, Level of Evidence: B*)

Viswanathan, 75/ M

DM & HT : long standing

Dec 06 — **Ant. MI, LVF**

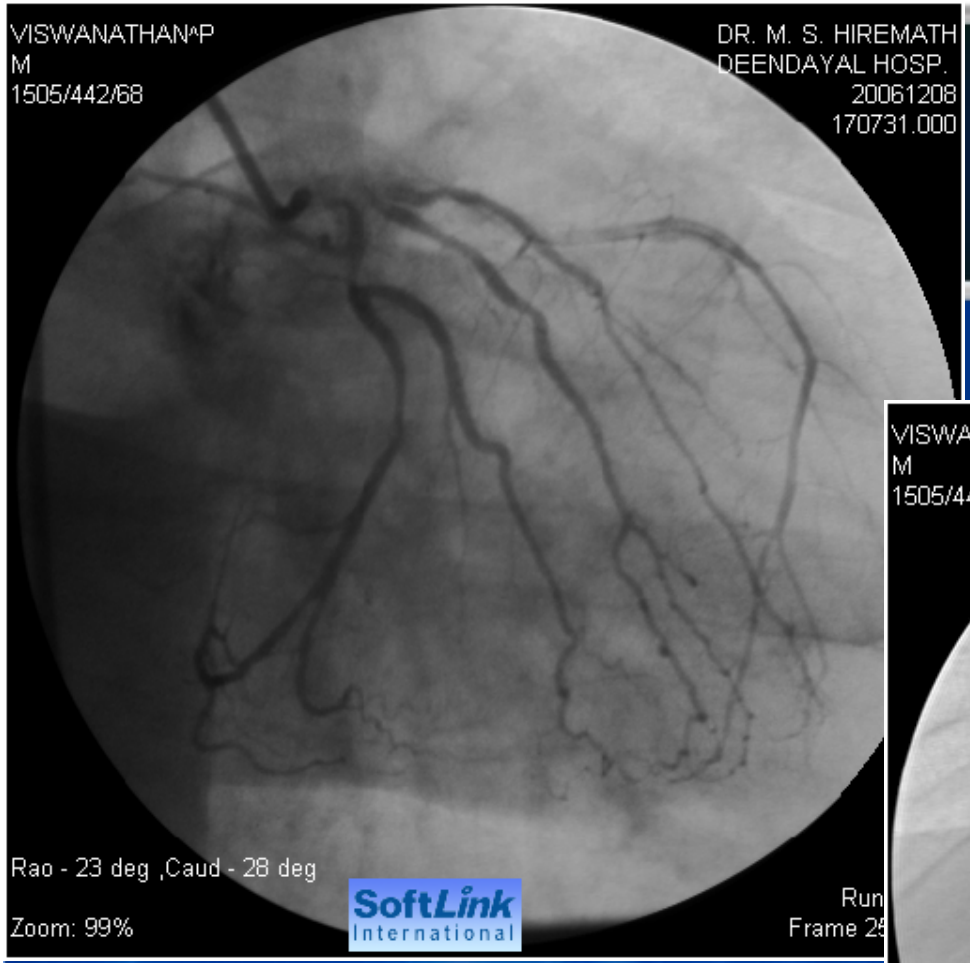
Bilat Renal A Stenosis 70% & 80%

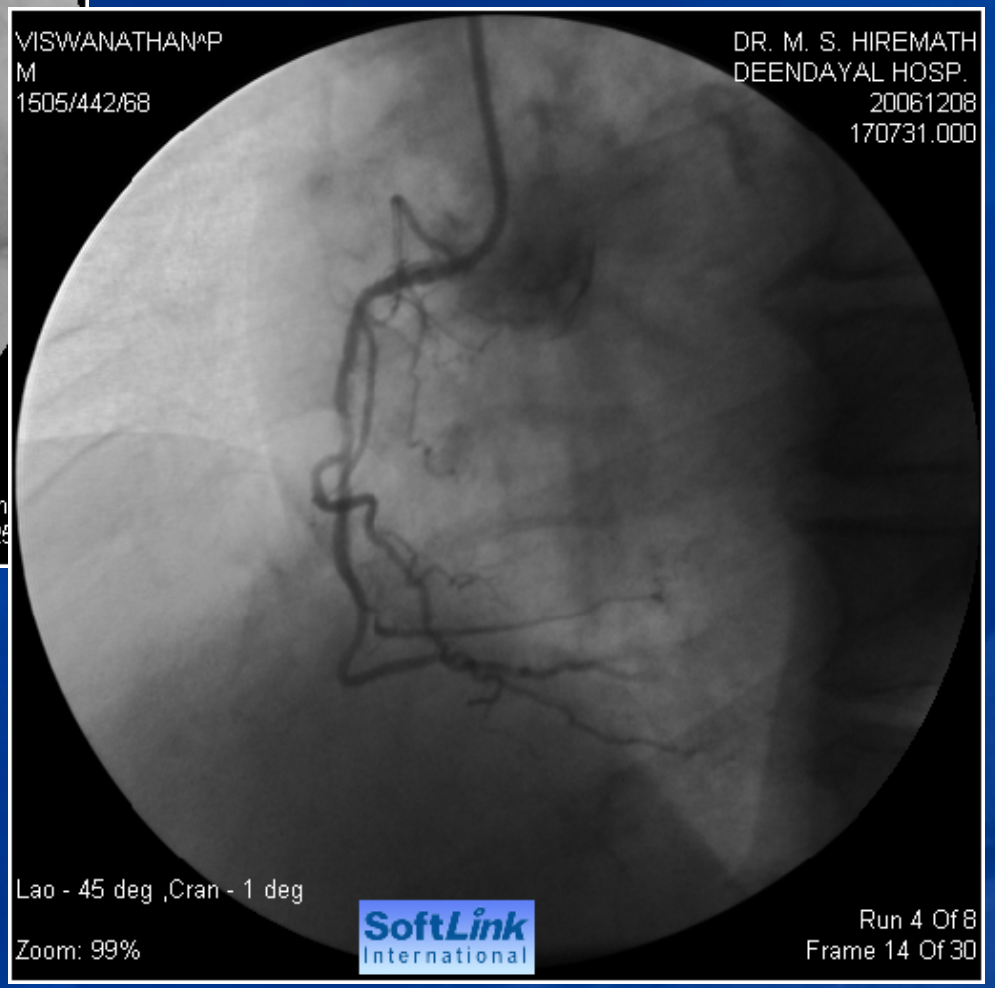
TVD, EF 20% (Too low for surgical comfort)

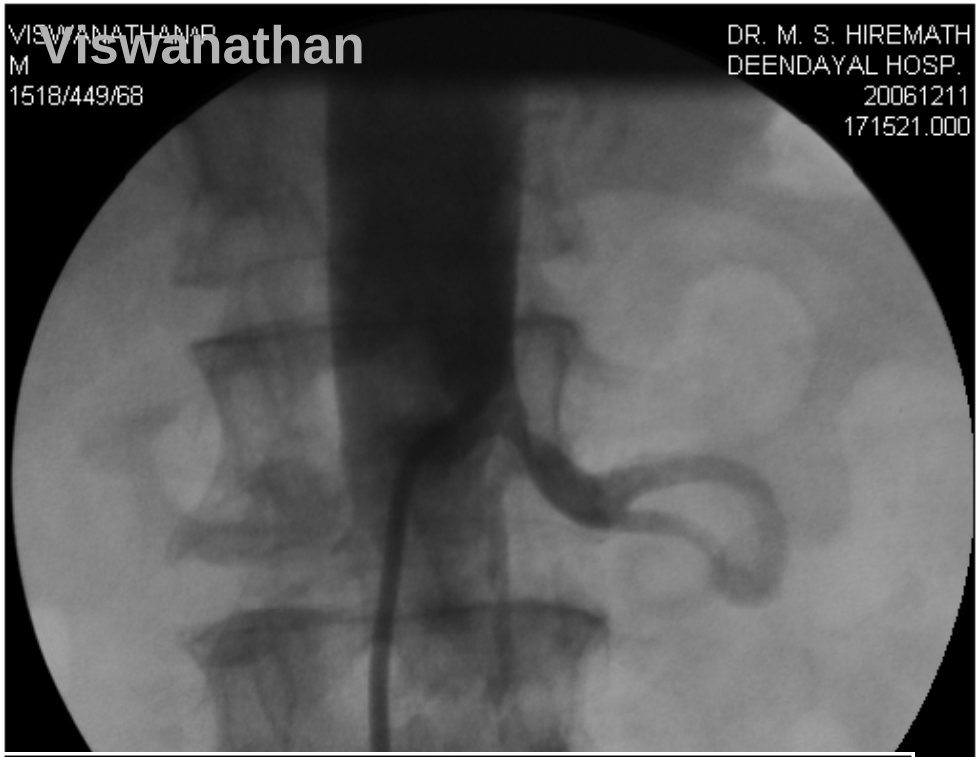
Large Thrombus

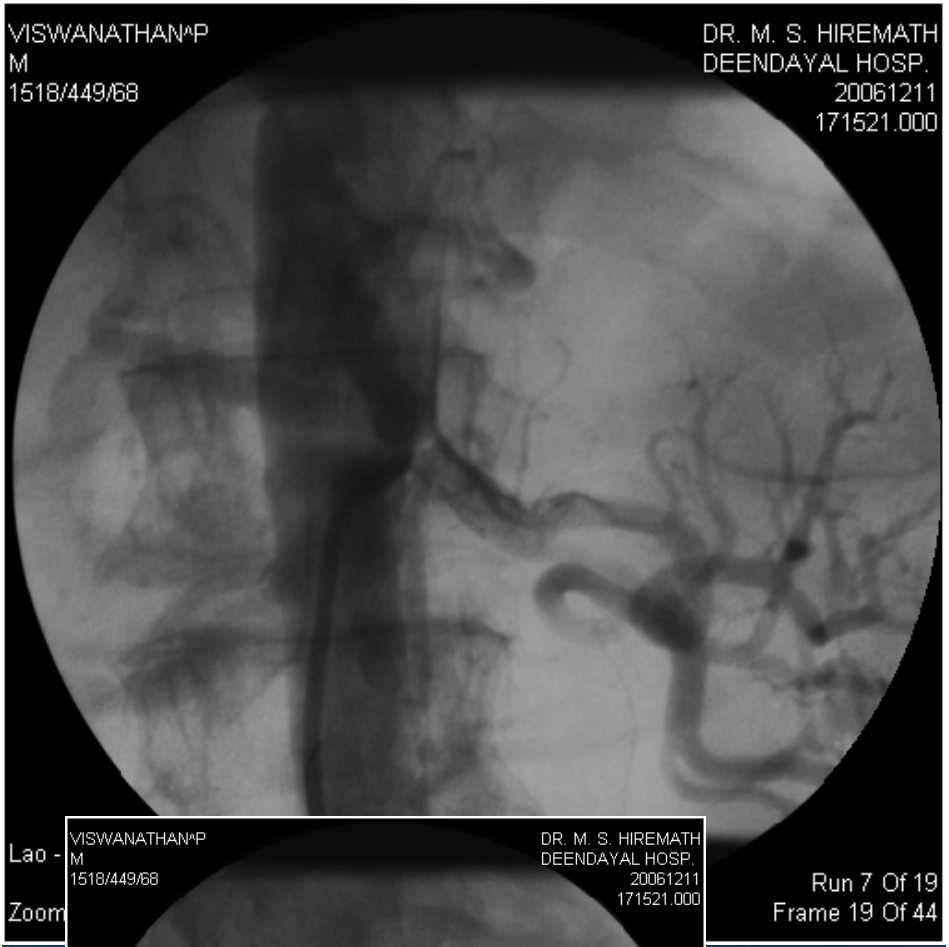
Dec 06 — **Bilat PTRA with Stent**

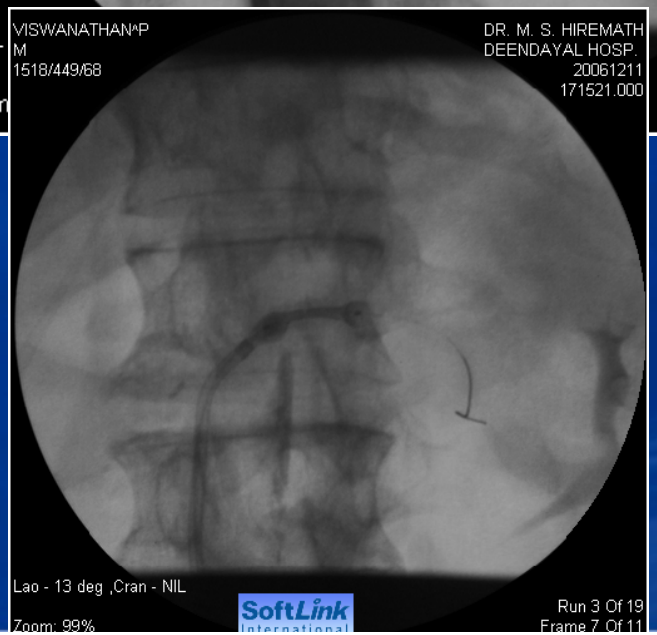
Viswanathan

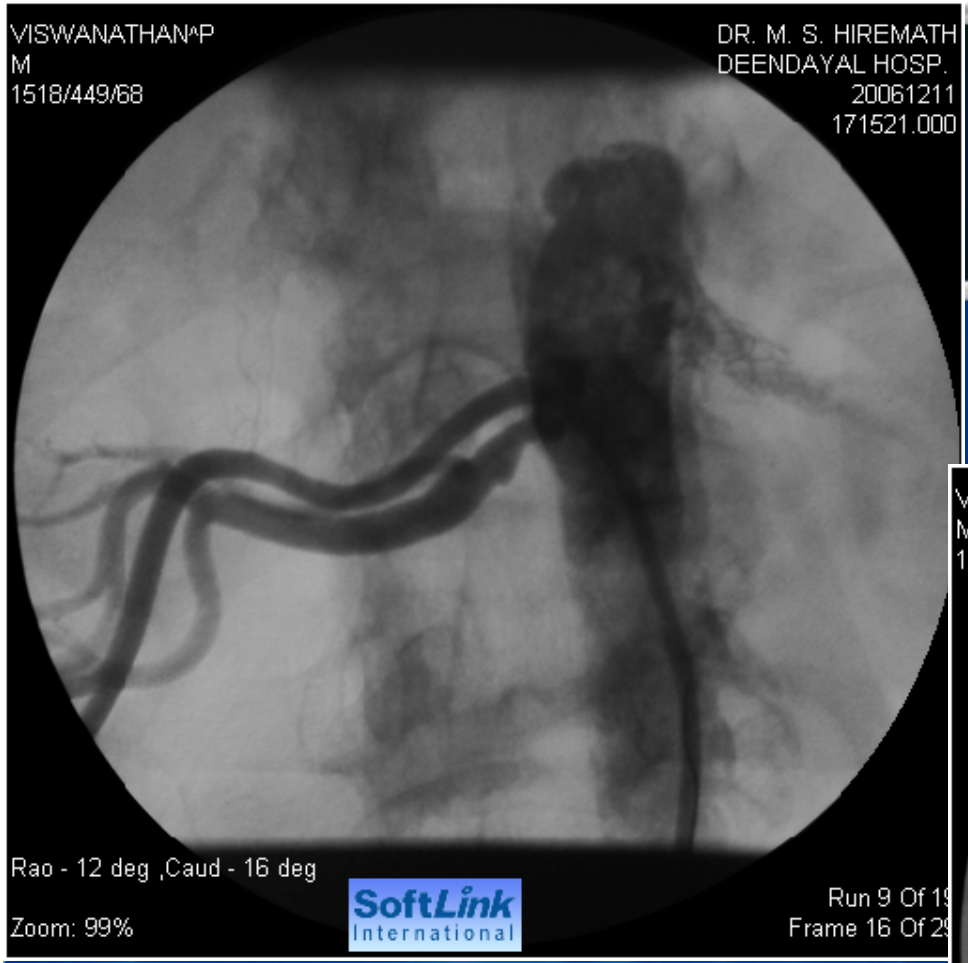




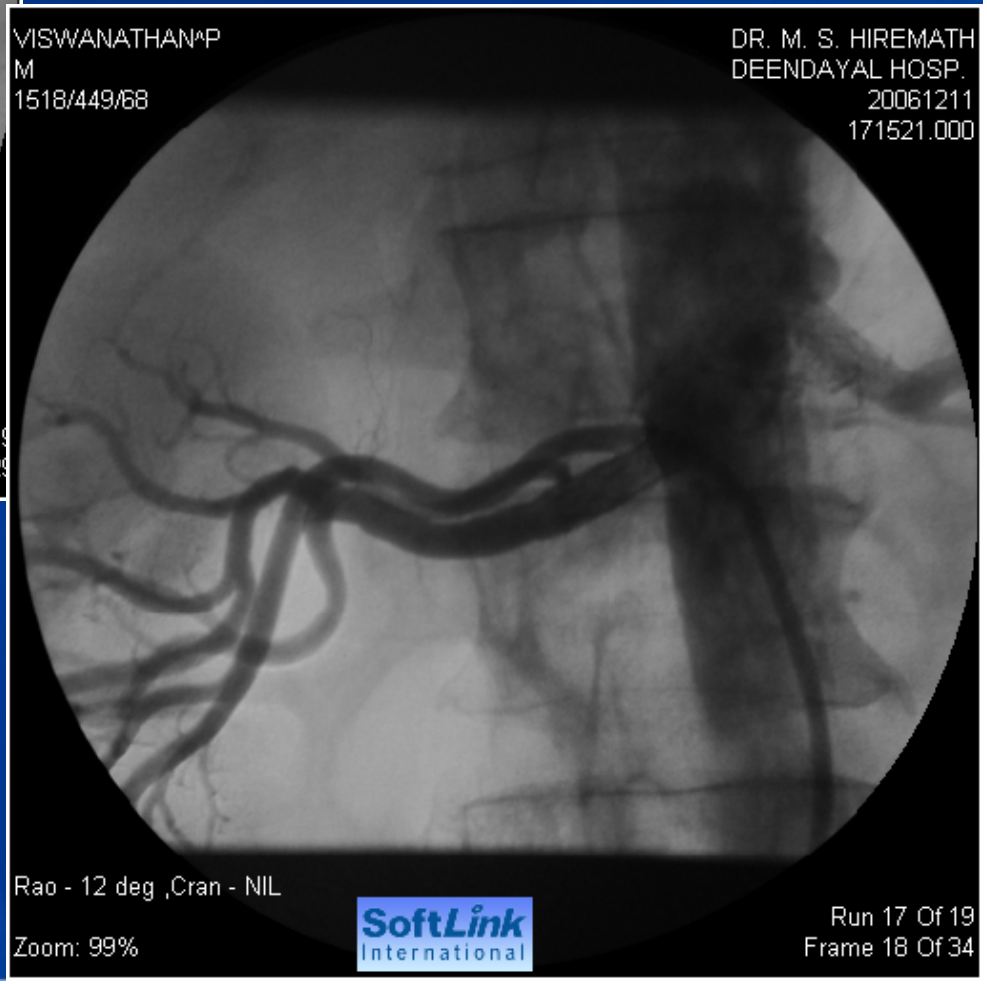


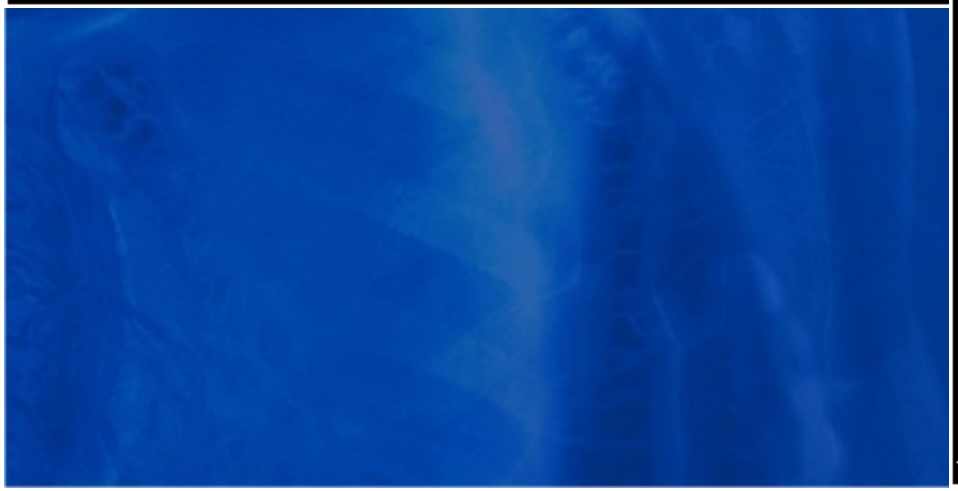






Viswanathan





Viswanathan, 75/ M

F/u 3 y : No Adm for Angina or LVF

S.Cr	1.6 to 0.9
BUL	57 to 29
BP	90/70 to 115/70, despite Ramipril 10 mg
LVEF	20% to 30%
Diuretics	3 to ½
LDL	135 to 70

Rx Plan : Ramipril 10, Carvedilol 12.5; Amifru ½ ; Lanoxin = 1 y; statin

Occluded Renal Artery

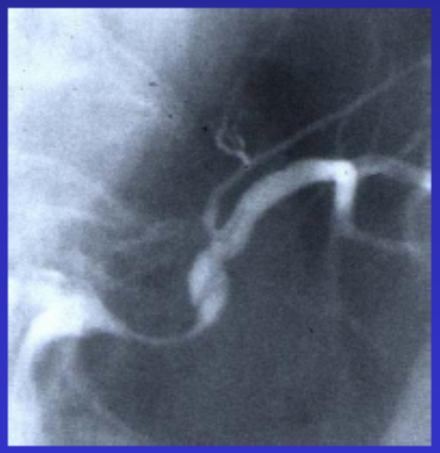
Most are left alone

Criteria for intervention:

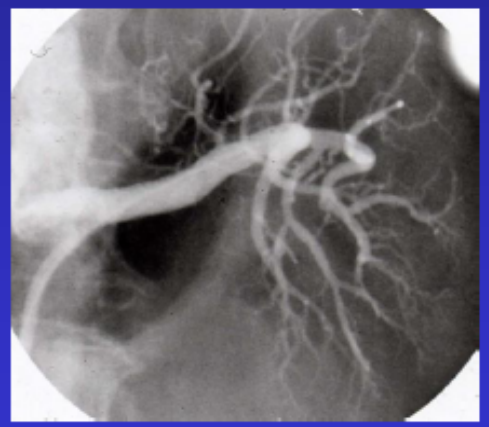
- –Clinically significant
- –Adequate kidney size
- –Clear stump on angiography
- –Increased renin production*

Rehan A, Almanaseer Y, Desai DM, Ali A, Yamasaki H. Complete resolution of acute renal failure after left renal artery angioplasty and stent placement for total renal artery occlusion. Cardiology 2007;108:51-54.

Renal artery stump
Gently probe with wire

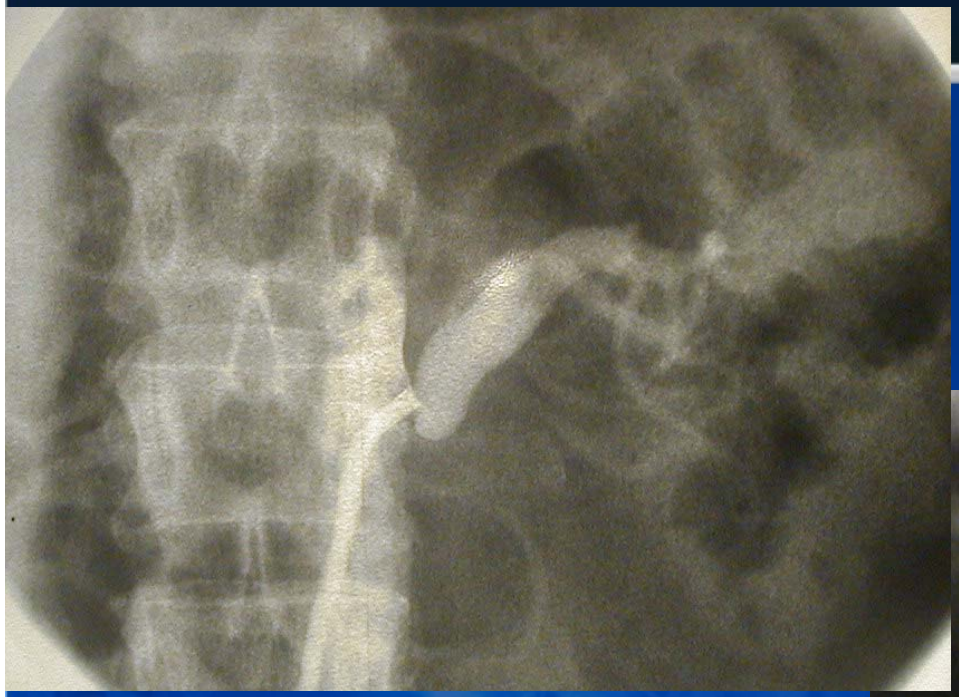


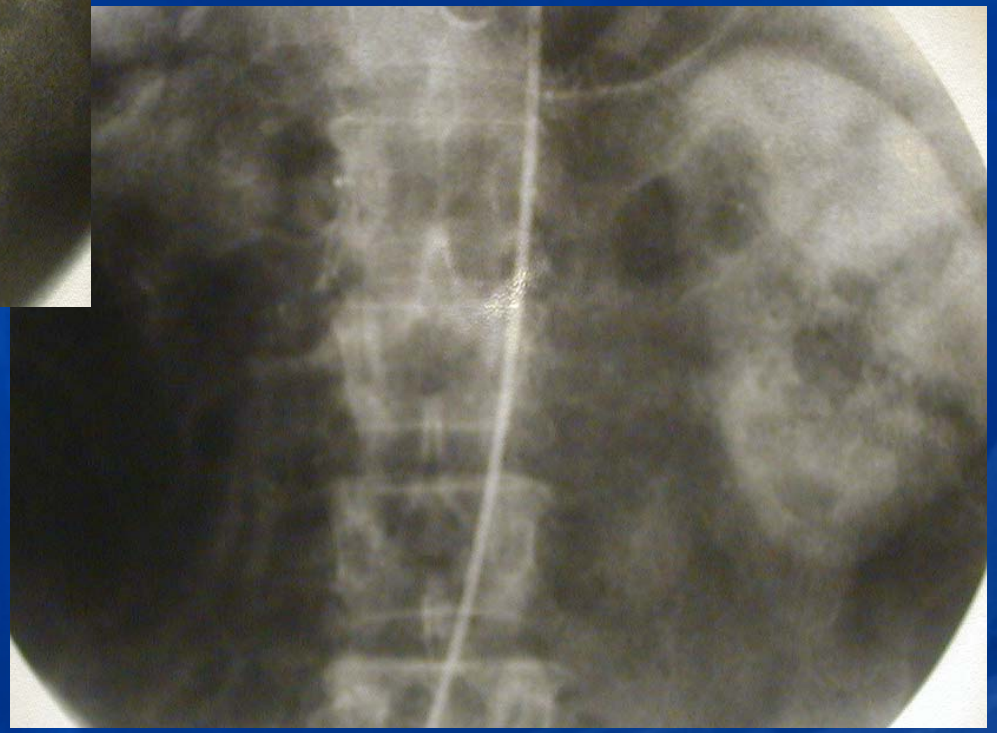
Injection after wire
before balloon inflation



Mr. Y

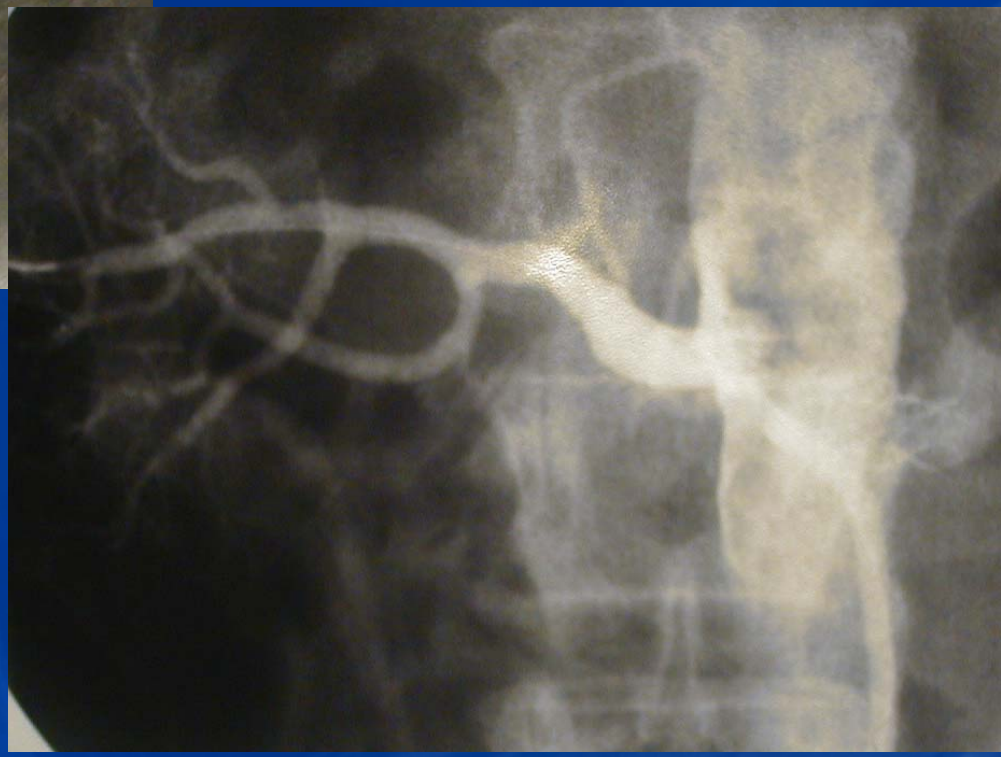
Mr. Y

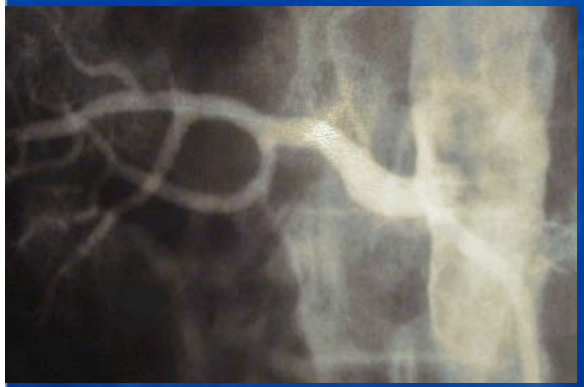




Mr. Y

Mr. Y





When to Intervene

- RAS causes 10-20% of new onset end stage renal disease in patients over age 50
- Indications
  - Rapid acceleration of HTN, prior control
  - HTN and flash pulmonary edema
  - Azotemia with ACE inhibitors
- Contraindications
  - Kidney size <8cm
  - Gradient <10mm systolic or <5mm mean

KARVE 56 M

PRE

POST

KARVE 56 M

HT Severe (15 d ?)

Echo Severe LVH

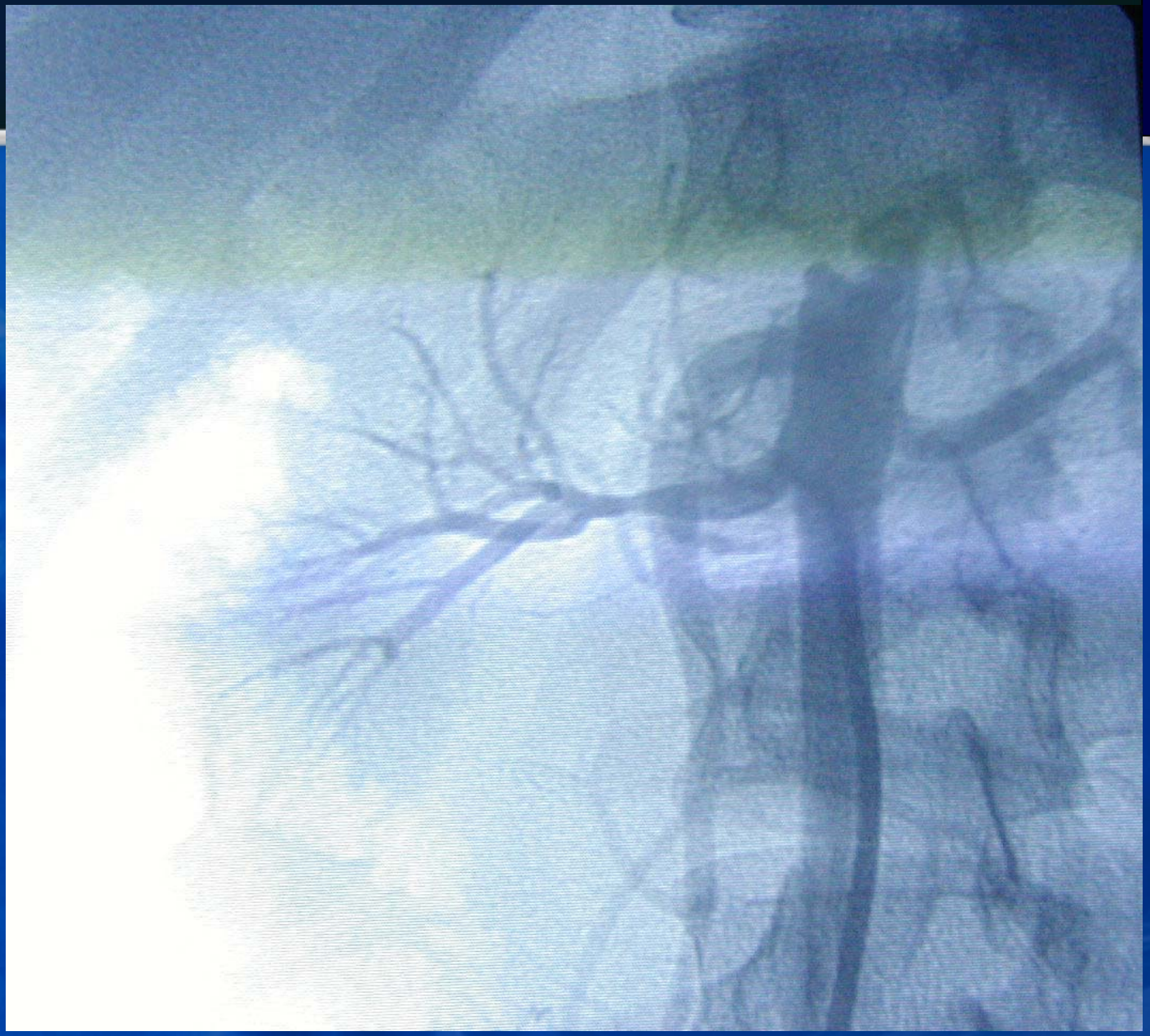
S.Cr 1.8

CT Angio : L RA occlusion

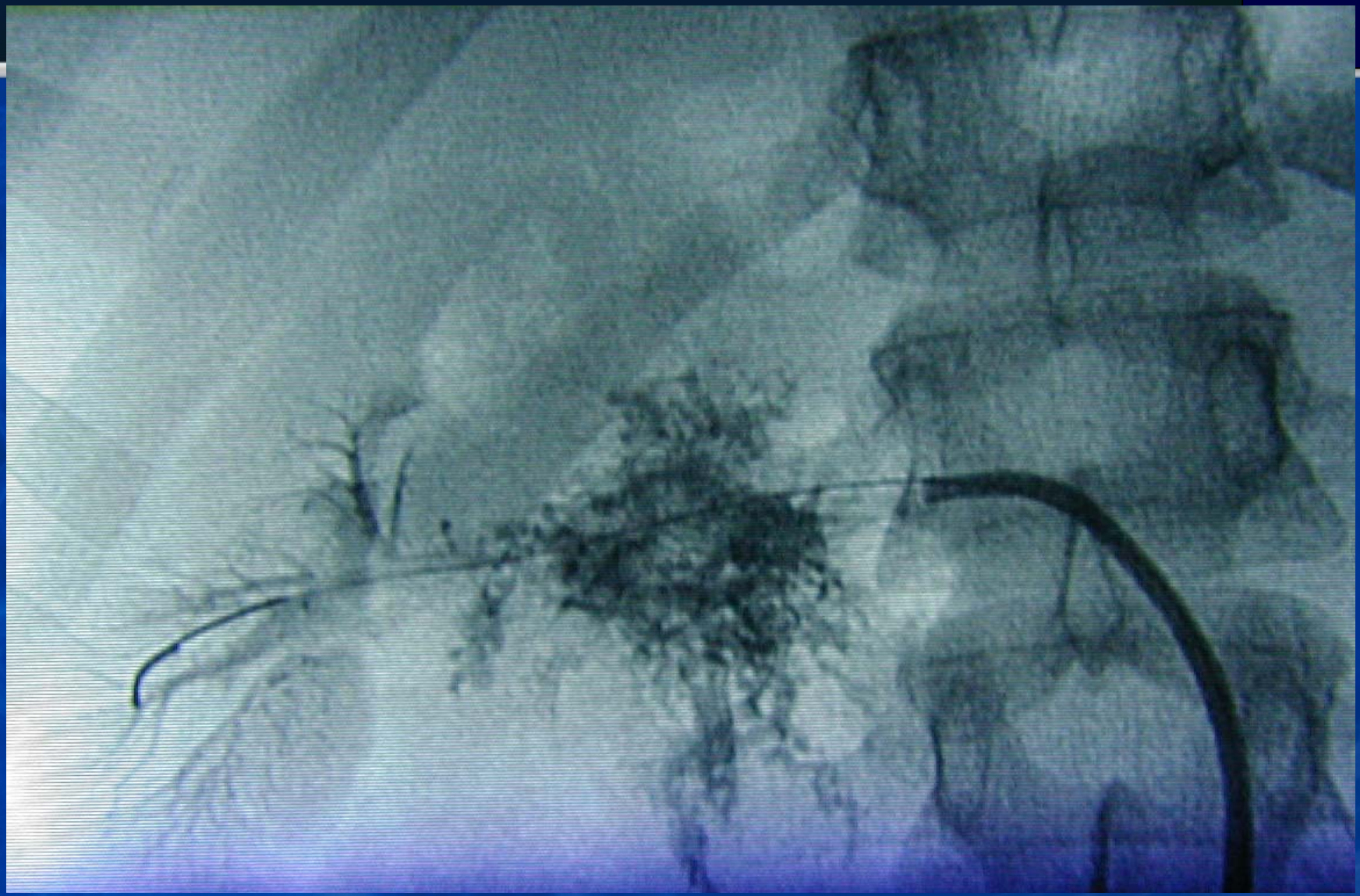
Renal Doppler : ??

RK	LK
USG 12.0 x 4.7	8.2 x 4.5
DTPA : GFR Pre 42.4	5.0 V.Poor
GFR Post PCI 44.0	26.0

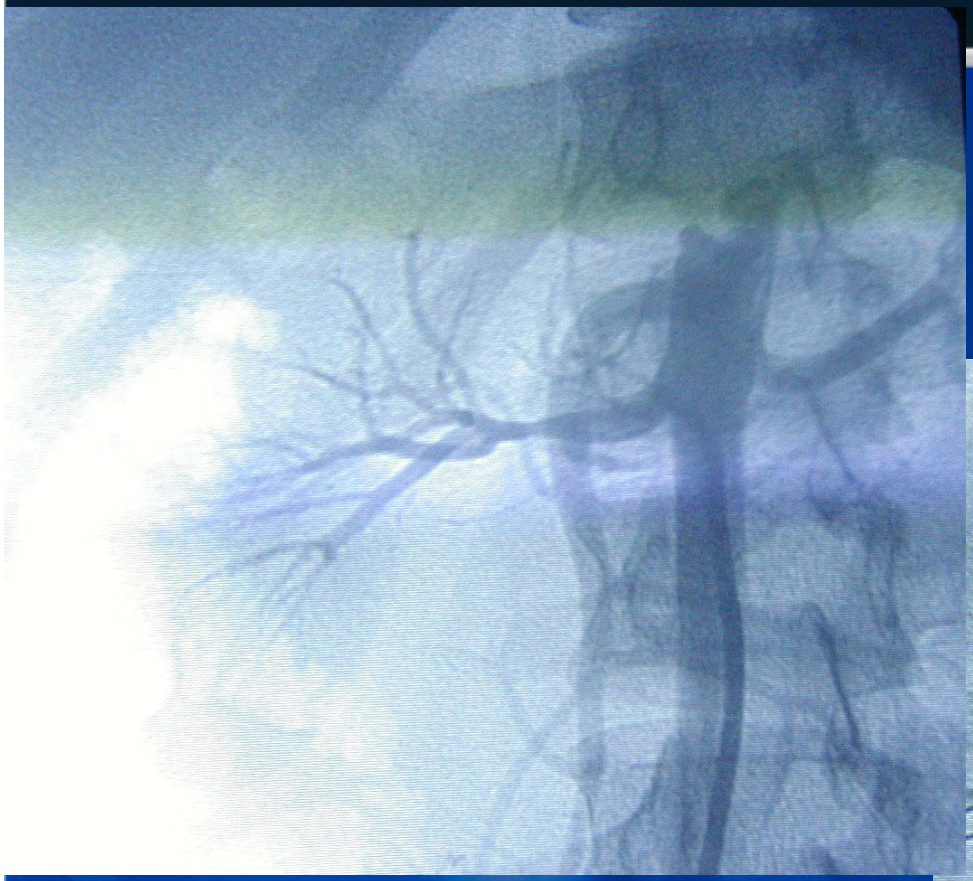
Mr. X



Mr. X



Mr. X

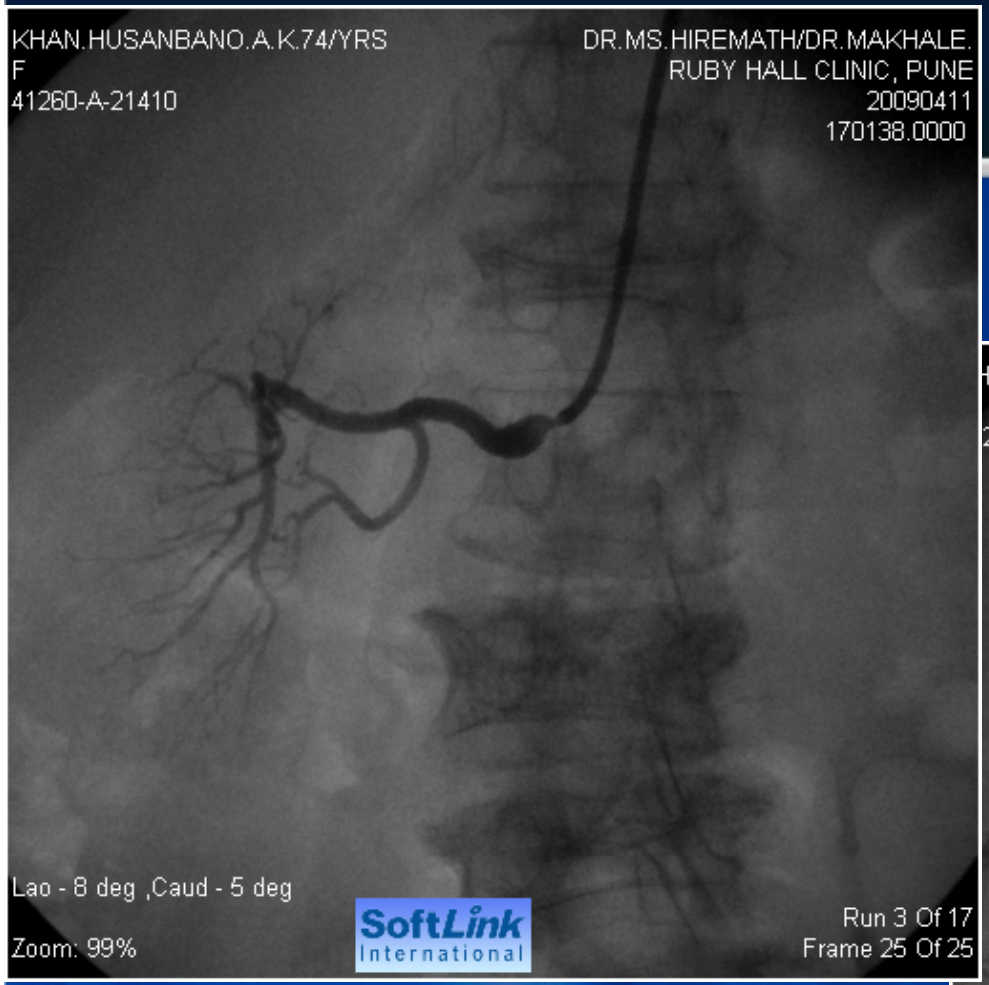


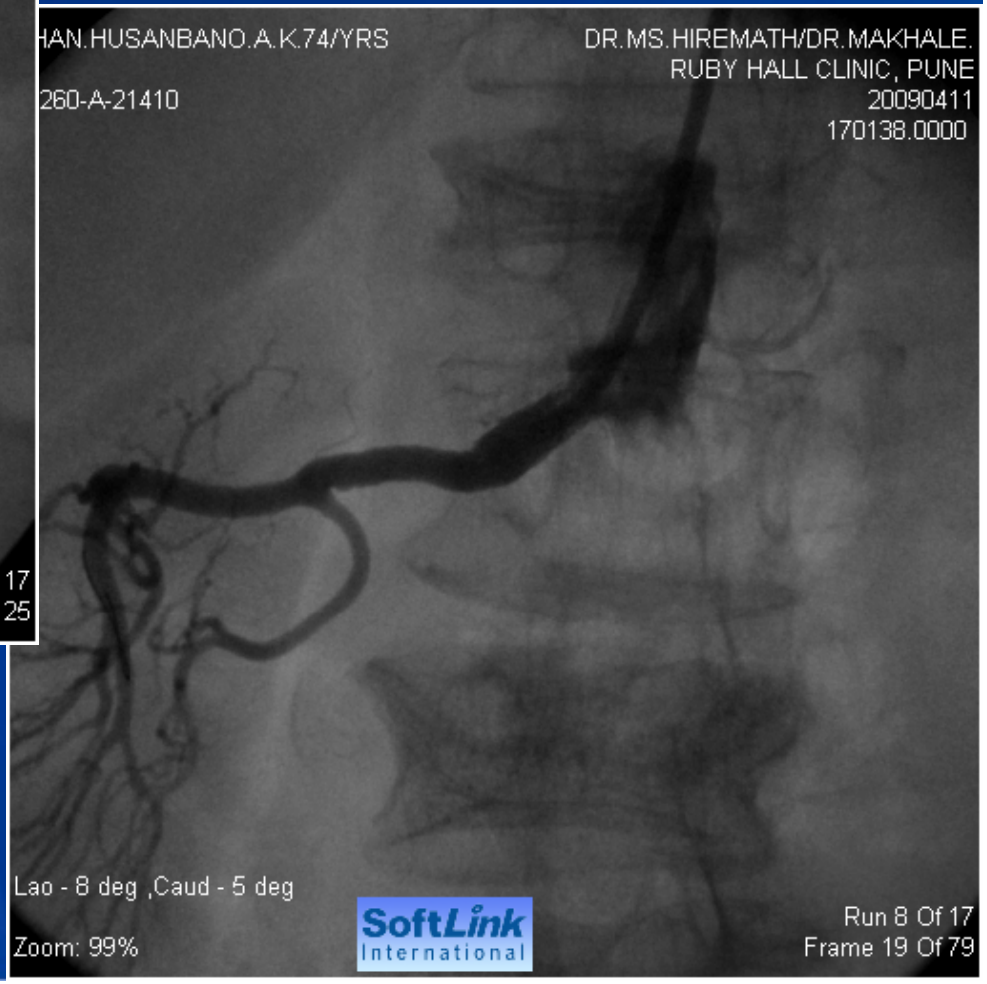
Mr. X

Tortuous Iliac Arteries Avoidance: Brachial Approach

Mrs. Khan

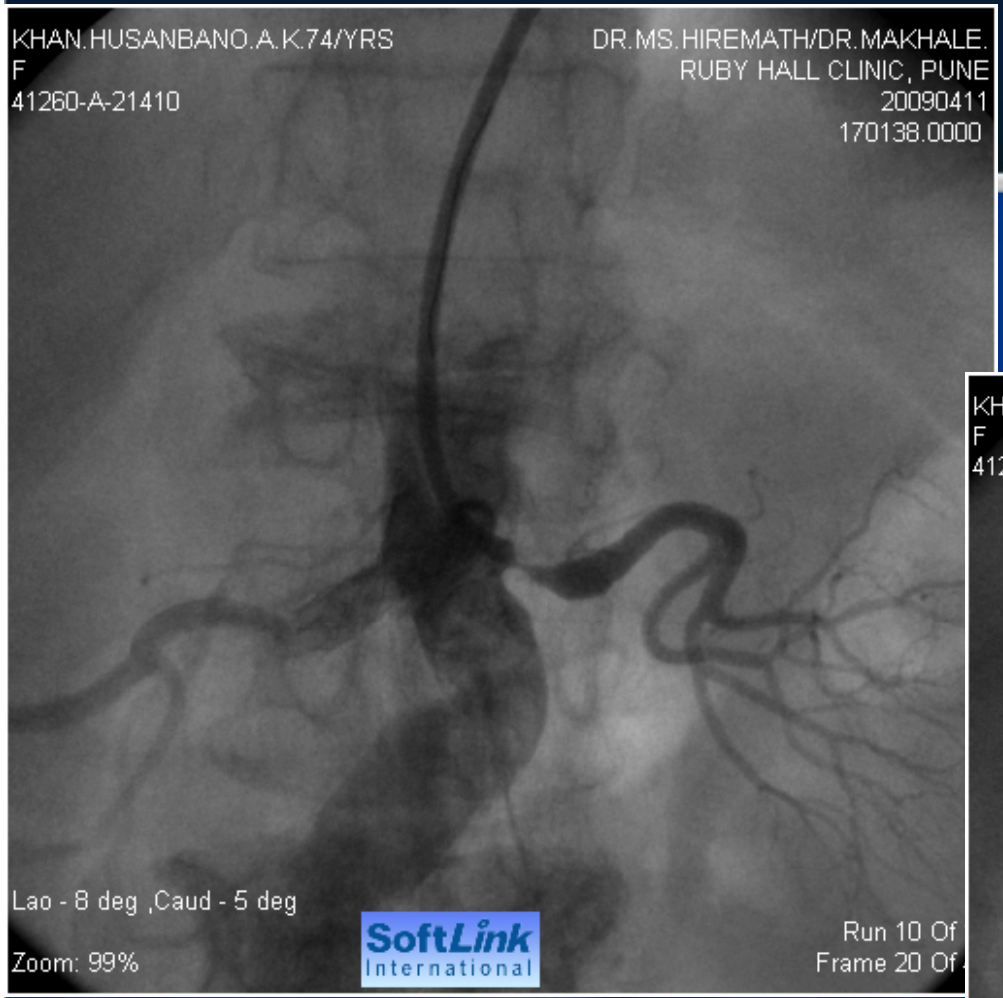
Arm Approach: A Huge simplifier

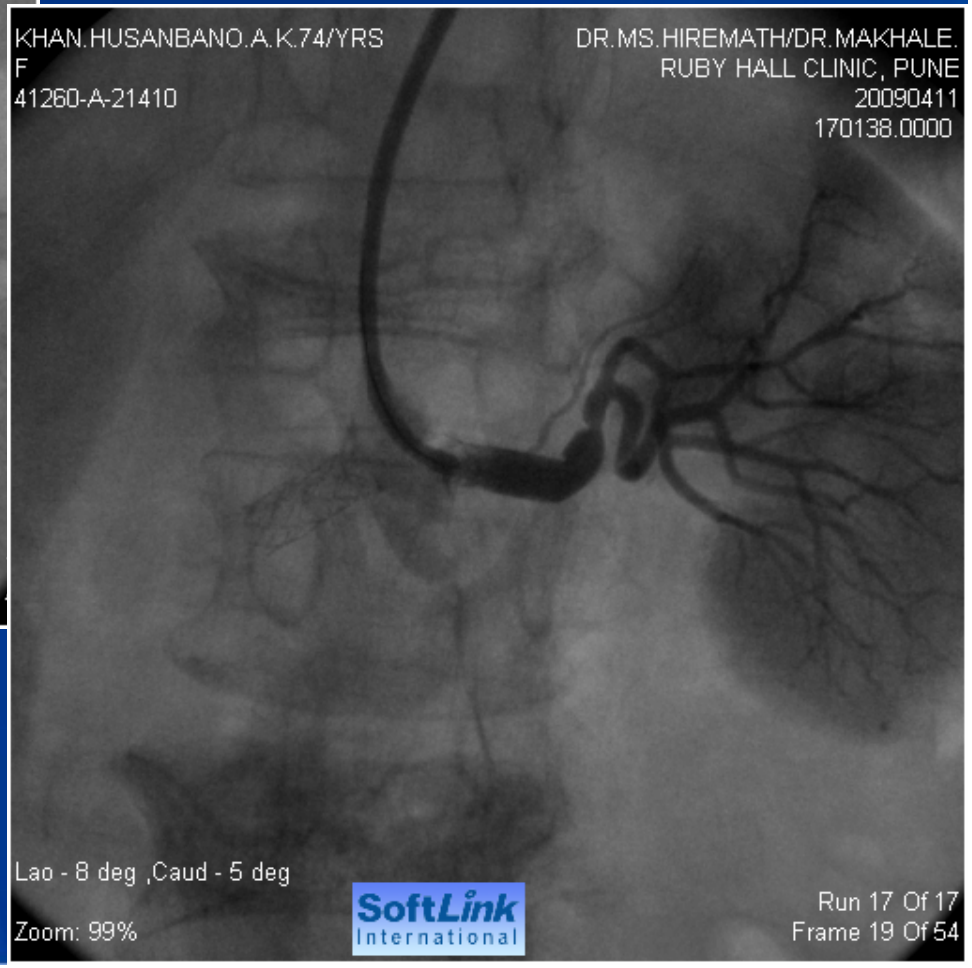




Mrs. Khan

Arm Approach: A Huge simplifier



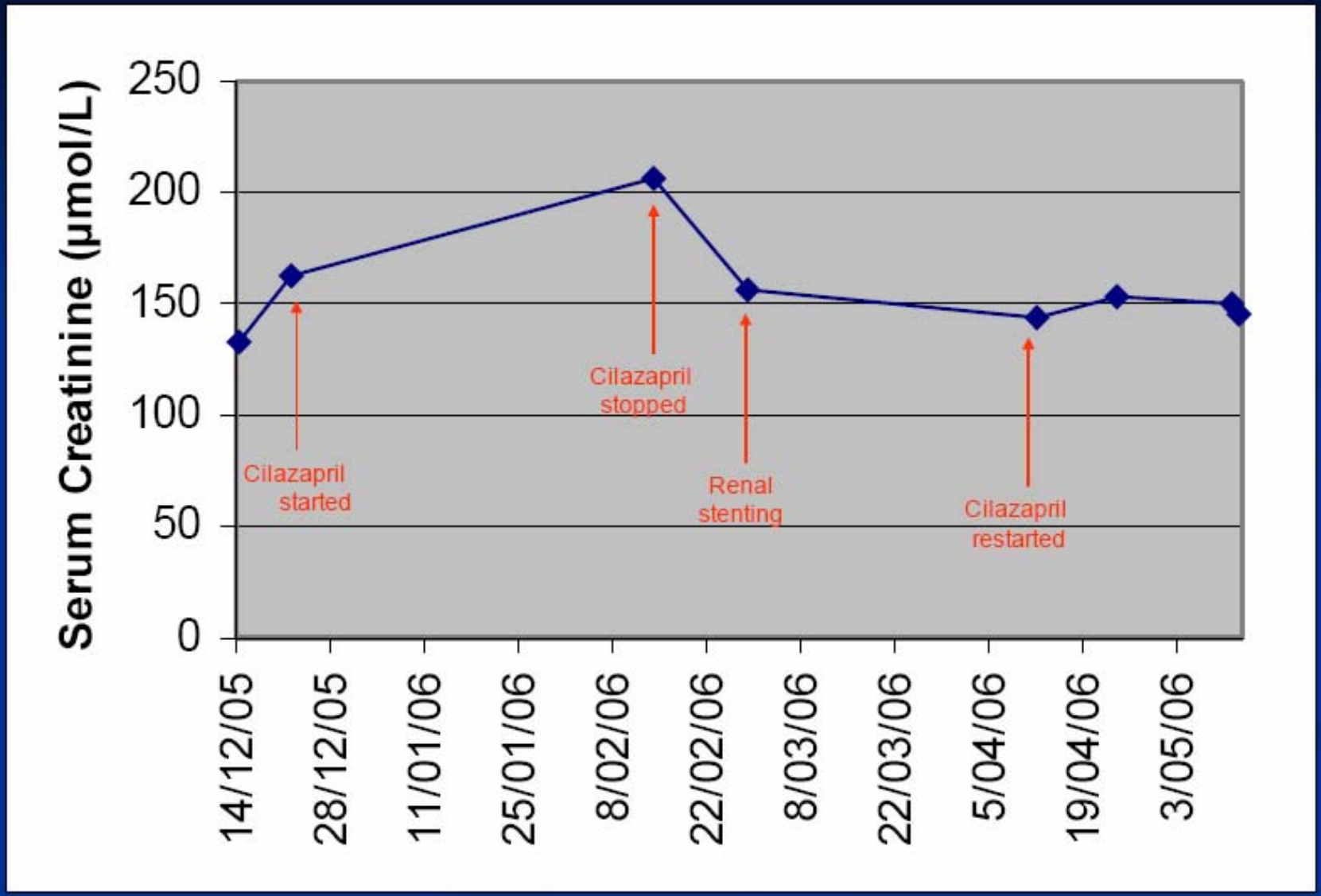


Hostile Aortas

ACC/AHA Recommendations: Indications for Renal Revascularization

- **Hypertension:**
  - Class IIa
- **Preservation of renal function:**
  - Class IIa: RAS and CKD with ischemic nephropathy
  - Class IIb: RAS and CRI with unilateral RAS
- **CHF and Unstable Angina:**
  - Class I: Unexplained pulmonary edema
  - Class IIa: RAS and USA

Decline in Renal Function on ACE-I



Hare & Dare

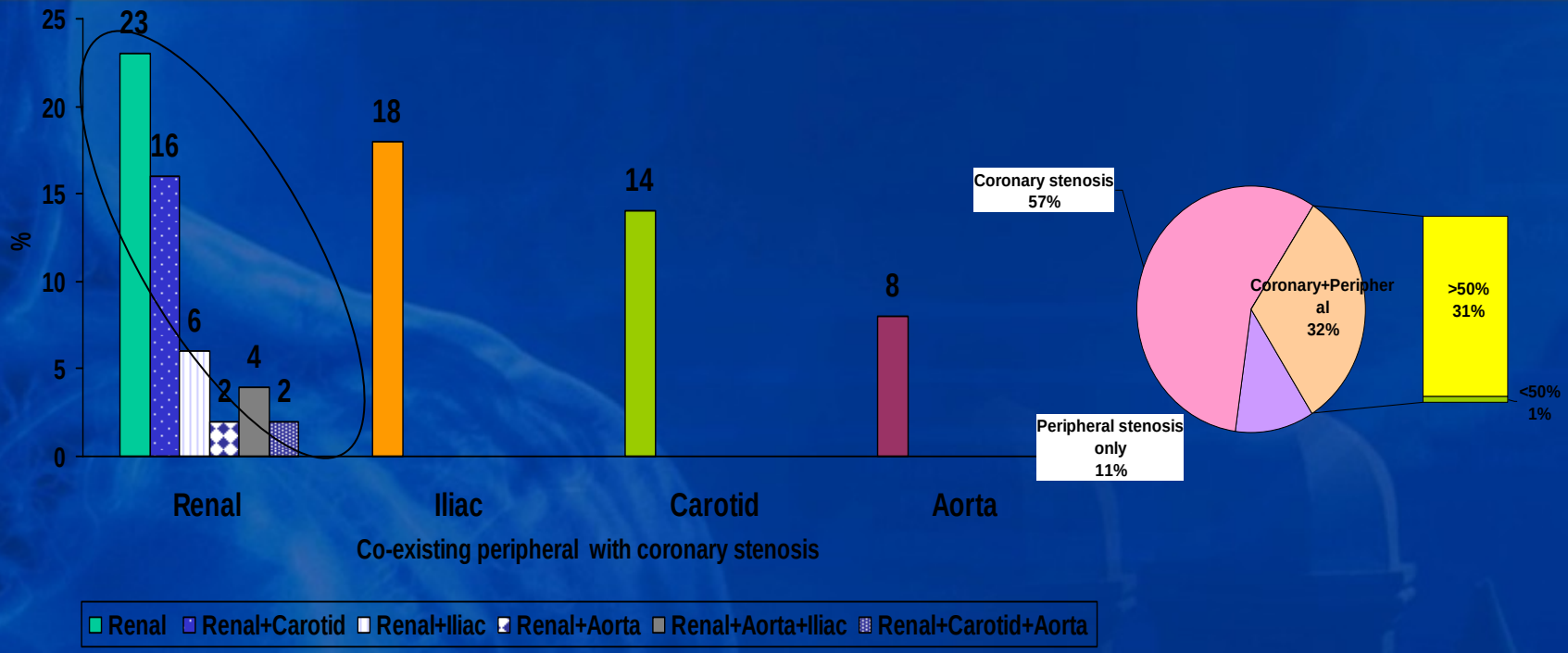
HYPERTENSION ASSOCIATED RISK FACTOR

DIABETES ASSOCIATED RISK FACTOR

RUBY HALL CLINIC, PUNE, INDIA

Distribution of Peripheral sites in CAD

Overall



- In co-existing peripheral stenosis, renal stenosis had relatively high prevalence (23%)
- Whenever there is co-existing Peripheral stenosis Renal Stenosis was common.

N = 49

RAS – Indications for Intervention

ACC 2006

- Indications
  - Class I:
    - Hemodynamic RAS with recurrent CHF or unexplained pulmonary edema.
    - RAS from fibromuscular dysplasia.
  - Class IIa / IIb: RAS with:
    - Accelerated, resistant HTN / medication intolerance
    - CRI with bilateral RAS or solitary functioning kidney
    - Asymptomatic bilateral or solitary viable kidney
    - Asymptomatic unilateral RAS in viable kidney
    - Unstable angina

P T R A……..Indication….

- Anatomic criteria:
  - > 70% diameter stenosis
  - Significant pressure gradient
    - ≥ 10mm Hg peak systolic pressure
    - ≥ 5mm Hg mean pressure
  - Asymmetrical renal size
    - Length difference of ≥ 1.5cm
    - Documented decrease of > 1cm

Hirsch, et al. JACC. 2006;47:1239