



# **Subintimal Angioplasty for BTK Occlusions: Standard or Bail-out Approach**

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# Critical Limb Ischemia

- Characterized by
  - Occlusive rather stenotic lesions
  - Diffuse, long lesions
  - Multilevel lesions
  - Infrapopliteal lesions

# Clinical Goals

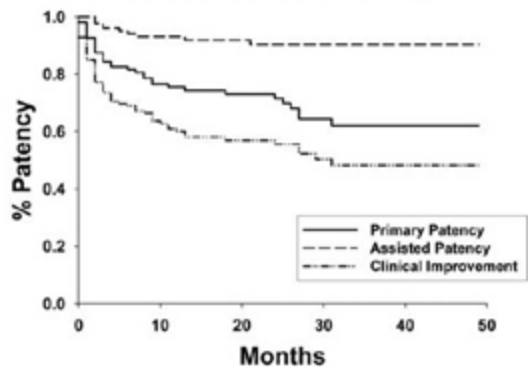
- Limb salvage
- Better wound healing
- Pain relief
- Early mobilization

# **Subintimal vs. Intraluminal Angioplasty for BTK Occlusions**

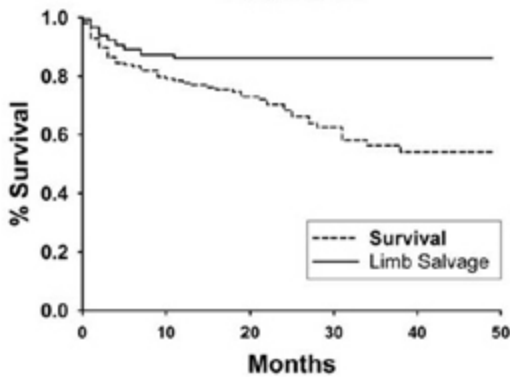
# Infrapopliteal balloon angioplasty for the treatment of chronic occlusive disease

144 patients with CLI (86%), diabetes (66%), and renal insufficiency (45%).

### Crural Vessel Patency

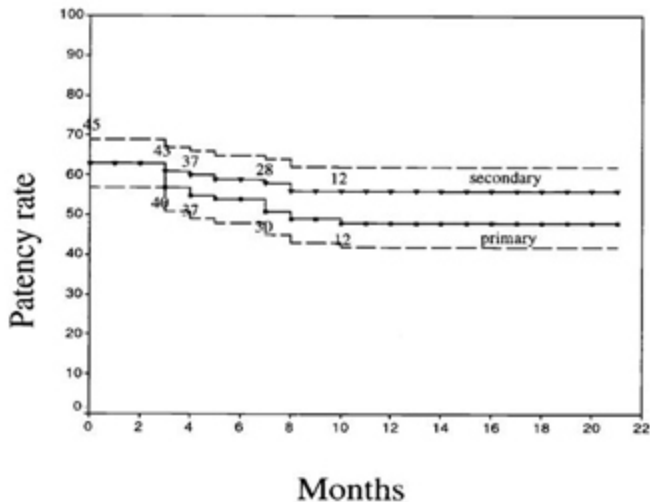


### Outcomes



# Infrapopliteal Artery Balloon Angioplasty for Critical Limb Ischemia

72 limbs of 60 patients



# Subintimal angioplasty in CLI

40 patients

## Summary of Kaplan-Meier Estimates and 95% CIs at 6- and 12-month Follow-up

End point	Survival (%)	Standard Error	95% CI
Limb salvage			
At 6-month follow-up	91	NA*	0.789, 1.000
At 12-month follow-up	66	NA*	0.480, 0.845
Amputation-free survival			
At 6-month follow-up	72	0.0732	0.585, 0.874
At 12-month follow-up	48	0.0892	0.333, 0.690
Survival			
At 6-month follow-up	74	0.0711	0.614, 0.894
At 12-month follow-up	71	0.0749	0.576, 0.872

\* Nonparametric methods were used to correct for correlate response data; therefore, a standard error was not estimated. NA = not applicable.

# Subintimal Angioplasty of Tibial Vessel Occlusions in Critical Limb Ischemia

Table 2. Occlusion characteristics

Length	
>10 cm	39 (78%)
<10 cm	11
Extension	
Popliteal + tibial	28 (56%)
Tibial alone	22
Distal re-entry	
Calf level	32
Ankle level	18 (36%)

Patients/limbs 46/50

	1 month	12 months	24 months
Primary patency <sup>a</sup>	74%	46%	42%
Secondary patency <sup>a</sup>	76%	55%	52%
Clinical patency <sup>a</sup>	78%	63%	63%
Limb salvage	92%	87%	87%
Survival	100%	74%	64%

<sup>a</sup> In intention to treat.



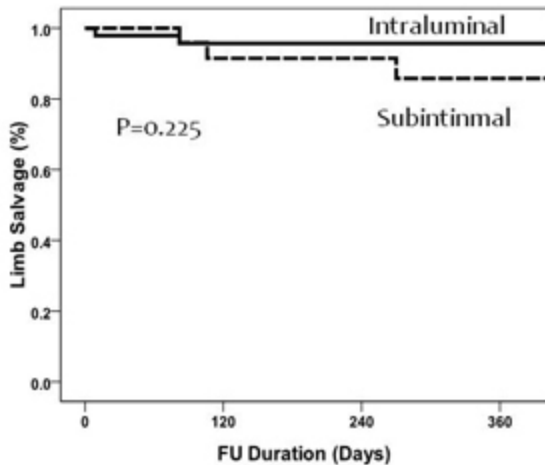
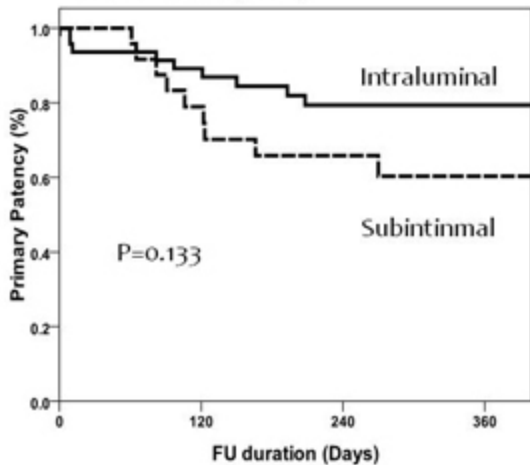
# Meta analysis: PTA in BTK Lesions

N=2653 limbs from 30 studies

Variable	Early death, median	Technical success, %	Primary patency, %	Secondary patency, %	Limb salvage, %	Patient survival, %
All	1.8	89.0 ± 2.2	58.1 ± 4.6	68.2 ± 5.9	86.0 ± 2.7	87.0 ± 2.1
Tissue loss						
>75%	2.0	83.6 ± 3.0	52.5 ± 5.0	55.8 ± 5.2	86.1 ± 3.8	85.3 ± 3.8
<75%	1.3	93.3 ± 1.5	66.0 ± 5.3	74.0 ± 8.0	92.6 ± 2.3	87.3 ± 2.6
<i>P</i>		<.05		<.05		
Crural PTA						
Alone	0.6	88.7 ± 4.8	52.0 ± 11.8	74.0 ± 8.5	85.2 ± 5.5	85.7 ± 4.5
Combined	2.0	88.4 ± 2.6	58.1 ± 5.0	60.9 ± 5.8	86.8 ± 3.2	86.0 ± 2.7
Subintimal dissection						
Routinely	0.6	83.9 ± 2.7	55.9 ± 12.1	70.9 ± 11.4	88.7 ± 4.8	81.4 ± 4.2
Other	2.0	90.3 ± 2.7	58.0 ± 4.9	66.0 ± 7.1	84.8 ± 3.3	87.7 ± 1.9

# Severance Hospital Experience

Intraluminal (N=47)  
Vs. Subintimal (n=28)



## How I do subintimal angioplasty in BTK occlusions

- Approach:
  - Ipsilateral antegrade > contralateral cross-over
- Devices:
  - Long sheath: 5F Ansel (Cook)
  - Wire: 035" hydrophilic (Terumo) for above ankle  
018" hydrophilic (Terumo) for below ankle
  - Balloon: diameter 2.5 ~ 3 mm long balloon (100 mm)
  - Stent: self-expandable BMS for bail-out

# M/70

PYB 6189988

CC: Delayed healing of wound in toes

PHx: - CRF

- Recent stroke
- Smoker



# Subintimal angioplasty

Ansel sheath 5F (Cook)



035" J-tip Glidewire (Terumo)  
5F Glidecath (Terumo)



# Passage of Wire



# Balloon dilation

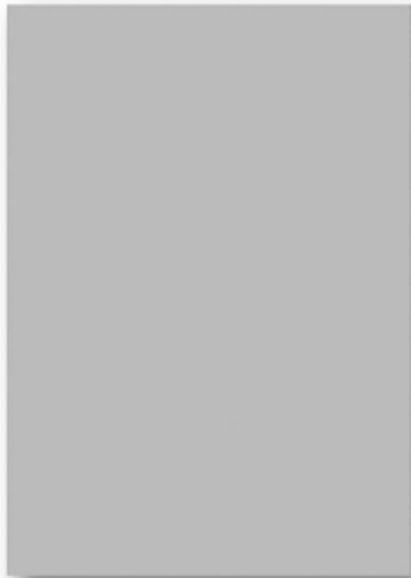
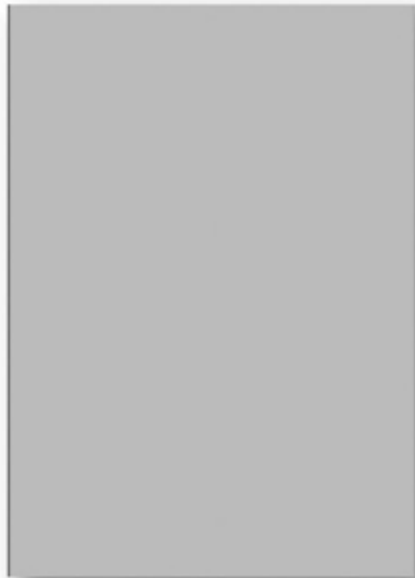
Savy 3.0 x 150 mm



Savy 2.0 x 100 mm



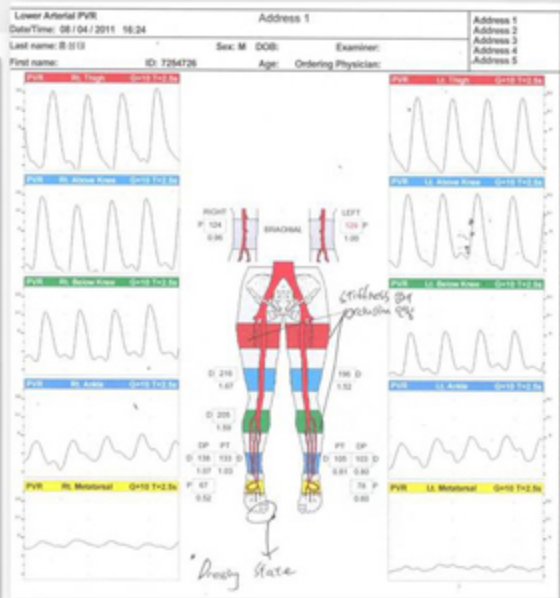
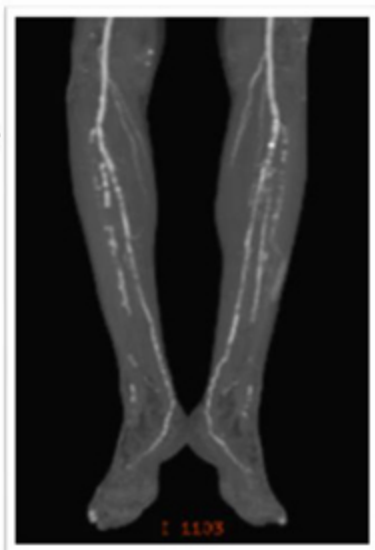
# Final result





# M/61

DM+  
HTN+  
Smoking+



# Subintimal Angioplasty

Ansel Sheath 5F



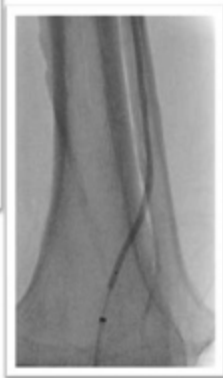
035" J-Tip Glidewire, Terumo



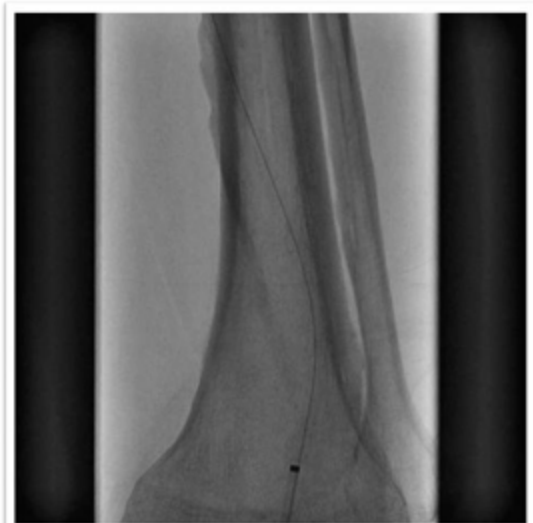
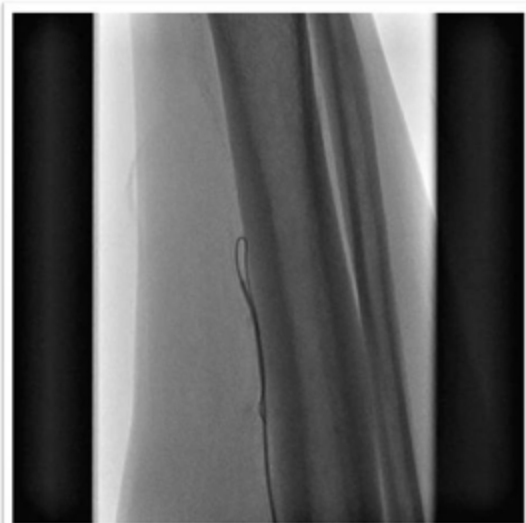
# Subintimal Angioplasty



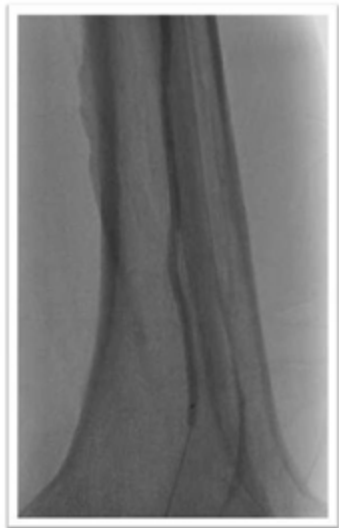
Savvy 3.0 x 150 mm,  
Cordis



# Subintimal Angioplasty



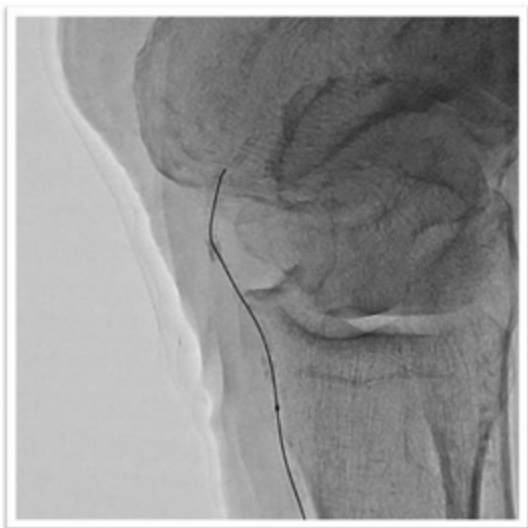
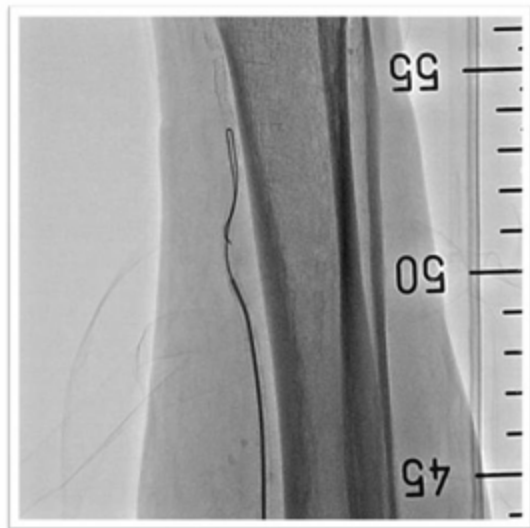
# Complete Revascularization



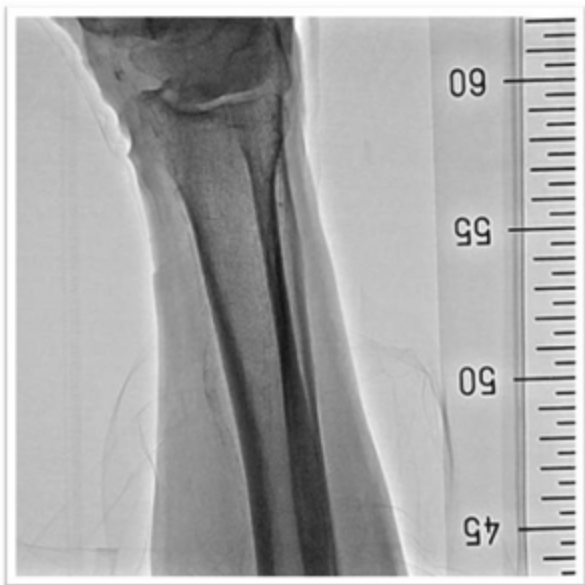
# Calcified Lesions



# Calcified Lesions

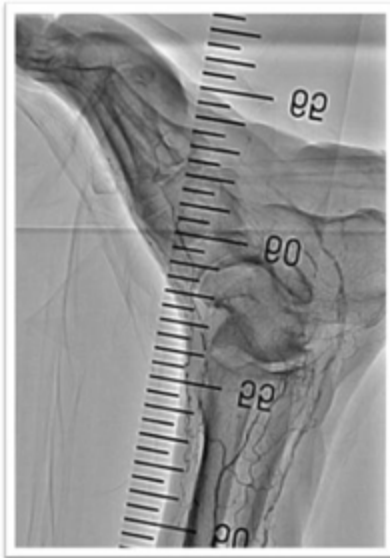


# Calcified Lesions





# Poor Distal Stump



# Advantages of SIA

- Relatively high technical success rate
- Short procedure time
  - Less effort
  - Less use of contrast media
  - Shorter exposure to radiation for operator & patient
- Similar patency & limb salvage rates compared to intraluminal angioplasty

# Limitations of SIA

- Heavily calcified vessel
- Poorly visible distal stump
- Previously stented vessel