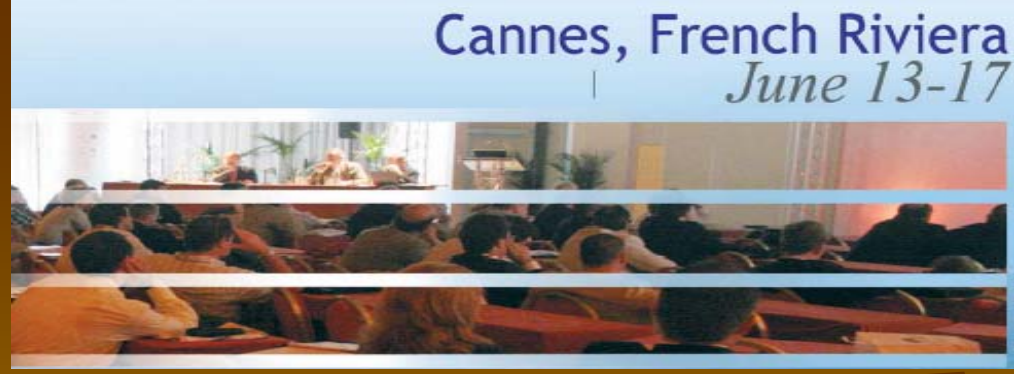
MEET 2007
MULTIDISCIPLINARY EUROPEAN ENDOVASCULAR THERAPY



Aorto-iliac occlusion: how to manage a failed endovascular attempt ?
I convert to surgery

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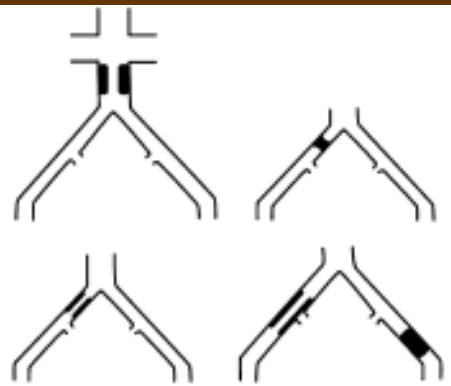
Type B lesions:

- Short (≤3cm) stenosis of infrarenal aorta
- Unilateral CIA occlusion
- Single or multiple stenosis totaling 3–10 cm involving the EIA not extending into the CFA
- Unilateral EIA occlusion not involving the origins of internal iliac or CFA



Type C lesions

- Bilateral CIA occlusions
- Bilateral EIA stenoses 3–10 cm long not extending into the CFA
- Unilateral EIA stenosis extending into the CFA
- Unilateral EIA occlusion that involves the origins of internal iliac and/or CFA
- Heavily calcified unilateral EIA occlusion with or without involvement of origins of internal iliac and/or CFA

Type D lesions

- Infra-renal aortoiliac occlusion
- Diffuse disease involving the aorta and both iliac arteries requiring treatment
- Diffuse multiple stenoses involving the unilateral CIA, EIA, and CFA
- Unilateral occlusions of both CIA and EIA
- Bilateral occlusions of EIA
- Iliac stenoses in patients with AAA requiring treatment and not amenable to endograft placement or other lesions requiring open aortic or iliac surgery

Aortoiliac ***occlusions*** are included in type B, C and D lesions in the TASC II classification

TASC II recommendations, Norgren L, Hiatt WR, Eur J Vasc Endovasc Surg 2007

Type	*Lesion morphology*
A	- Single unilateral or bilateral stenosis of CIA or EIA < 3 centimeters in length
B	- Single stenosis 3-10 centimeters in length not extending into CFA - Two stenosis of CIA or EIA not involving CFA < 5 centimeters - Unilateral CIA occlusion
C	- Bilateral stenosis of CIA or EIA 5-10 centimeters in length not involving CFA - Unilateral EIA occlusion not involving CFA - Unilateral EIA stenosis extending into CFA - Bilateral CIA occlusion
D	- Diffuse stenosis of entire CIA, EIA, CFA of >10 centimeters - Unilateral occlusion of CIA and EIA - Bilateral EIA occlusion - Iliac stenosis adjacent to aortic or iliac aneurysms

TASC I

Type	*Lesion morphology*
A	- Unilateral or bilateral stenoses of CIA - Unilateral or bilateral single short (≤ 3 centimeters) stenosis of EIA
B	- Short (≤ 3 centimeters) stenosis of infrarenal aorta - Unilateral CIA occlusion - Single or multiple stenosis totalling 3-10 centimeters involving the EIA, not extending into the CFA - Unilateral EIA occlusion, not involving the origins of IIA or CFA
C	- Unilateral EIA stenosis extending into the CFA - Unilateral EIA occlusion that involves the origins of IIA and/or CFA - Bilateral EIA stenoses 3-10 centimeter long not extending into the CFA - Bilateral CIA occlusions - Heavily calcified unilateral EIA occlusion with or without involvement of origins of IIA and/or CFA
D	- Infra-renal aorto-iliac occlusion - Diffuse disease involving the aorta and both iliac arteries requiring treatment - Diffuse multiple stenoses involving the unilateral CIA, EIA and CFA - Unilateral occlusions of both CIA and EIA - Bilateral EIA occlusion - Iliac stenoses in patients with AAA requiring treatment and not amenable to endograft placement or other lesions requiring open aortic or iliac surgery

TASC II

TASC I to TASC II Changes in occlusive lesions

Blue line: moved from type C to type B

Red line: new entries

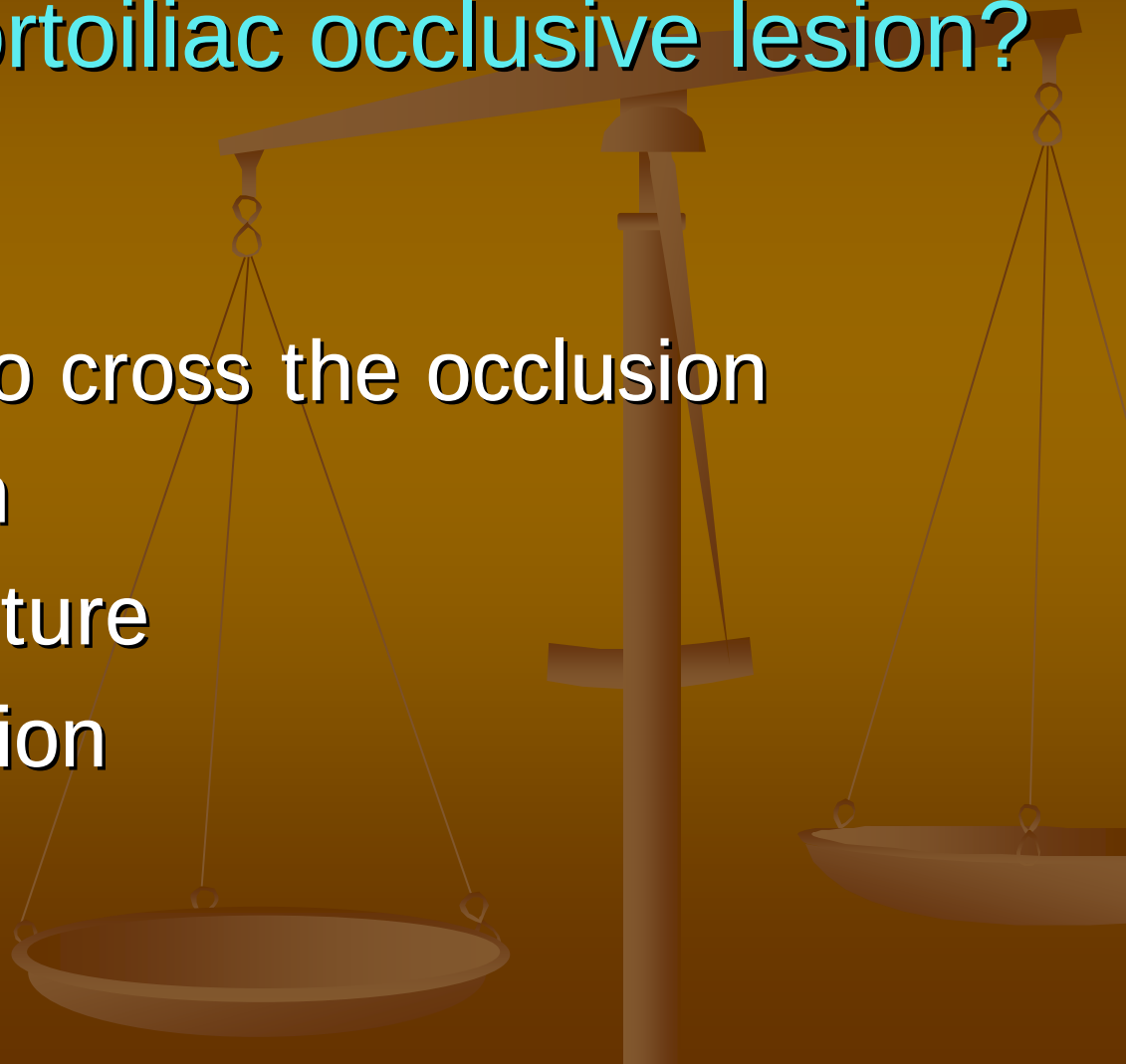
General recommendations for aortoiliac disease treatment

Recommendation 36. Treatment of aortoiliac lesions

- TASC A and D lesions: Endovascular therapy is the treatment of choice for type A lesions and surgery is the treatment of choice for type D lesions [C].
- TASC B and C lesions: Endovascular treatment is the preferred treatment for type B lesions and surgery is the preferred treatment for good-risk patients with type C lesions. The patient's co-morbidities, fully informed patient preference and the local operator's long-term success rates must be considered when making treatment recommendations for type B and type C lesions [C].

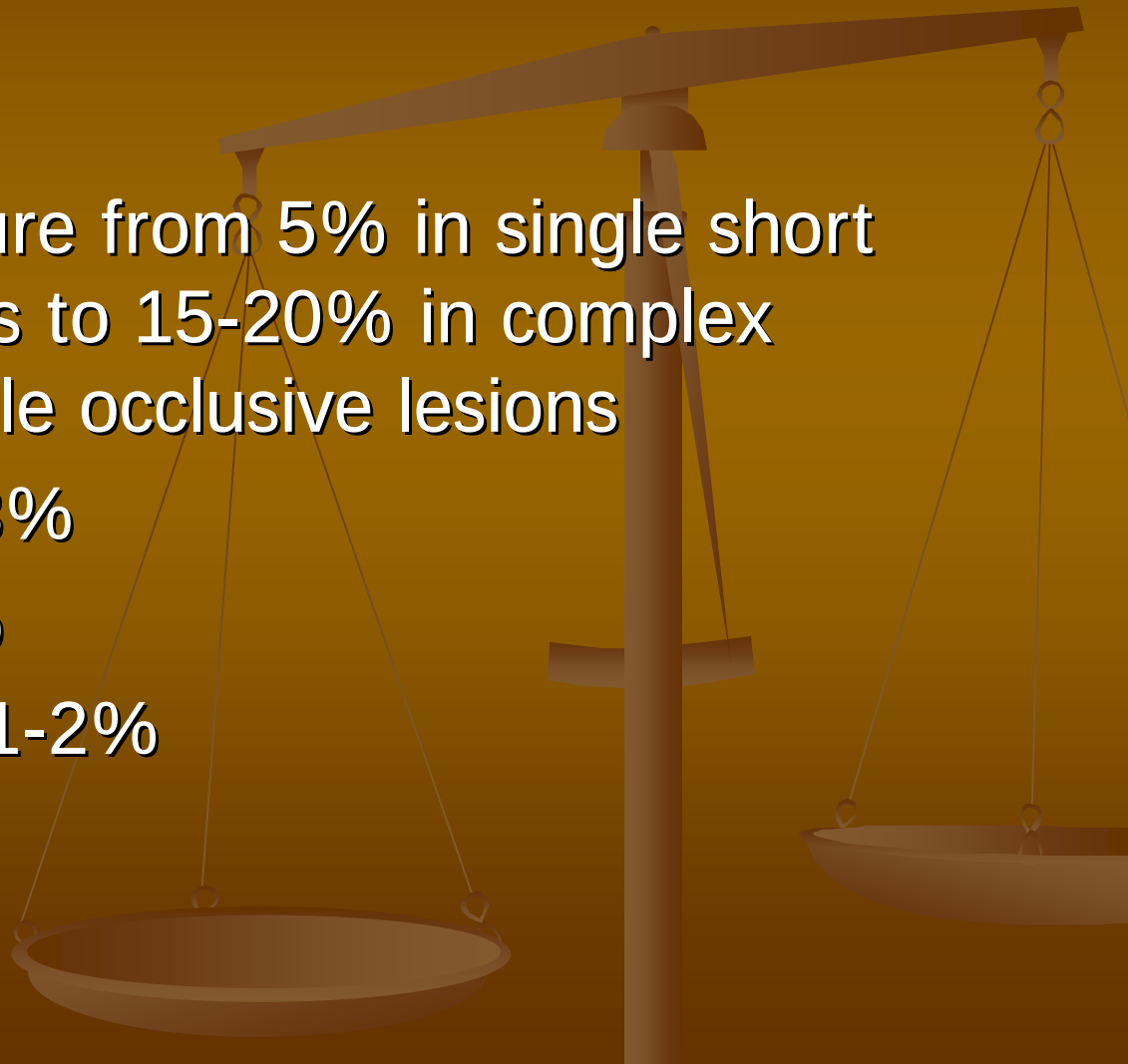
TASC II recommendations, Norgren L, Hiatt WR, Eur J Vasc Endovasc Surg 2007

What constitutes a failed endovascular attempt at an aortoiliac occlusive lesion?



- Inability to cross the occlusion
- Dissection
- Aortic rupture
- Embolization

How often does this happen?

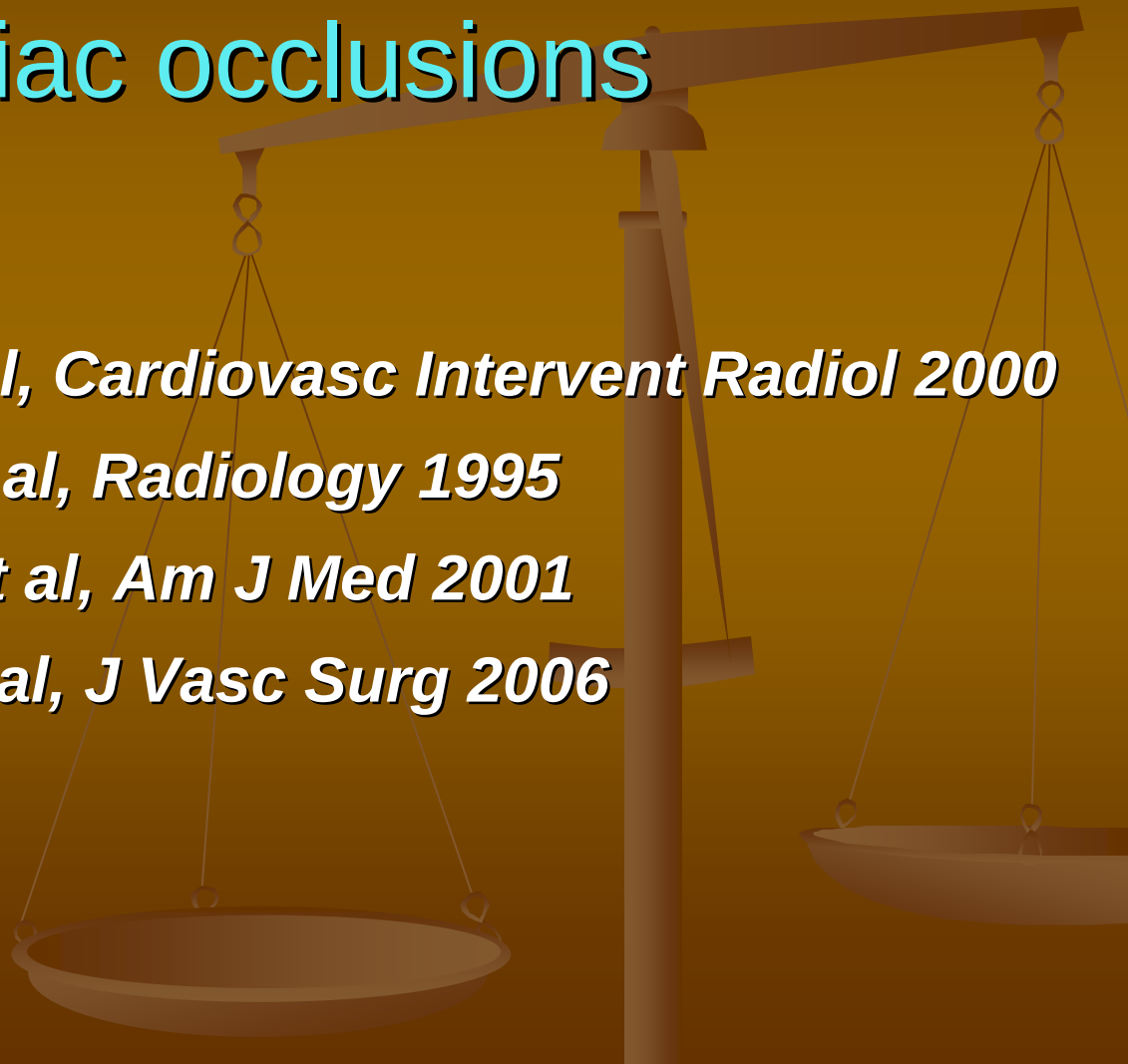


- Technical failure from 5% in single short iliac occlusions to 15-20% in complex long or multiple occlusive lesions
- Dissection 1-3%
- Rupture 1-3%
- Embolization 1-2%

COMPLICATIONS

- Puncture site: hematoma, false aneurysm, AV shunt, infection
- PTA/stenting site: acute thrombosis, occlusion, dissection, perforation
- Major complications 4-6%
- Complications requiring surgery 1,5-2,5%

Primary technical **failure** in aortoiliac occlusions



- **22%** ***Nyman U, et al, Cardiovasc Intervent Radiol 2000***
- **19%** ***Vorwerk D, et al, Radiology 1995***
- **11%** ***Scheinert D et al, Am J Med 2001***
- **14%** ***Leville CD, et al, J Vasc Surg 2006***

Results of stenting for chronic iliac artery occlusion

- 50% multiple access sites
- Primary technical success 91% (86% in TASC D lesions)
- 24% femoral endarterectomy and patch angioplasty (disease extension to CFA)
- 3y secondary patency 90% (83% in TASC D lesions, 79% in CLI patients)

Leville CD, et al, J Vasc Surg 2006

META-ANALYSIS OF THE RESULTS OF PTA/STENTING FOR AORTOILIAC OCCLUSIVE DISEASE

	PTA	stenting
complications	10.9%	10.2%
4y primary patency in **claudicants**		
Stenosis	65%	77%
Occlusion	54%	61%
4y primary patency in **CLI**		
Stenosis	53%	67%
Occlusion	44%	53%

JL Bosch et al Radiology 2000

Results of stenting for chronic iliac artery occlusion I

- 3% distal embolization
- 3% arterial rupture
- 23% failure at 27m median follow up
- 9.5% late conversion
- 3y primary patency 69%
  secondary patency 81%

Uher P, et al, J Endovasc Ther 2002

Results of stenting for chronic iliac artery occlusion II

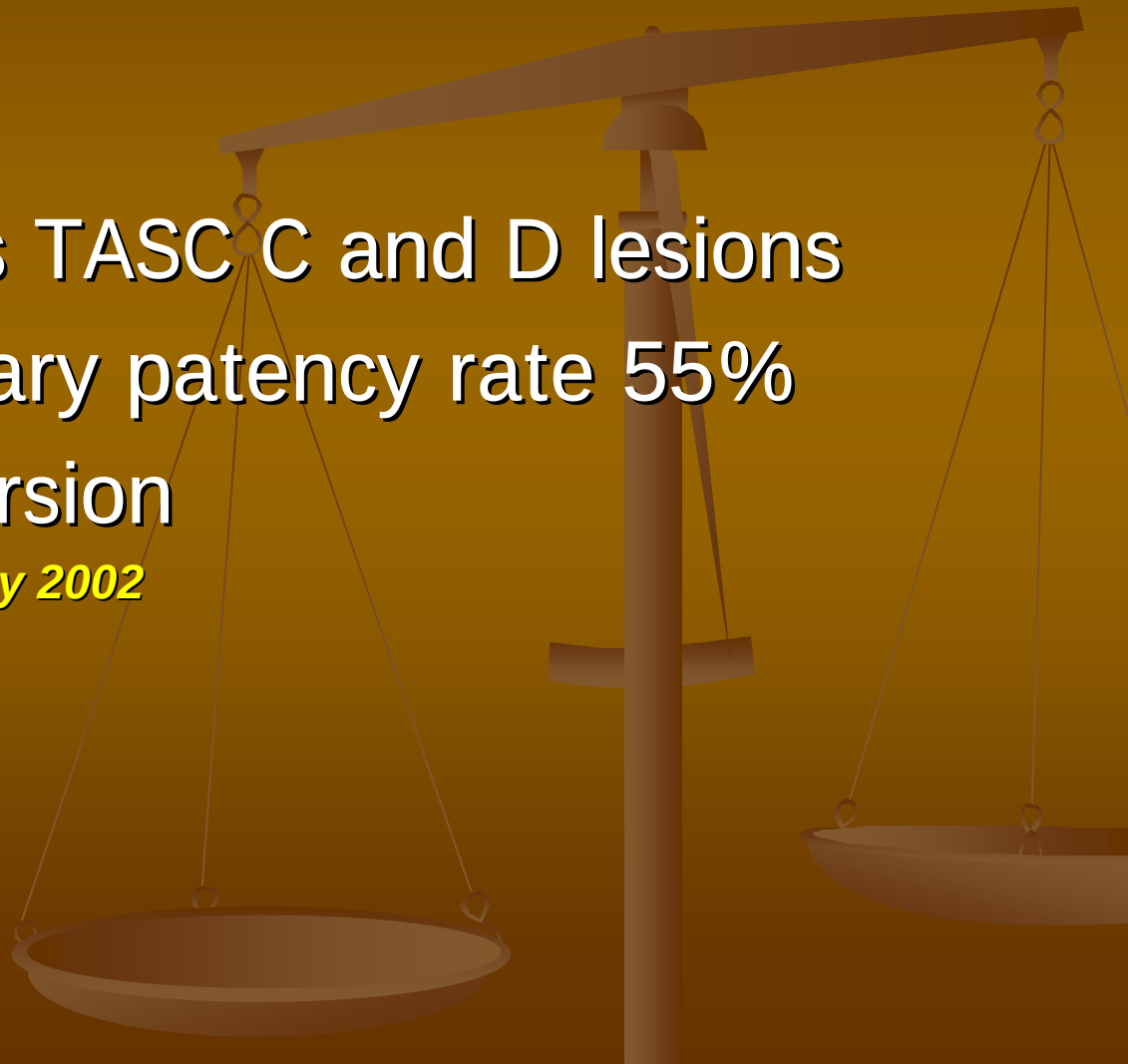
- 3% arterial thrombosis
- 3% arterial rupture
- 1% distal embolization
- 15% failure in 29m mean follow up

Carnevale FC, et al, Cardiovasc Interv Radiol 2004

10-year results of iliac stenting

- 66% of patients TASC C and D lesions
- 10-year secondary patency rate 55%
- 16% late conversion

Schurmann K, et al, Radiology 2002



5year patency of aortoiliac/aortofemoral prosthetic grafts 64-95%

Table II. Mortality, morbidity, and patency data

Author	Operative mortality (%)	Systemic morbidity (%)	Local morbidity (%)	Patency: Unit of observation	Patency: Source of data	Patency: Definition	Patency: Patency reported	Patency: 5-year patency rate
Szilagy[6]	5.0	18.9	6.0	Patient	Table	—	Primary	85.3
van den Akker[5]	3.3	—	—	Patient	Table*	Loss of pulse	Primary	86.5
Brewster[9]	2.6	—	—	Limb	Table	(Occl/Sten) & ReTx	Primary	90.3
Nevelsteen[4]	5.5†	8.6‡	9.0‡	Limb	Table*	—	Primary	88.9
Mulcare[18]	8.8	—	—	Patient	Table	—	Primary	—
Johnson[2]	5.7†	—	—	Patient	Table	Loss of pulse	Secondary§	64.3
Martinez[16]	5.6	5.8‖	3.5‖	Limb	Table	—	Primary	88.8
Dunn[11]	3.1	17.2	8.1	Patient	Table	—	Primary	83.0
Sladen[24]	0.0	—	—	Patient	Table	ReTx/Amp	Primary	82.3
N-Hsiang[20]	—	—	—	Patient	Figure	—	Primary	86.1
Couch[10]	1.0	16.1	—	Limb	Figure	Loss of pulse/Sxs	Primary	—
Naylor[19]	—	—	—	Both	Figure	—	Primary	92.8
Piotrowski[21]	3.0†	13.0	22.0	Patient	Figure	—	Primary	86.5
van der Vliet[25]	4.9†	9.3	9.9	Patient	Table	—	Primary	87.0
Bowes[8]	7.7†	4.2	—	Limb	Figure	ISCVS/SVS	Primary	91.7
Littooy[14]	4.9†	3.8	10.8	Limb	Table	Occl	Primary	89.6
Prendiville[22]	3.0†	—	—	Limb	Figure	—	Primary	90.7
Harris[12]	3.5	—	—	Limb	Figure	—	Primary	89.1
Jensen[13]	0.0†	5.4	17.9	Patient	Table	Loss of pulse	Primary	—
Mason[16]	6.8†	21.3‖	9.6‖	Limb	Figure	—	Primary	—
Melliere[17]	2.5	—	—	Limb	Figure	—	Primary	89.1
Friedman[3]	0.0	8.3	11.7	Limb	Table	Occl	Primary	95.4
Schneider[23]	0.8†	—	—	Patient	Figure	ISCVS/SVS	Primary	69.4

de Vries et al, J Vasc Surg 1997

Surgery is ahead in the 5-year and alone in the 10- year patency

Table F3. Estimated success rate of iliac artery angioplasty from weighted averages (range) from reports of 2222 limbs

% Claudication	Technical success	Primary patency		
		1 yr	3 yr	5 yr
76% (81–94)	96% (90–99)	86% (81–94)	82% (72–90)	71% (64–75)

Table F4. Patency at 5 and 10 years after aortobifemoral bypass[191]

Indication	5-year % patency (range)		10-year % patency (range)	
	Claudication	CLI	Claudication	CLI
Limb based	91 (90–94)	87 (80–88)	86 (85–92)	81 (78–83)
Patient based	85 (85–89)	80 (72–82)	79 (70–85)	72 (61–76)

CLI – critical limb ischemia.

TASC II recommendations, Norgren L, Hiatt WR, Eur J Vasc Endovasc Surg 2007

Total, hand or robot assisted laparoscopic surgery

- Total LS: 2.2% conversion, 2,2% embolization, 2,2 % acute aortic false aneurysm, 4,4% limb graft thrombosis

Dion YM, et al, Surg Laparosc Endosc Percutan Tech 2004

- Hand assisted LS: operating time>240 min, cross clamp time > 30 min, blood loss > 1lt, ICU > 12h, mortality 0, major complication 12%

Klem TM, et al, Eur J Vasc Endovasc Surg 2006

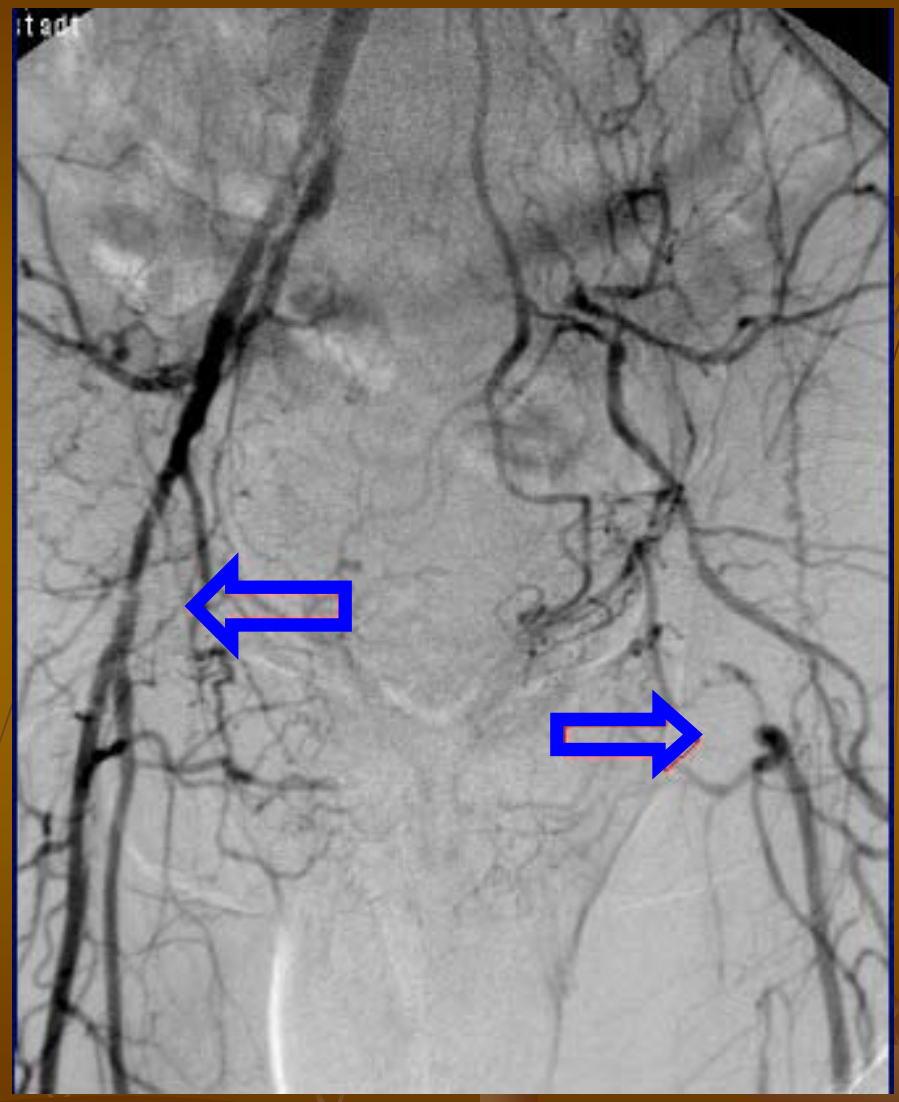
- Robot assisted LS: mean operative clamping and anastomosis time 365, 86 and 41 min respectively, median blood loss 1lt, median LOS 4 days, 5,9% mortality, 16,4% conversion

Dicks J, et al, Surg Endosc 2007

Hybrid procedures

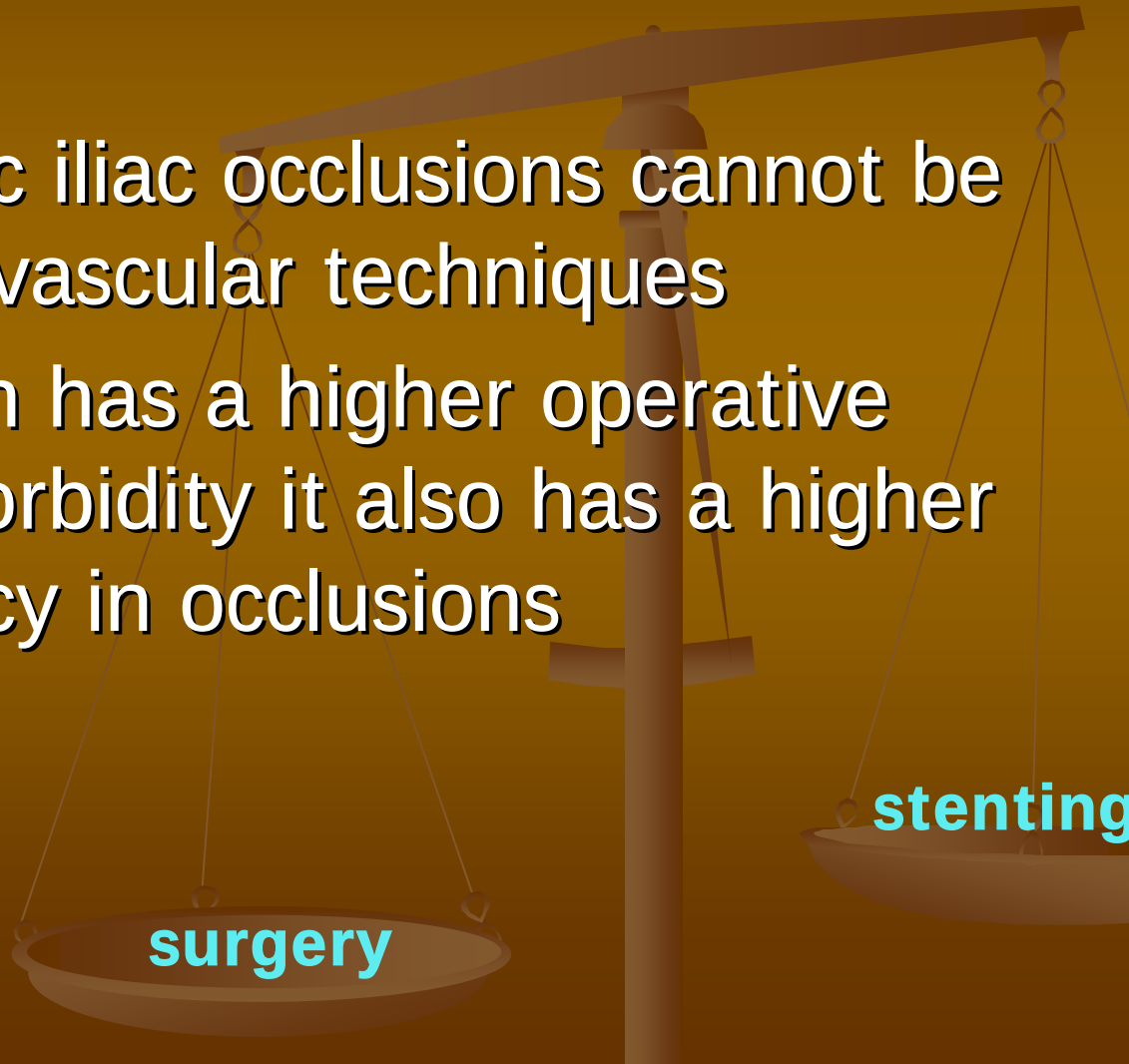
- Unilateral endovascular iliac recanalization and

1. Femoral endarterectomy and patch angioplasty or profundoplasty
2. Femoro-femoral cross over by-pass
3. Femoro-popliteal or distal bypass



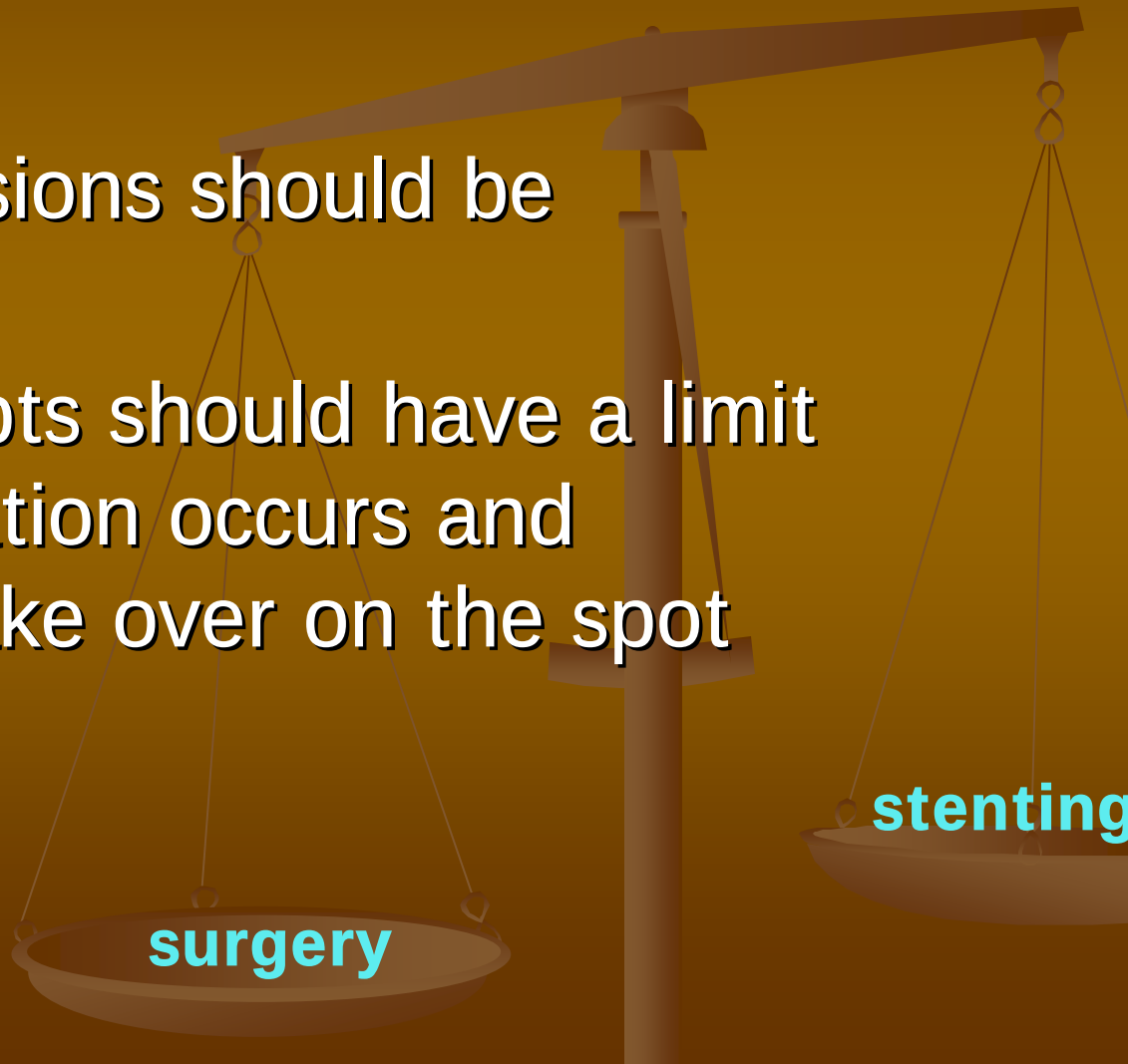
Conclusions I

- 5-20% of chronic iliac occlusions cannot be crossed by endovascular techniques
- Surgery although has a higher operative mortality and morbidity it also has a higher long term patency in occlusions



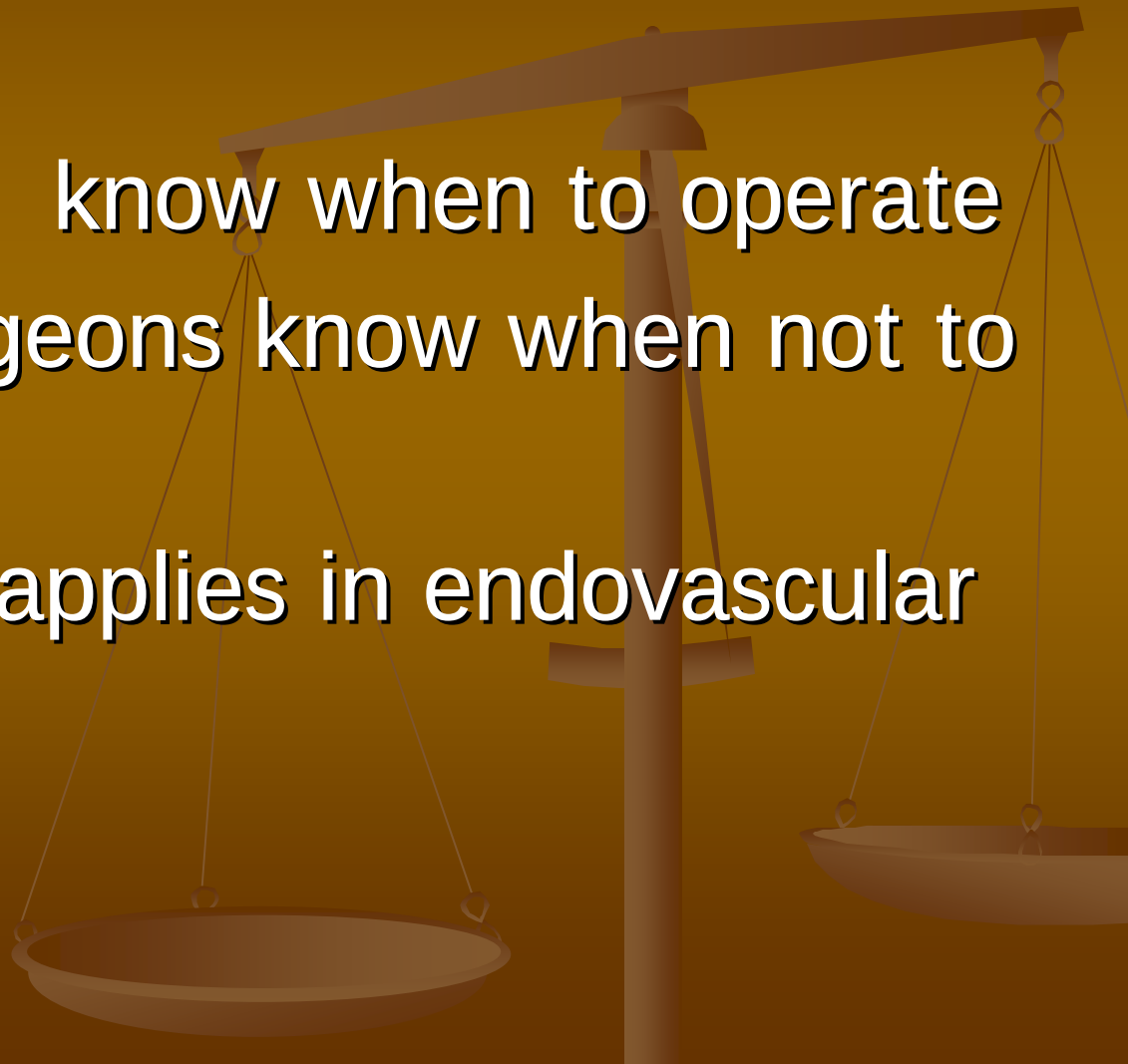
Conclusions II

- Treatment decisions should be individualised
- Crossing attempts should have a limit before complication occurs and surgery must take over on the spot



Conclusions III

- Good surgeons know when to operate
- Very Good Surgeons know when not to operate
- The same rule applies in endovascular procedures



FOLIE

CHIRURGICALE ENDOVASCULAIRE

Hieronymus Bosch: Excision de la pierre de folie