NEW EVIDENCES FOR HYPOGASTRIC PRESERVATION DURING EVAR

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MULTIDISCIPLINARY EUROPEAN ENDOVASCULAR THERAPY

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Disclosure

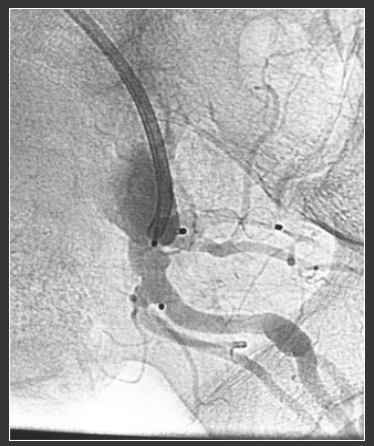
Speaker name:

Elixène JEAN-BAPTISTE

Proctoring of fenestrated and branched procedures for Cook Europe®.

INTRODUCTION

- Sacrifice of the hypogastric artery
  - Quite common during EVAR
  - Extension to 1 or 2 of the iliac artery bifurcation



- With satisfactory results
  - This only means: no big drama most of the time

Major Acute Pelvic Ischemia after IOHA

- Incidence rate: 0 – 18%

- Severe complications :
  - Sciatic nerve palsy
  - Colonic ischemia
  - Gluteal necrosis
  - Paraplegia

- Our own data: 2.8% in 71 patients

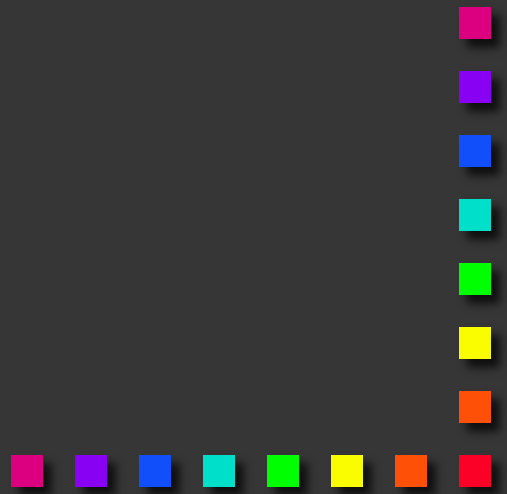
Factors associated with major acute pelvic ischemic complications

- Inadequacy of the pelvic collateral circulation
  - Failed collateral network
  - Atherothrombotic microembolization
  - Bilateral HA interruption
- Severe perioperative hypotension
- Splanchnic arterial occlusive disease
- Low cardiac output / Heart failure

CHRONIC PELVIC ISCHEMIA

- Buttock claudication

- Sexual dysfunction
  - markers of chronic pelvic ischemia



SEXUAL DYSFUNCTION

First Author (year)	No. of Patients	Erectile Dysfunction	
		n	%
Cynamon (2000)[6]	34	NA	
Razavi (2000)[16]	32	2/16	13
Karch (2000)[19]	22	NA	
Criado (2000)[18]	39	NA	
Lee (2000)[9]	27	NA	
Yano (2001)[3]	103	NA	
Lee (2001)[8]	23	NA	
Mehta (2001)[22]	107	7/73	10
Wolpert (2001)[26]	18	NA	
Lyden (2001)[21]	23	NA	
Schoder (2001)[24]	46	5/20	25
Lin (2002)[12]	12	5/11	45
Rhee (2002)[23]	49	NA	
Wyers (2002)[27]	11	NA	
Engelke (2002)[28]	16	NA	
Kritpracha (2003)[20]	20	NA	
Tefera (2004)[25]	13	NA	
Mehta (2004)[2]	32	2/18	11
Arko (2004)[17]	12	NA	
Farahmand (2008)[7]	101	19/101	20
Bratby (2008)[4]	39	2/39	5
Rayt (2008)[11]	29	5/29	17

Abbreviation: NA, not available.

A prospective evaluation of hypogastric artery embolization in endovascular aortoiliac aneurysm repair

Peter H. Lin, MD,[a] Ruth L. Bush, MD,[b] Elliot L. Chaikof, MD,[b] Changyi Chen, MD, PhD,[a] Brian Conklin, PhD,[a] Thomas T. Terramani, MD,[b] William T. Brinkman, MD,[b] and Alan B. Lumsden, MD,[a] *Houston, Tex; and Atlanta, Ga*

Purpose: Hypogastric artery embolization (HAE) is often performed in endovascular aortoiliac aneurysm repair to prevent potential endoleak, and this can be associated with pelvic ischemic sequelae. This prospective study was performed to evaluate the clinical outcome of HAE in patients who underwent endovascular aortoiliac aneurysm repair.

12 patients underwent preoperative and postoperative penile-brachial- index (PBI) and pulse-volume recording assessment.

aortic endografting and one sacral decubitus (25%) that occurred 4 months after aortic endografting. With analysis of angiographic collateral patterns, diseased profunda femoral artery (PFA; >50% stenosis) was noted in four patients, all in whom post-HAE pelvic ischemic symptoms developed ($P < .05$). In contrast, only four of the remaining eight patients with normal or mild PFA disease had pelvic ischemic sequelae after HAE.

Conclusion: Erectile dysfunction after HAE correlates with significant reduction in PBI. Severe pelvic ischemic symptoms are more likely to occur after bilateral HAE, which should be avoided if possible. Moreover, patients with diseased PFA are at risk of development of pelvic ischemia after HAE. Our data suggest a potential role of concomitant profundaplasty at the time of aortic endografting to improve pelvic collateral flow and reduce pelvic ischemia in this subset of patients

Mean reductions in PBI after unilateral and bilateral hypogastric artery embolization were 13% and 39% (P = 0☐

free external iliac artery, thereby eliminating hypogastric endoleak into the aortoiliac aneurysm. Numerous retrospective studies have suggested that unilateral HAE can often be performed without significant risk of complication

relatively little is known concerning the natural history of pelvic ischemia after HAE. This prospective study was undertaken to: 1, determine the incidence of pelvic ischemia after HAE; 2, perform physiologic assessment of pelvic circulation after HAE; and 3, assess the patency of pelvic collateral circulation in subsequent pelvic ischemia after HAE.

Rate of new-onset erectile dysfunction was 45%

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with a mean age of 79 years (range, 66 to 87 years). Patients with unplanned hypogastric artery occlusion from endograft placement or unplanned intraoperative hypogastric

BUTTOCK CLAUDICATION

First Author (year)	No. of Patients	Claudication	
		n	%
Cynamon (2000)[6]	34	13	40
Razavi (2000)[16]	32	9	28
Karch (2000)[19]	22	7	[illegible]
Criado (2000)[18]	39	5	13
Lee (2000)[9]	27	5	[illegible]
Yano (2001)[3]	103	21	20
Lee (2001)[8]	23	9	39
Mehta (2001)[22]	107	17	16
Wyers (2002)[illegible]	[illegible]	[illegible]	[illegible]
Engelke (2002)[28]	16	4	25
Kritpracha (2003)[20]	20	9	45
Tefera (2004)[25]	13	4	31
Mehta (2004)[2]	32	5	16
Arko (2004)[17]	12	6	50
Farahmand (2008)[7]	101	51	50
Bratby (2008)[4]	39	12	[illegible]
Rayt (2008)[11]	29	16	55

Abbreviation: NA, not available.

Natural regression occurs in 13 to 100% of cases

Pelvic ischemia and quality of life scores after interventional occlusion of the hypogastric artery in patients undergoing endovascular aortic aneurysm repair

Elixène Jean-Baptiste, MD, PhD,[a,b] Sophie Brizzi, MD,[a,b] Michel A. Bartoli, MD, PhD,[c] Nirvana Sadaghianloo, MD,[a,b] Jean Baqué, MD,[a,d] Pierre-Edouard Magnan, MD,[c] and Réda Hassen-Khodja, MD,[a,b] *Nice and Marseille, France*

Objective: The aim of this study was to analyze the pelvic ischemic complications and their impact on quality of life after interventional occlusion of the hypogastric artery (IOHA) in patients undergoing endovascular aortic aneurysm repair (EVAR).

Methods: Between January 2004 and April 2012, 638 consecutive patients with aortoiliac aneurysm treated by EVAR were prospectively registered in two teaching hospitals. We identified all EVAR patients who underwent IOHA. Demographic, clinical, and radiologic data were extracted from electronic databases and patient records as requested. All patients who survived the postoperative period took part in a quality of life survey, the Walking Impairment Questionnaire (WIQ), which included four items: pain, distance, walking speed, and stair climbing. Outcome measures included the 30-day rate of pelvic ischemic complications, the buttock claudication (BC) rate at 30 days and during follow-up, and the comparative WIQ scores between patients with persistent BC, those with regressive BC, and those who never had BC after the IOHA procedure.

Results: A total of 71 patients (97% men; mean age, 76 years ± 7.69) required 75 IOHA procedures. These were deemed proximal in 44 cases and distal in 31, with use of coil embolization in 64%, Amplatzer plug in 24%, or a combination of coils and plugs in 12%. The technical success rate was 100%. Two patients (2.8%) experienced fatal acute pelvic ischemic complications in the postoperative period after EVAR. Another patient died of iliac rupture during EVAR, leading to an operative mortality rate of 4.3%. Eighteen patients (25.3%) suffered BC, among whom 11 cases resolved at a median follow-up of 42 months. Young age (odds ratio, 0.92; 95% confidence interval, 0.85-0.99; $P = .03$) and distal IOHA (odds ratio, 3.5; 95% confidence interval, 1.01-11.51; $P = .04$) were independent predictors of BC occurrence. The actuarial rate of persistent BC was 85% at 18 months. The WIQ scores were lower for patients with persistent BC (median score, 35.04; interquartile range, 16.36; $P = .001$) compared with patients with regressive BC (median score, 76.5; interquartile range, 36.66; $P = .02$) or those who never experienced BC after the IOHA procedure (median score, 65.34; interquartile range, 10.94; $P < .0003$).

Conclusions: Pelvic ischemia associated with IOHA may be severe and lead to fatality after EVAR. Our data show that BC may lead to severe quality of life impairment when it does not regress during follow-up. (J Vasc Surg 2014;60:40-9.)

Interventional occlusion of the hypogastric artery (IOHA) is commonly performed in patients undergoing endovascular aortic aneurysm repair (EVAR), especially when the aneurysmal process extends to one or both of the iliac artery bifurcations. Potential drawbacks include a higher incidence of pelvic ischemia, with acute or chronic clinical consequences such as sciatic nerve palsy, paraplegia, gluteal necrosis, colonic ischemia, and buttock claudication (BC).[1-6] This last complication is particularly frequent but often ignored or considered benign by clinicians. The full effect of BC, as a marker of chronic pelvic ischemia, and its impact on patients' daily walking ability may be underestimated. Poor clinical assessment criteria, lack of prospectively collected data in reported series, and possible confusion with common mobility-limiting conditions in the target population make the evaluation of BC even more difficult.

Assessment of functional capacity and walking ability is important in determining disease severity, evaluating treatment, and assessing quality of life in claudicants.[7] Treadmill testing is the standard measure to assess walking ability as expressed in meters. However, there is often discrepancy between subjectively experienced daily walking ability,

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Author conflict of interest: none.

Additional material for this article may be found online at www.jvascsurg.org.

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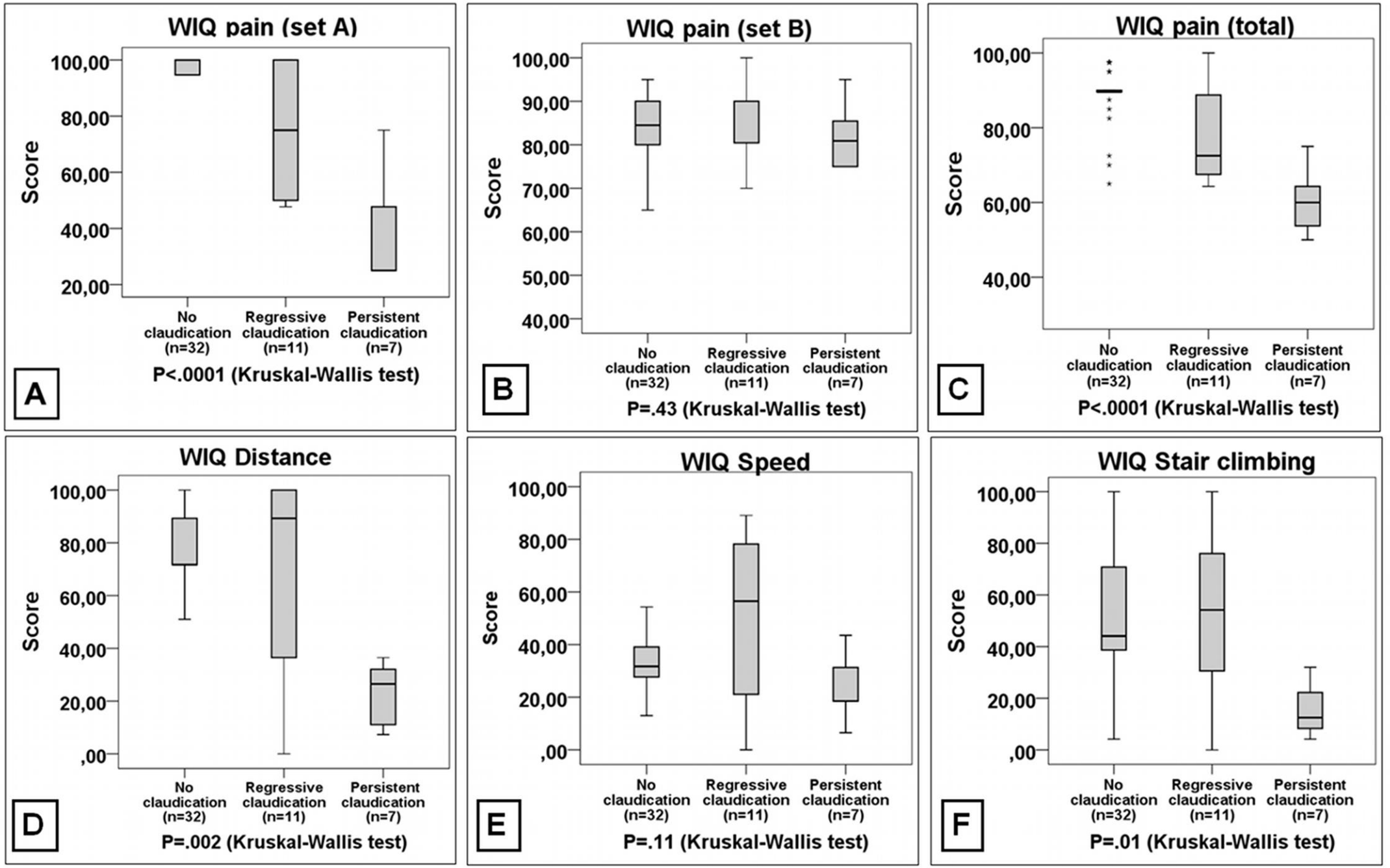
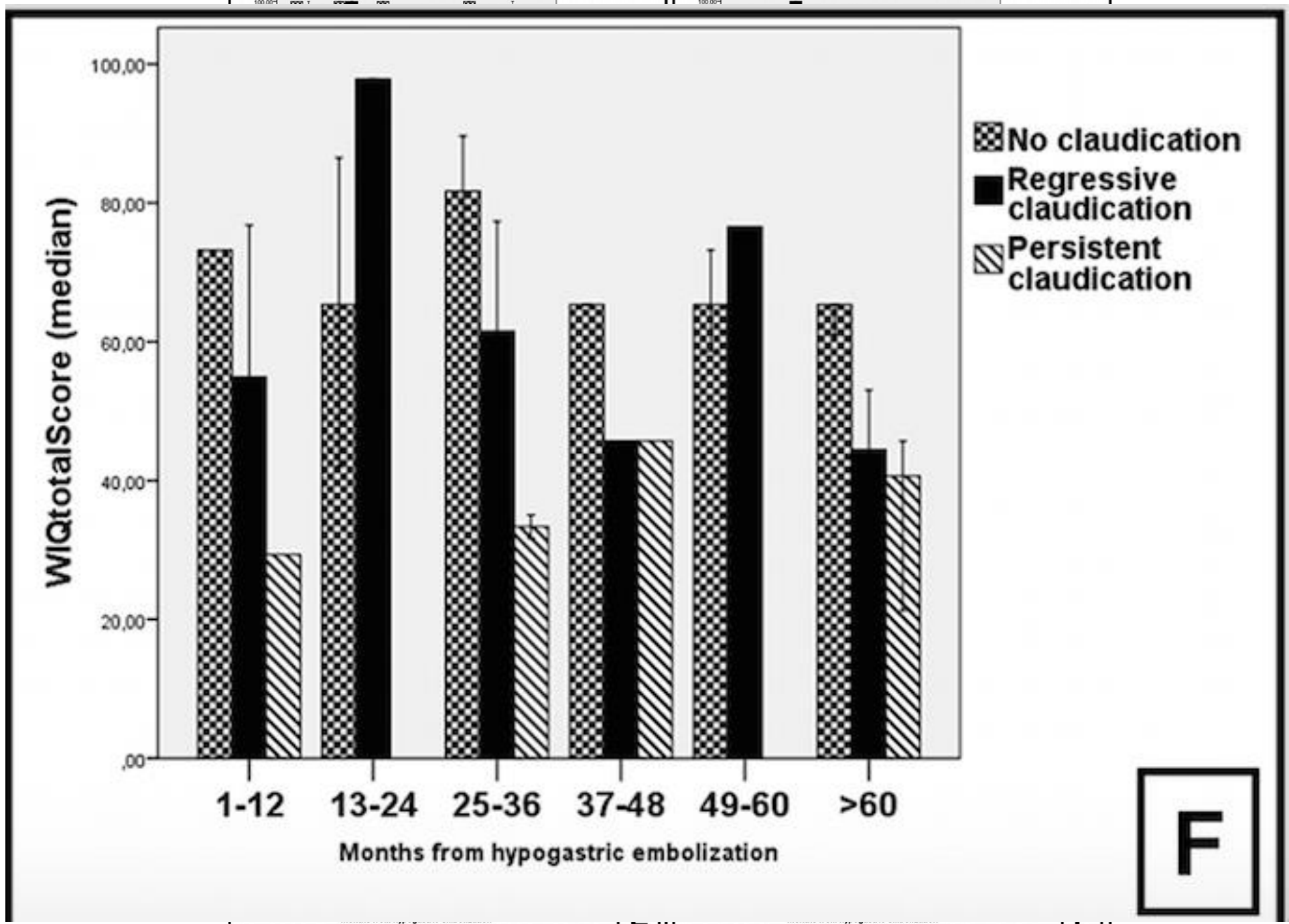
Chronic Pelvic Ischemia after IOHA

- Incidence
  - 25% of patients experienced BC
  - regression in 61% of cases during follow-up

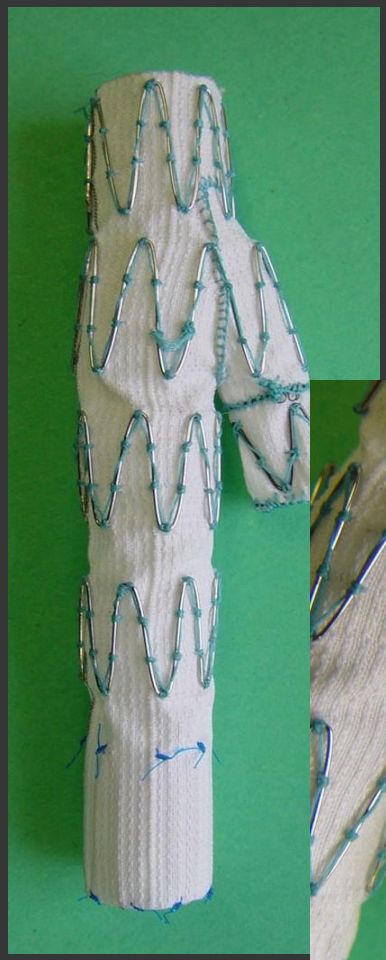
BUTTOCK CLAUDICATION

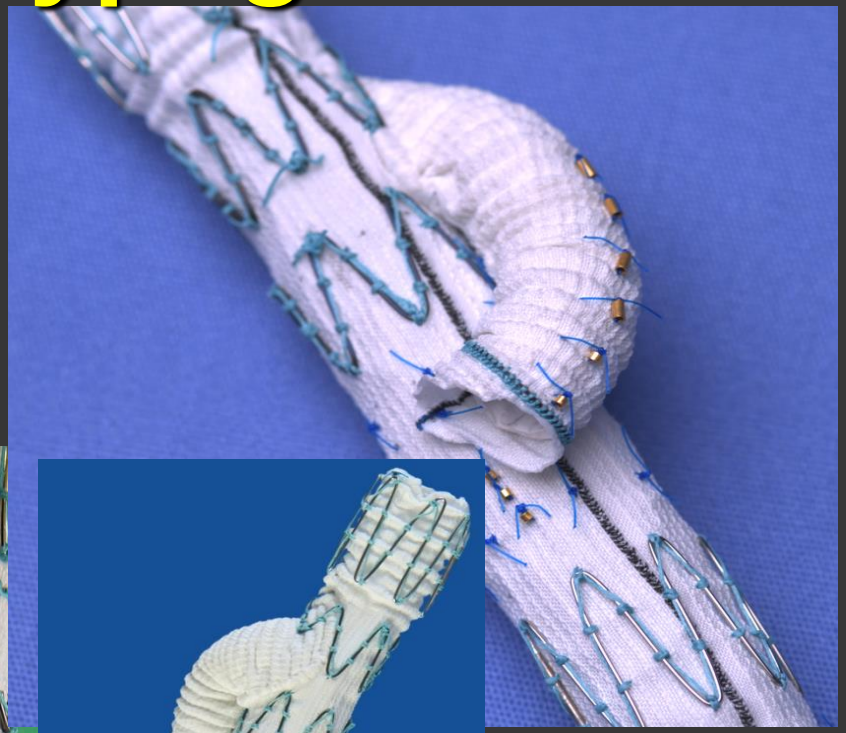
- What are the repercussions on patient's QoL?

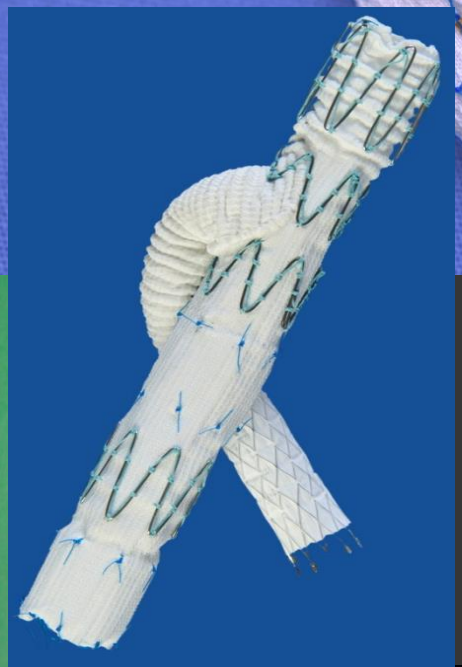

WIQ pain (set A)
Score
100,00
80,00
60,00
40,00
20,00
No claudication (n=32)
Regressive claudication (n=11)
Persistent claudication (n=7)
P<.0001 (Kruskal-Wallis test)
A
WIQ pain (set B)
Score
100,00
90,00
80,00
70,00
60,00
50,00
40,00
No claudication (n=32)
Regressive claudication (n=11)
Persistent claudication (n=7)
P=.43 (Kruskal-Wallis test)
B
WIQ pain (total)
Score
100,00
80,00
60,00
40,00
No claudication (n=32)
Regressive claudication (n=11)
Persistent claudication (n=7)
P<.0001 (Kruskal-Wallis test)
C
WIQ Distance
Score
100,00
80,00
60,00
40,00
20,00
,00
No claudication (n=32)
Regressive claudication (n=11)
Persistent claudication (n=7)
P=.002 (Kruskal-Wallis test)
D
WIQ Speed
Score
100,00
80,00
60,00
40,00
20,00
,00
No claudication (n=32)
Regressive claudication (n=11)
Persistent claudication (n=7)
P=.11 (Kruskal-Wallis test)
E
WIQ Stair climbing
Score
100,00
80,00
60,00
40,00
20,00
,00
No claudication (n=32)
Regressive claudication (n=11)
Persistent claudication (n=7)
P=.01 (Kruskal-Wallis test)
F


100,00
80,00
60,00
40,00
20,00
,00
WIQtotalScore (median)
No claudication
Regressive claudication
Persistent claudication
1-12
13-24
25-36
37-48
49-60
>60
Months from hypogastric embolization
F

Therapeutic Strategies to Preserve the Hypogastric Artery

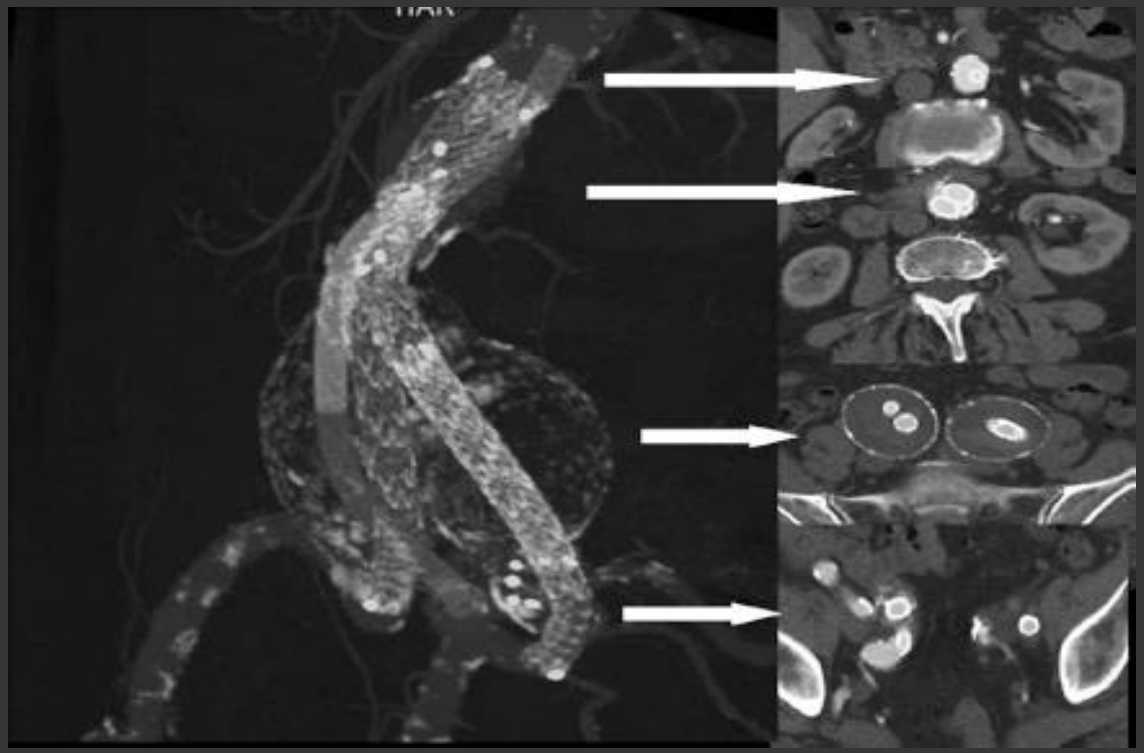




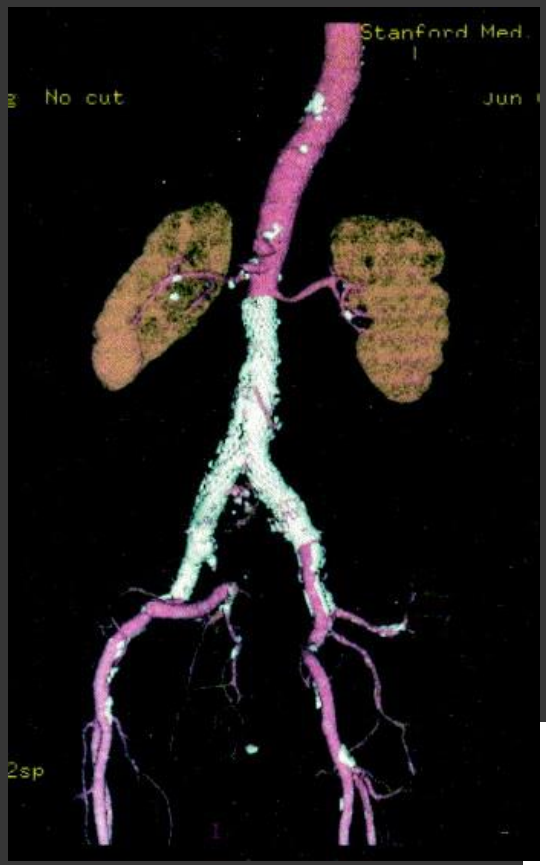


Therapeutic Strategies to Preserve the Hypogastric Artery

✓Sandwich technique



✓Hybrid technique



Frigatti et al. EJVES, 2009

We are far from the banana technique!

Bergamini et al. J Vasc Surg, 2002.

LITTERATURE

Author	year	EDP
Ferreira	2010	36 ZBIS 11 HBE
Verzini	2009	32 ZBis
Tielliu	2009	30 ZBis
Dias	2008	18 ZBis 3 HBE
Ziegler	2007	26 (1ère géné) 20 Zbis
Haulon	2006	53 HBE

Endovascular treatment of iliac aneurysm: Concurrent comparison of side branch endograft versus hypogastric exclusion

Fabio Verzini, MD, Gianbattista Parlani, MD, Lydia Romano, MD, Paola De Rango, MD, Giuseppe Panuccio, MD, and Piergiorgio Cao, MD, FRCS, *Perugia, Italy*

Objective: To analyze early and mid-term outcome of endovascular treatment in patients with iliac aneurysms, comparing the results of hypogastric [illegible] stric occlusion.

74 patients in 2 groups

Methods: Consecutive patie[illegible] p I) were compared with those receiving endograft with [illegible] January 2000 to May 2008. Procedural details and outcomes were prospectively collected and were analyzed at one year to avoid mismatch in follow-up length.

Results: A total of 74 patients (mean age, 75.8 years, 95% males) were treated: 32 in Group I and 42 in Group II. No differences in baseline risk factors and aneurysm diameter (40.2 ± 7.9 mm in Group I vs. 38.4 ± 10.8 in Group II) were found. Concurrent treatment of aortic aneurysm was performed in 25/32 (78%) of Group I and 36/42 (86%) of Group II. Fluoro time was 48 minutes (interquartile range [IQR] 31-57) in Group I vs. 31 minutes (IQR 23-38) in Group II (P = .[illegible] l (IQR 155-2[illegible] lures of hypog[illegible] rring in the ext[illegible] /32 vs. 4/42) [illegible] oup II. Iliac e[illegible] milarly, buttoc[illegible] Group II and [illegible]

Higher rate of endoleaks and buttock claudication in the embolization group

Conclu[illegible] anched endog[illegible] eads to similar technical success and reintervention rates. Endoleak and buttock claudication occur frequently in patients with iliac aneurysm treated with hypogastric exclusion, while are uncommon in those with hypogastric revascularization. Side branch endografting for iliac aneurysm may be considered a primary choice in younger, active patients with suitable anatomy, but larger studies and longer postoperative observation periods are needed. (J Vasc Surg 2009;49:1154-61.)

Main limitation: Applicability of the available technology

ROOM FOR RESEARCH AND IMPROVEMENT

CONCLUSIONS

- Hpogastric occlusion is rarely associate with fatal Acute Pelvic ischemia
- Chronic pelvic ischemia is more common and likely to be relevant in the youngest patients
- Our data shows that BC may lead to severe quality-of-life impairment when it doesn't regress during follow-up.
- This should encourage you to preserve as much as HA as possible
- Problem: perfectibility of the current solutions