TECNICA E INDICACIONES DEL ABORDAJE RADIAL

XVIII JORNADAS SOLACI-SEICAV
GUAYAQUIL, ECUADOR

OCTUBRE 2012

DR. PATRICIO NAVARRO D.
INTERVASCU
HOSPITAL DE LOS VALLES

QUITO, ECUADOR

HISTORIA TECNICA RADIAL

Historique de l'Approche Transradiale

Radner S. Thoracal aortography by catheterization from the radial artery. *Acta Radial 1948;29: 178-180.*

Campeau L. proximal radial artery cut-off for selective coronary angiography (with radial artery suture). *Montreal 1964*

Campeau L. Percutaneous radial artery approach for coronary angiography. *Cathet Cardiovasc Diagn 1989;16:3-7*

Kiemenedj F. First transradial approach for PTCA. *1992, Amsterdam*

Kiemenedj F. First transradial coronary stenting. *1993, Amsterdam*

Kiemenedj. F. First outpatient coronary stenting. *1994, Amsterdam*

Fajadet. J. First transradial live demonstration. 1994, *Toulouse*

Kiemenedj F. Percutaneous transradial artery approach for coronary stent implantation. *Am Heart J 1995;128:167-174*

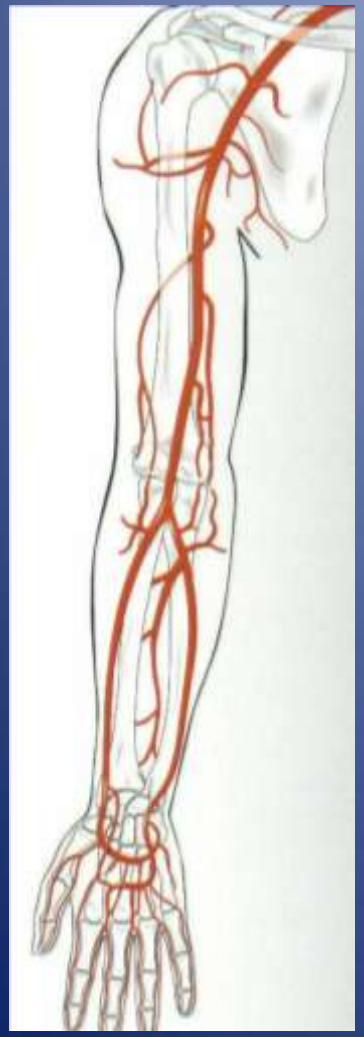
ABORDAJE RADIAL

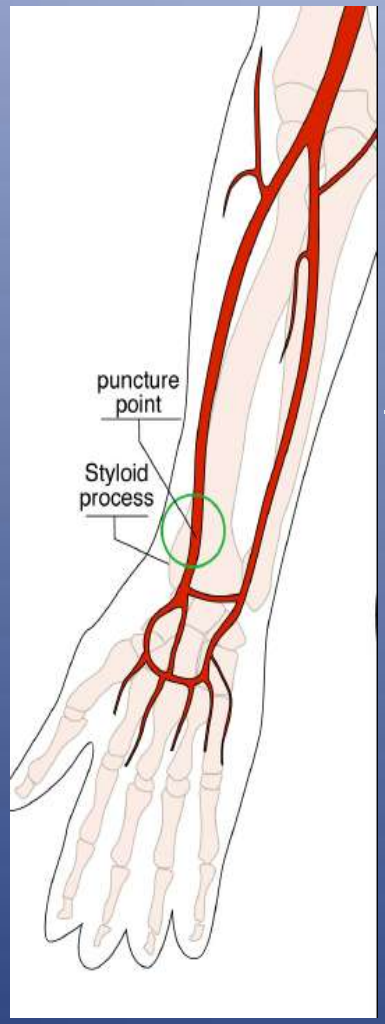
- Transradial arterial access for coronary and peripheral procedures:
- Excecutive summary by the transradial committee of the SCAI.
- Ronald P. Caputo MD, FSCAI et al.
- May 4-2011.

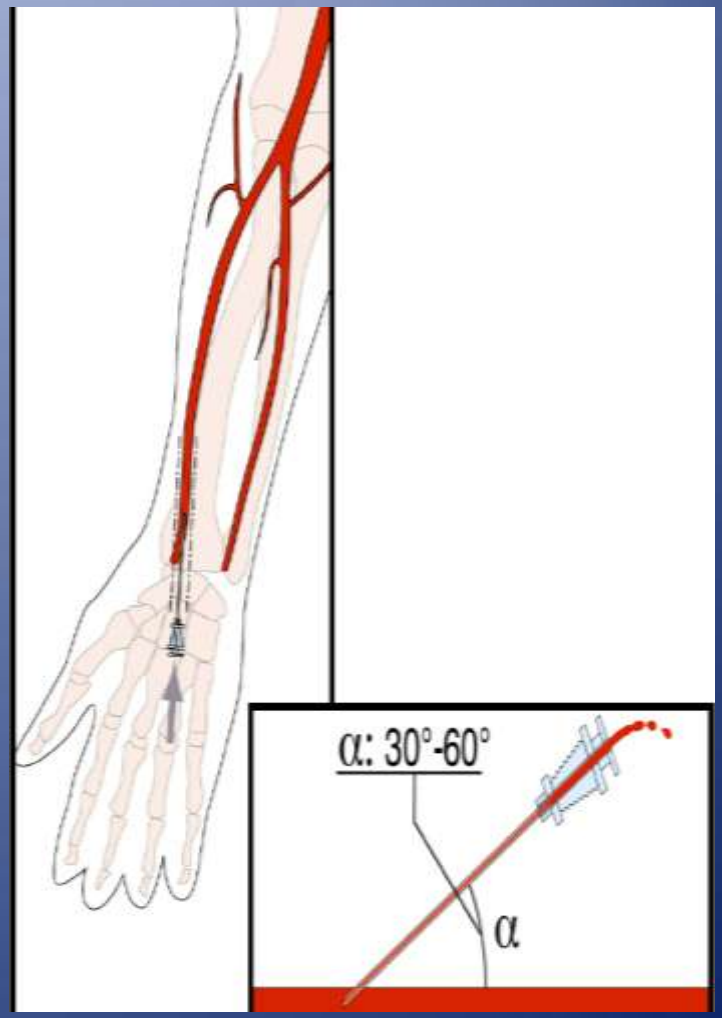
ABORDAJE RADIAL

- LA TECNICA RADIAL A INCREMENTADO SU USO DESDE 1992.
- NORUEGA,MALAYSIA, BULGARIA 70-80%
- CANADA 50% USA 2%
- CENTRO Y SUD AMERICA 15%
- PROMEDIO MUNDIAL 20%

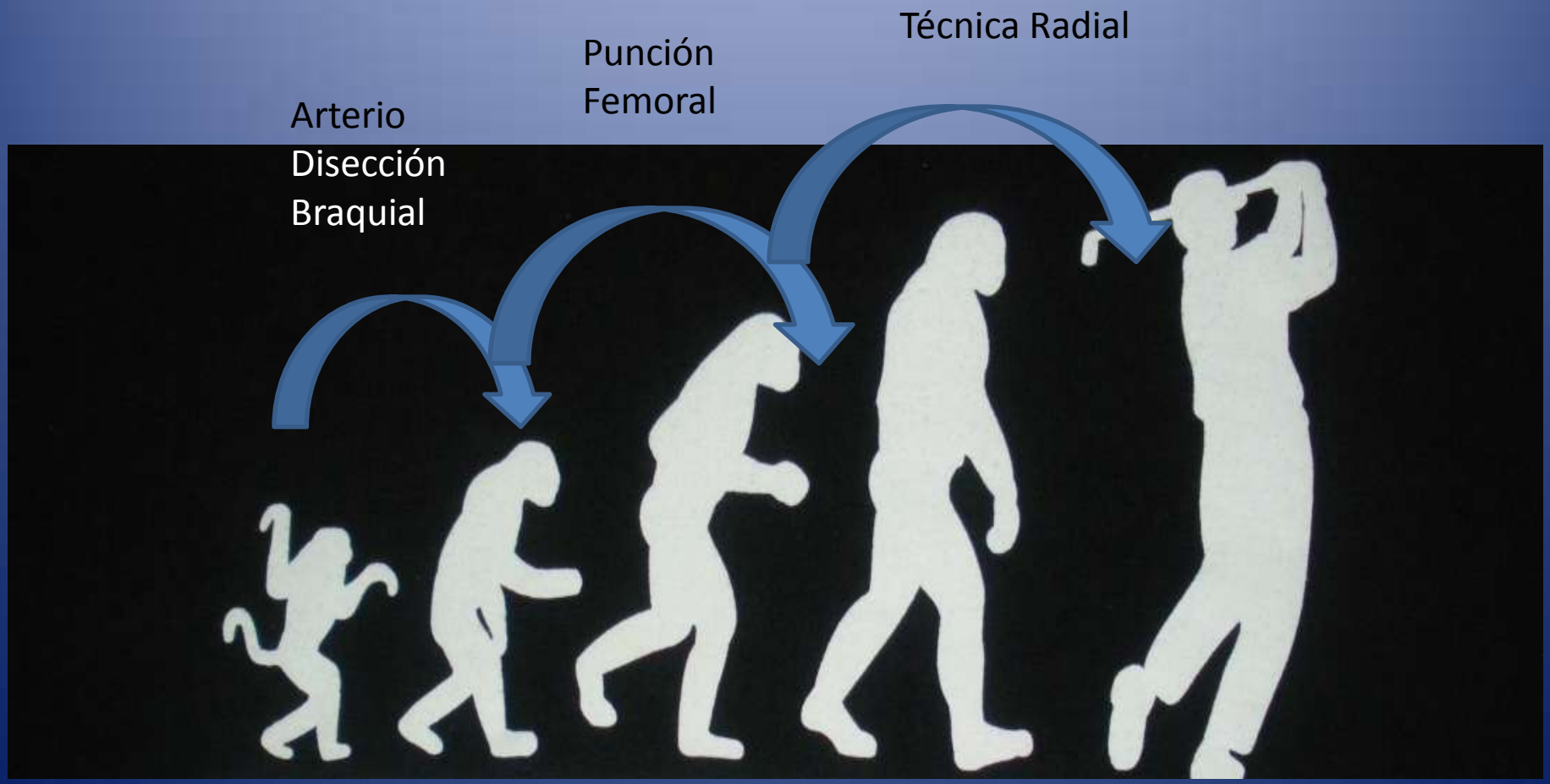
ANATOMIA NORMAL







EVOLUCION DE LA TECNICA



HACER LO MEJOR PARA EL PACIENTE

- Los Pacientes Prefieren la Vía Radial
- Las Enfermeras Prefieren la Vía Radial
- Los Administradores Prefieren la Vía Radial
- Usted Preferirá la Vía Radial

RECUPERACION RAPIDA CON BAJO RIESGO

- No Requiere Reposo en Cama
- Se puede dar salida el mismo día
- Retorno inmediato a las actividades normales
  - Gilchrist IC. Catheter Cardiovasc Interv 2002;56:10-3

EL TEST DE ALLEN

- Indica buena colateralización en el Brazo y la Mano
- No se Correlaciona con isquemia y líneas arteriales. **(J Trauma 2006;206:468-70)**
- Existe Gran Experiencia con la Extracción de la Arteria Radial en Cirugía para Injertos
- Se puede Extraer la Arteria Radial con Test de Allen Anormal **(Surg Today 2006;36(9):790-2)**

UN TEST DE ALLEN ANORMAL: ES UNA MALA EXCUSA PARA LAS COMPLICACIONES INGUINALES

GIORA WEISZ, MD
Center for Interventional Vascular Theraphy
Columbia University Medical Center
New York, NY

TECNICA RADIAL

- Punción Precisa (Técnica vs Fuerza)
- Evitar Espasmo (Adecuada Sedación)
- Heparina para reducir riesgo de Trombosis
- Nunca perder el Terreno logrado
- El mejor catéter es el que la propia técnica indique
- Retire el Introductor al Finalizar el Caso
- Una Buena Técnica Previene Complicaciones

POR QUE UTILIZAR LA VIA RADIAL?

- La vía Radial es segura y con tasas de éxito clínico similares a las de la vía Femoral
- Elimina Virtualmente las Complicaciones
- Aunque la Curva de Aprendizaje es un poco mas compleja, hoy tiene índice de éxito y falla similar a la vía Femoral – OR 1.39; 3.9% vs 2.9%; p=0.3

  (P. Agostoni et al JACC 2004)
- Tiene mejor relación Costo/Efectividad
- Es la mejor Plataforma para un Servicio Ambulatorio de Angiografía Intervencionista

POR QUE UTILIZAR LA VIA RADIAL?

- La vía Radial Brinda Comodidad y Seguridad al Paciente
- La Vía Radial Brinda Tranquilidad al Grupo de Angiografía
- Permite un Retorno Temprano a las Actividades
- Porque la Intervención NO Termina al Implantar el Stent, Termina Cuando el Paciente Sale Caminando y SIN Complicaciones del Hospital

TECNICA RADIAL

- NUMEROSAS PUBLICACIONES INDICAN QUE LA TECNICA RADIAL TIENE UNA GRAN ACEPTACION PARA PCI, PORQUE CON EL USO DE DROGAS ANTITROMBOTICAS MAS POTENTES LA POSIBILIDAD DE COMPLICACIONES HEMORRAGICAS ES MAYOR Y POR ESTA VIA EL ÉXITO POSTERIOR DEL PROCEDIMIENTO ES SUPERIOR.

ABORDAJE RADIAL DERECHA O IZQUIERDA

- DERECHA ES MAS COMODA PARA EL OPERADOR Y PACIENTE
- IZQUIERDA ES MAS SIMILAR A LA FEMORAL EN EL MANEJO DE LOS CATETERES.
- IZQUIERDA MAS APROPIADA PARA ESTUDIO DE ANASTOMOSIS MAMARIA IZQ. Y ESTUDIOS INFRADIAFRAGMATICOS.

Innova 2100

CATETERES DIAG IZQ. DER.

JL 3.5	44.9 %	JR4	58.8%
JL 4	21.6%	MP	6.7%
MP	6.2%	AL	2.4%
AL	2.2%	AR	2.2%
KIMNY	1.8%	KIMNY	1.7%
OTROS	23.4%	OTROS	22.9%

- CONCLUSION SE USAN EN LA GRAN MAYORIA LOS MISMOS CATETERES QUE PARA LA VIA FEMORAL

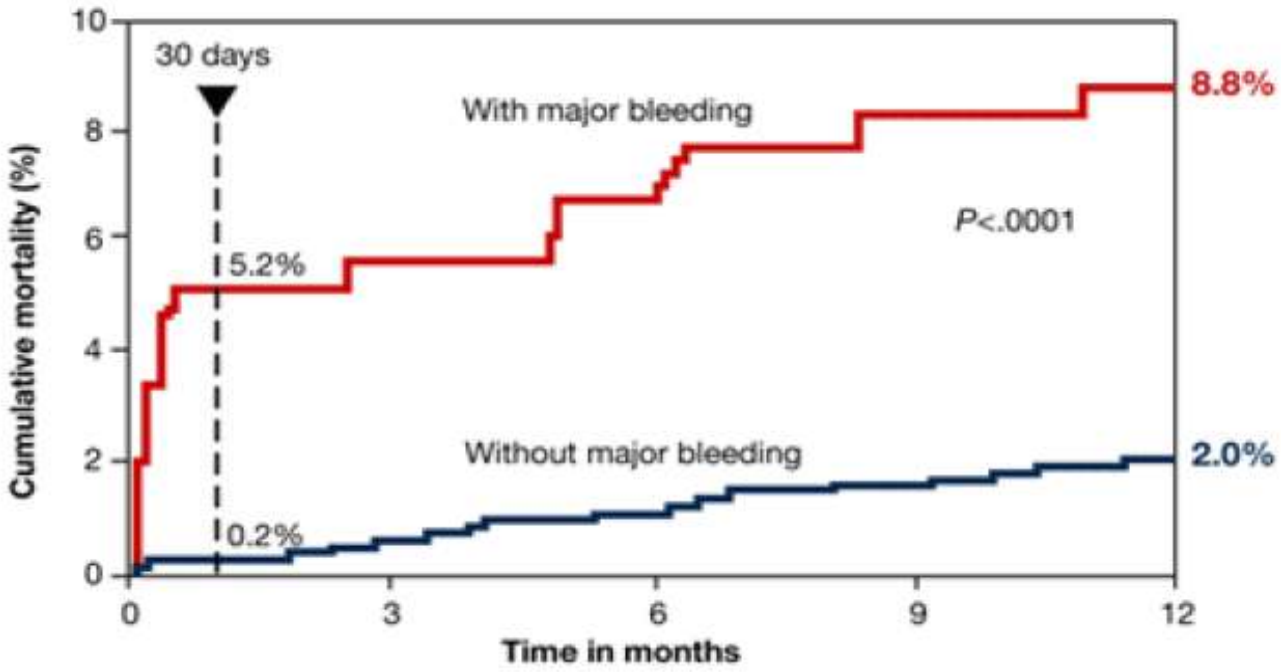
CATETERES GUIA IZQ. DER.

JL 3.5	22.5%	JR4	70.2%
XB 3.5	29.2%	AR	10.2%
AL	1.4%	AL	5.8%
OTROS	46.9%	OTROS	13.8%

- CONCLUSION SE USAN CATETERES DE MAS SOSPORTE PARA CORONARIA IZQUIERDA . EL JR ES EL MAS USADO PARA CORONARIA DERECHA.

TECNICA RADIAL

Impact of In-Hospital Major Bleeding on Early and Late Mortality in REPLACE-2

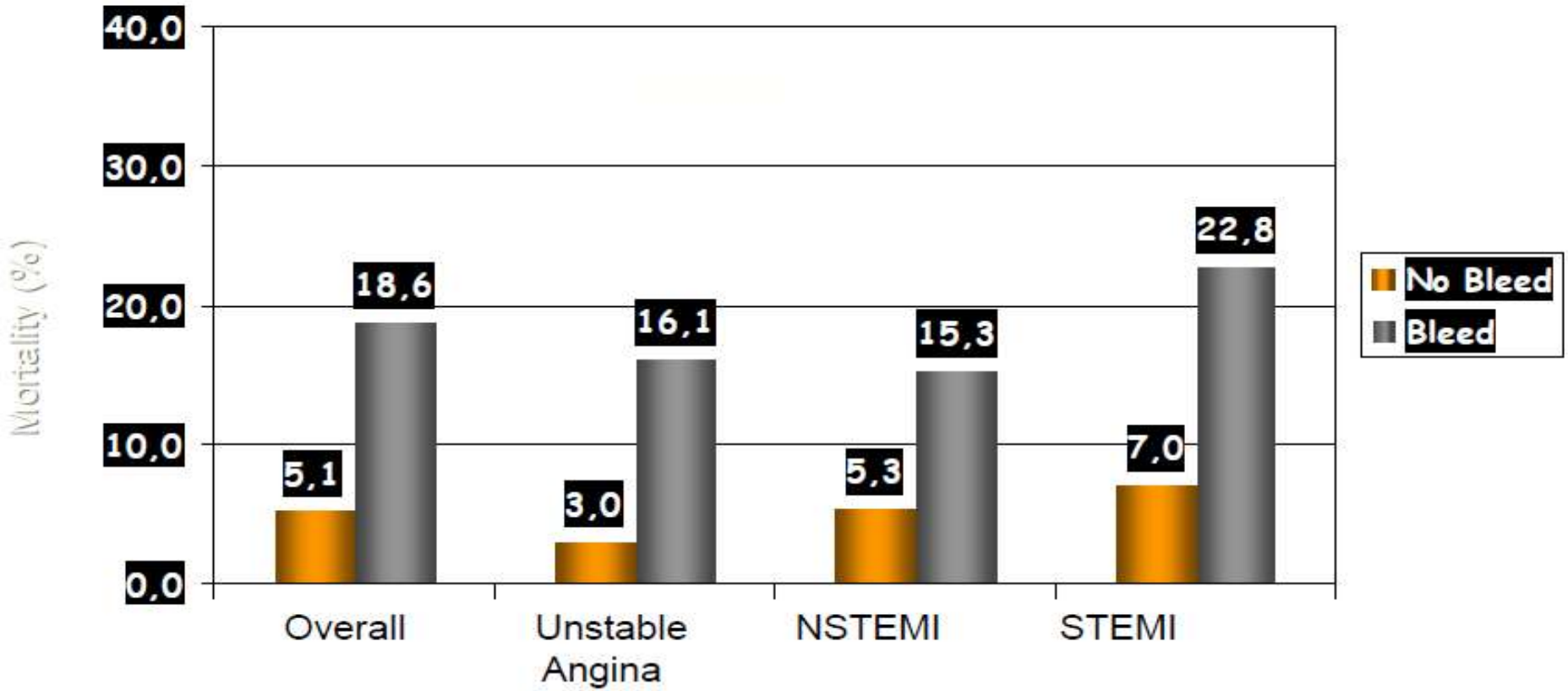


Stone GW J Invas Cardiol 2004, 16(suppl G): 12G-17G

TECNICA RADIAL

INSTITUT CARDIOVASCULAIRE PARIS SUD

Major Bleeding and Mortality in ACS
The GRACE Registry (N=24,045)

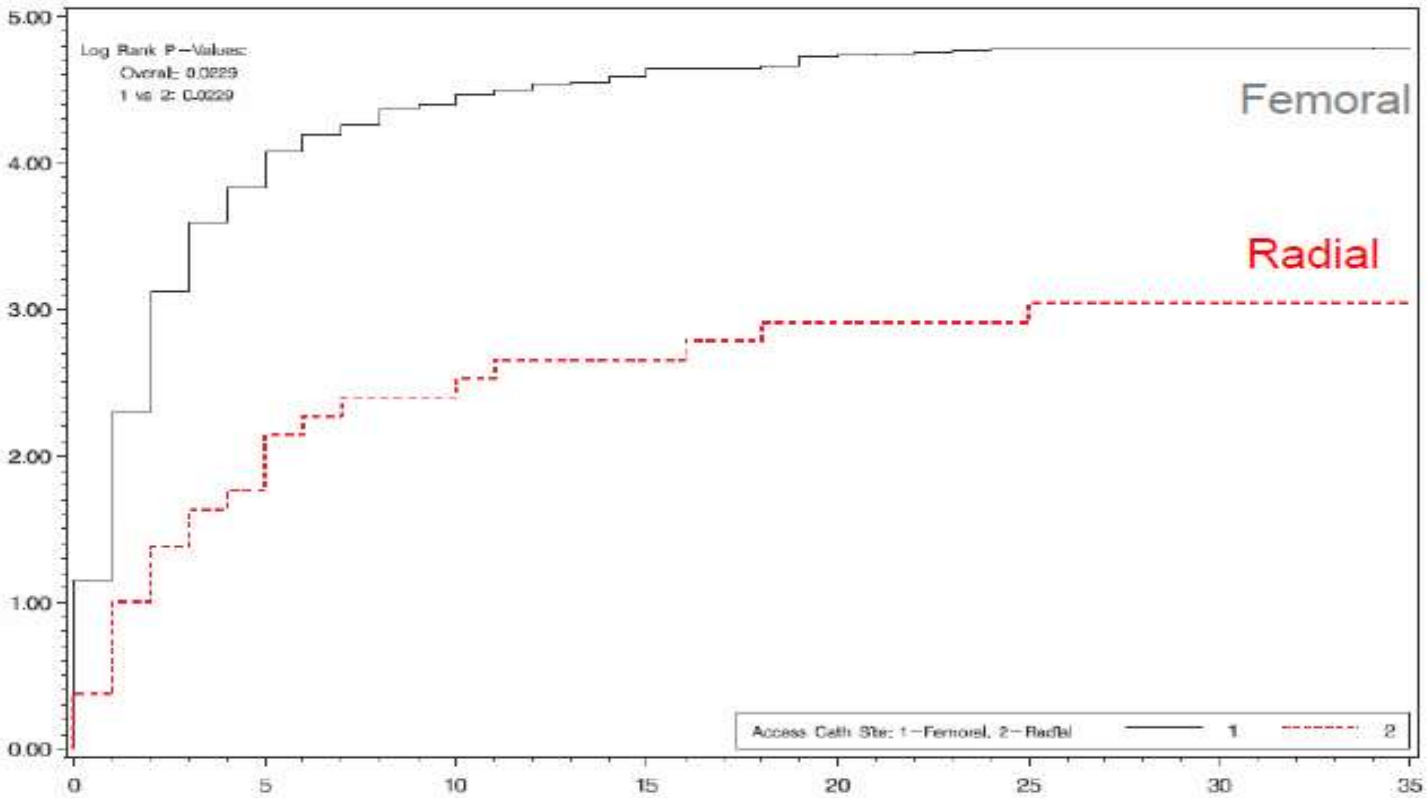


Moscucci M et al. Eur Heart J 2003;24:1815-23

TECNICA RADIAL

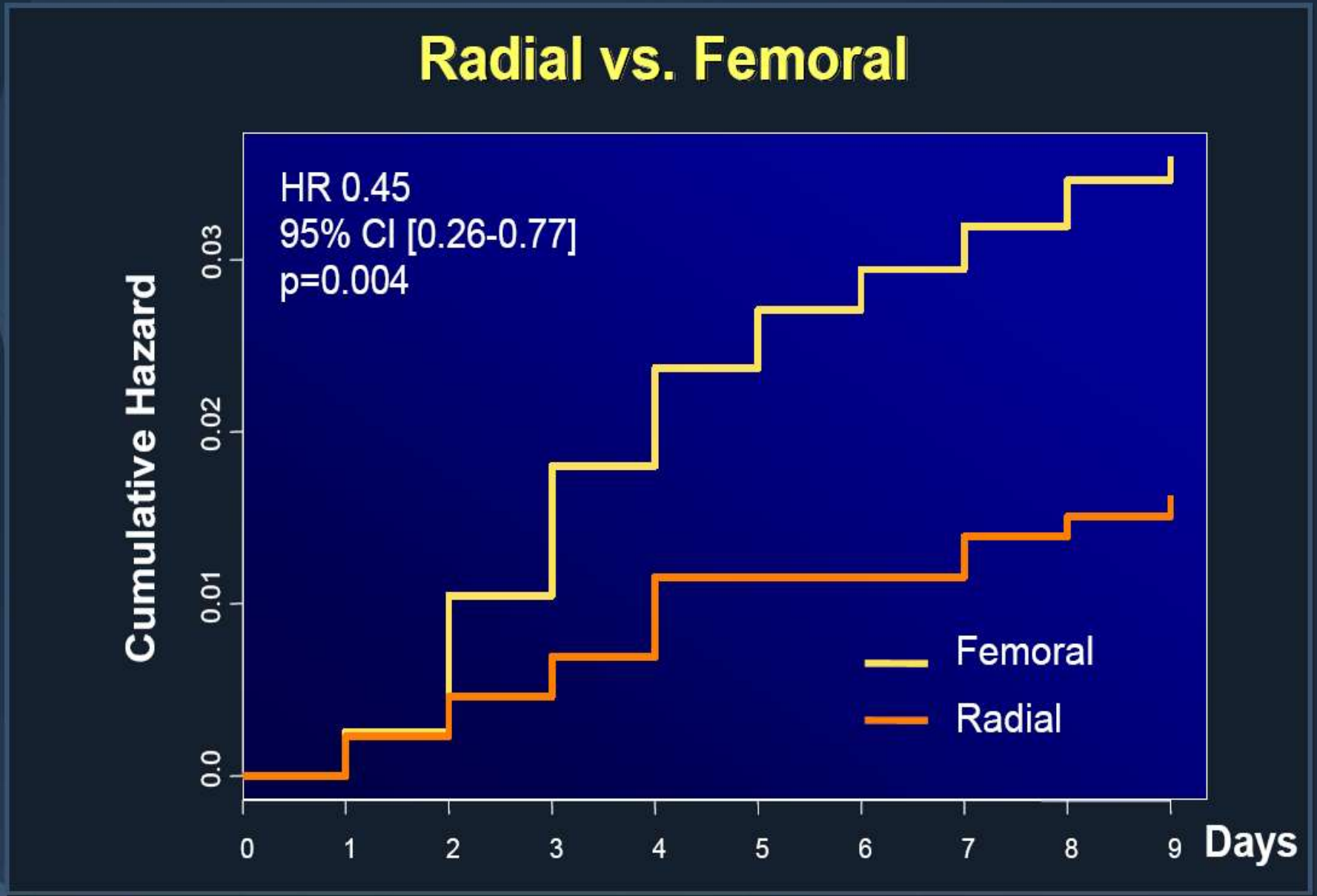
INSTITUT CARDIOVASCULAIRE PARIS SUD

Major Bleeding Endpoint in Acuity

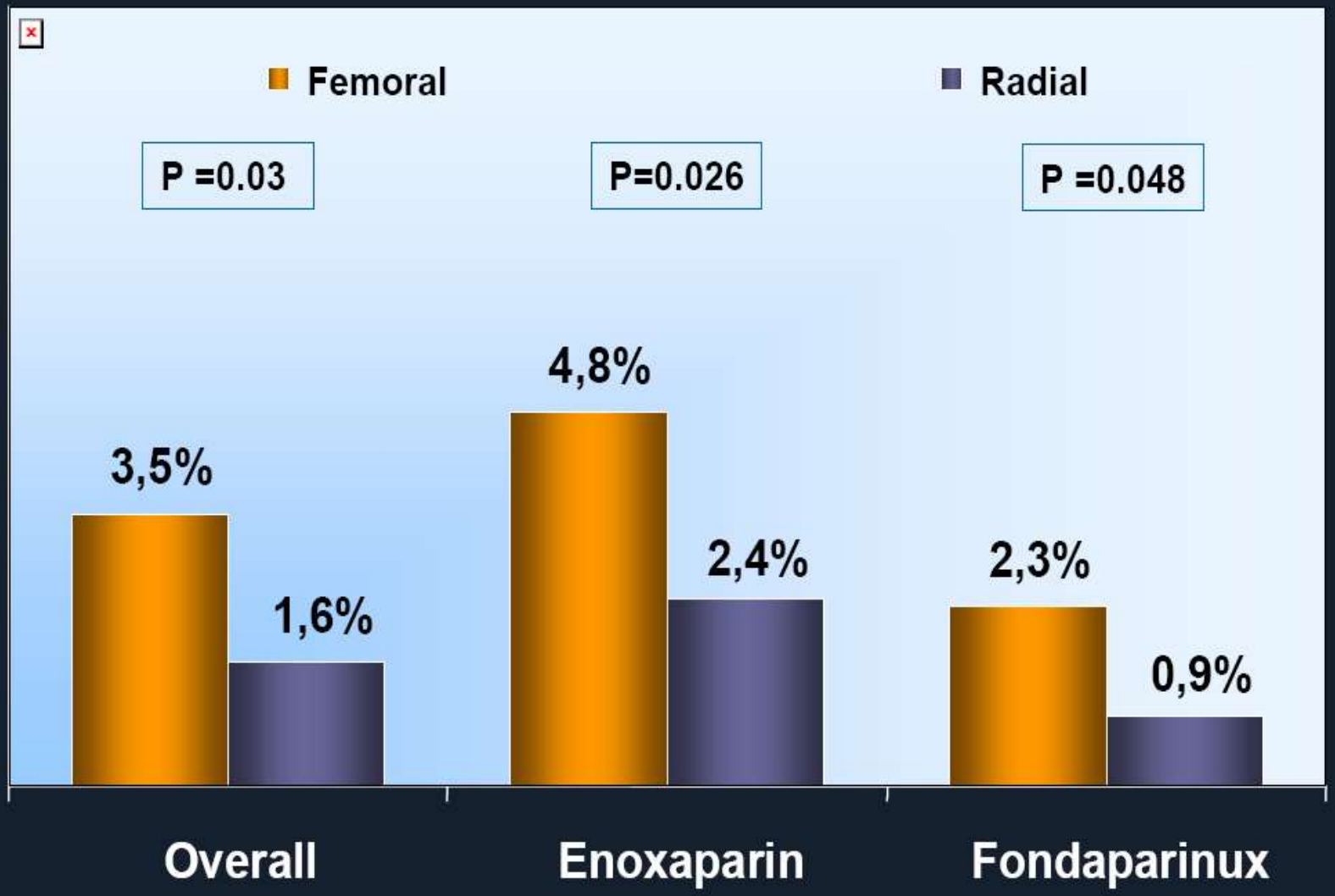


Stone GW et al. N Engl J Med 2006;355:2203-16.

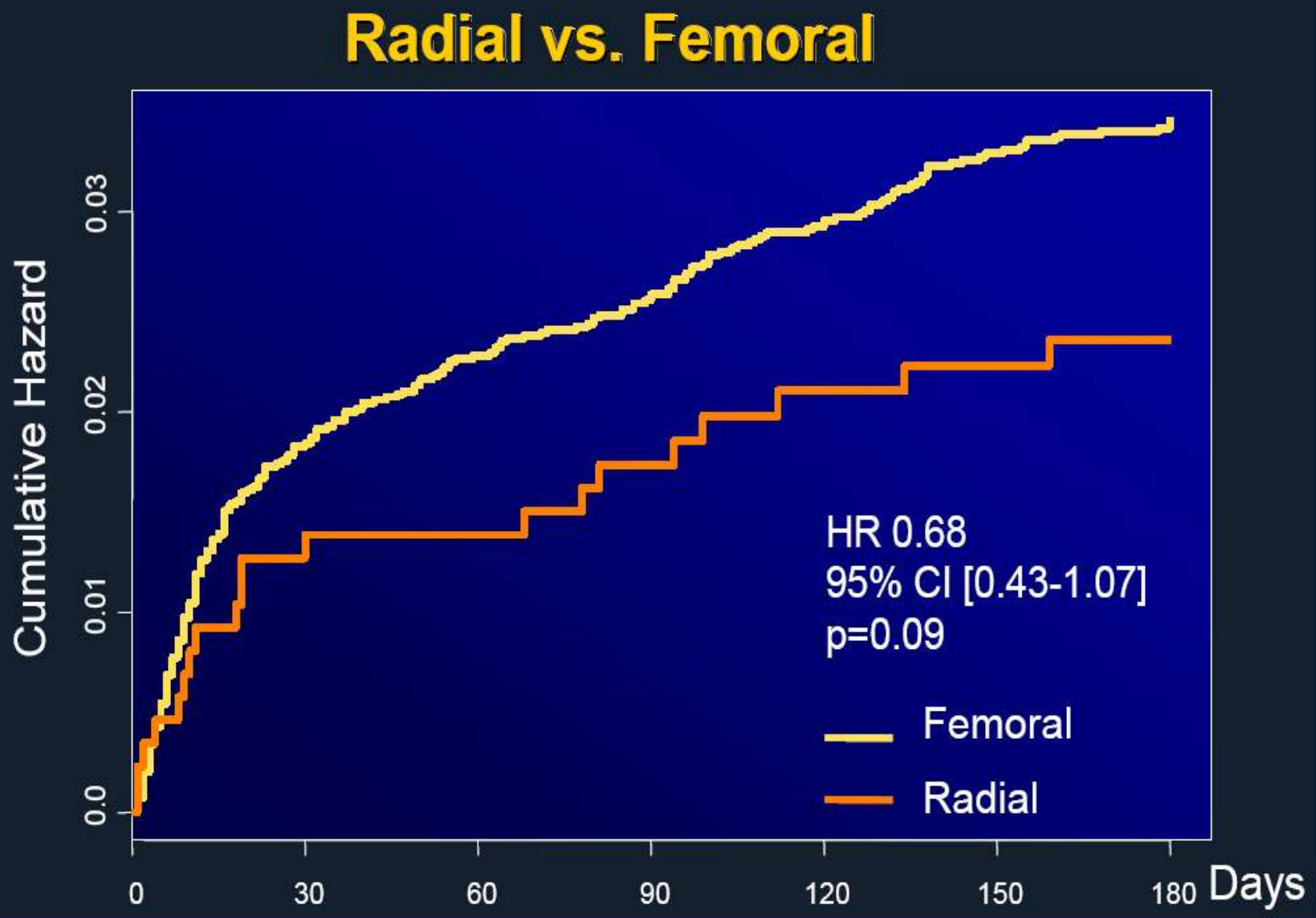
OASIS-5: Major Bleeding at Day 9



OASIS-5: Major Bleeding at Day 9



OASIS-5: Mortality at 6 months



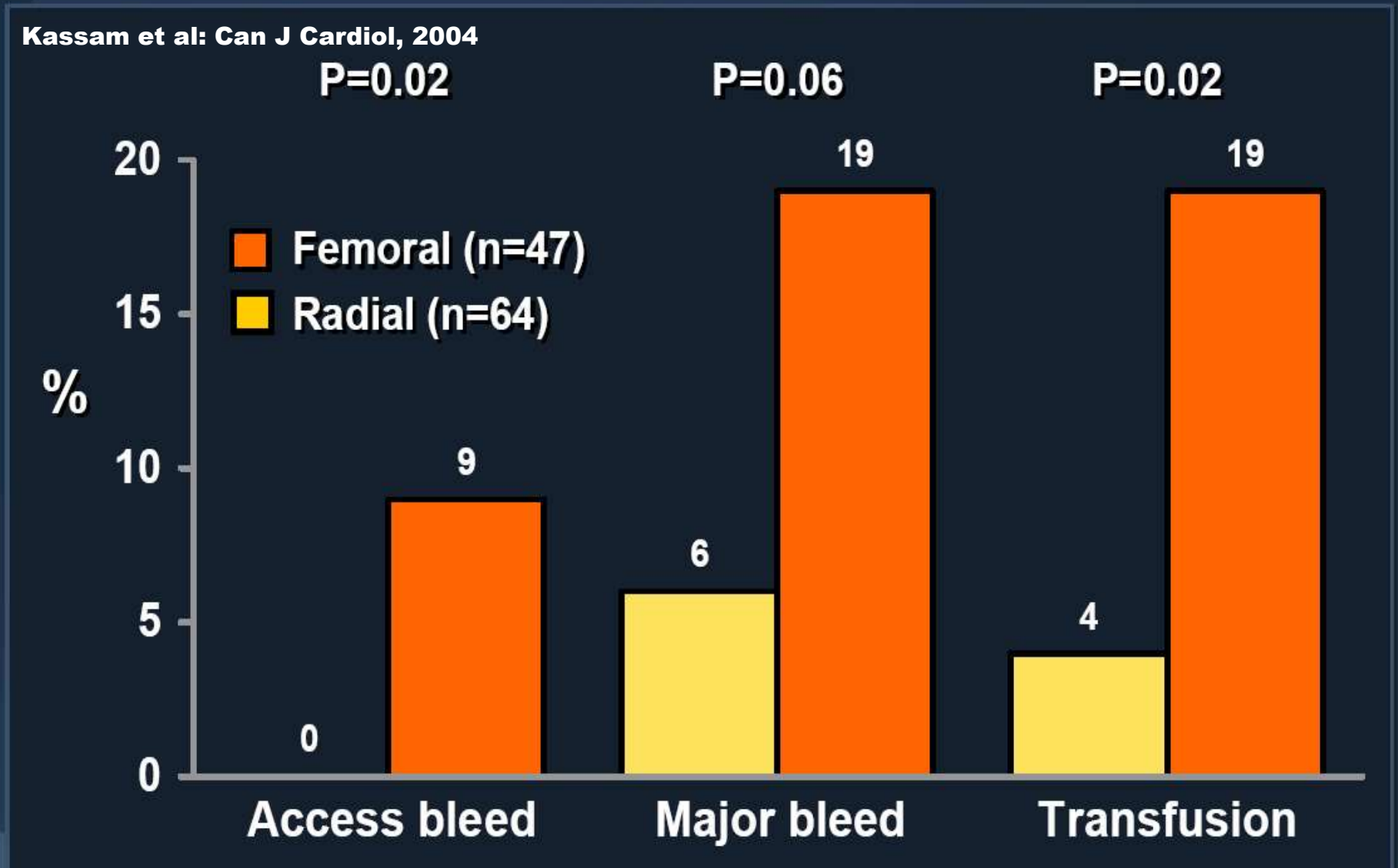
M.O.R.T.A.L STUDY

ASSOCIATION OF THE ARTERIAL ACCESS SITE AT ANGIOPLASTY WITH TRANSFUSION AND MORTALITY.

- OBJETIVO: DETERMINAR LA ASOCIACION ENTRE SITIO DE PUNCION ARTERIAL(RADIAL O FEMORAL) CON LA NECESIDAD DE TRANSFUSION Y LA MORTALIDAD EN ANGIOPLASTIAS NO SELECCIONADAS.
- SE ANALIZARON 38.872 CASOA EN 32.822 PACIENTES
- SE TOMO EN CUENTA LA MORTALIDAD A LOS 30 DIAS Y 1 AÑO
- REGISTRO MULTICENTRICO DE LA BRITISH COLUMBIA CARDIAC REGISTRY PCI ENTRE 1999 A 2005.
- RESULTADOS:
- TASA DE TRANSFUSION FEMORAL 2.8% VS 1.4% RADIAL
- TRANSFUSION ES UN PREDICTOR INDEPENDIENTE DE MORTALIDAD Y AUMENTA UN 5.7% NNT 18
- REDUCCION MORTALIDAD RAD VS FEM OR 0.85-95% CI 73-0.99 P=0.042
- AJ Chase, EB Fretz,WP Warburton et al. Heart 2008;94:1019-1025

Rescue PCI After Failed Fibrinolysis

Use of IIb/IIIa inhibitors and Radial access



PCI with Abciximab

Table 4 Major access site bleeding complications and their ranking from percutaneous transluminal coronary angioplasty to 1-month follow-up

Major access site bleeding complications	Radial group (n=83)		Femoral group (n=67)		*P* value
	Total	Ranking	Total	Ranking	
Surgical repair	0	0	2 (3·0)	2 (3·0)	
Blood transfusion	0	0	1 (1·5)	0	
Haematoma associated with prolonged hospitalization	0	0	3 (4·4)	3 (3·0)	
Total	0	0	6 (8·9)	5 (7·5)	0·04

Data presented are number (%) of patients. Ranking=frequency of events in descending order (surgical repair, followed in order of rank by blood transfusion and haematoma).

Choussat R, et al, *Eur Heart J 2000*

SUSPENDER ANTICOAGULACION

Percutaneous Left and Right Heart Catheterization in Fully Anticoagulated Patients Utilizing the Radial Artery and Forearm Vein: A Two-Center Experience

TED S. N. LO, M.R.C.P.,[1] ASHESH N. BUCH, M.R.C.P.,[1] IAN R. HALL, M.D., M.R.C.P.,[1] DAVID J. HILDICK-SMITH, M.D., F.R.C.P.,[2] and JAMES NOLAN, M.D., F.R.C.P.[1]

From the [1]Cardiothoracic Centre, University Hospital of North Staffordshire, Stoke-on-Trent, United Kingdom; [2]Sussex Cardiac Centre, Brighton and Sussex University Hospital, Brighton, United Kingdom

Background: *Stopping oral anticoagulants prior to cardiac catheterization is associated with an increased risk of thromboembolism. Performing the procedures via the femoral artery and vein without interruption of anticoagulation is associated with a high rate of major access site complications. The transradial technique for left heart catheterization is safe in fully anticoagulated patients but few data are available on the percutaneous right and left heart catheterization utilizing a combination of the radial artery and antecubital vein in this group of patients.*
Methods: *We report our experience in 28 consecutive patients that underwent left and right heart catheterizations via this percutaneous arm approach without interruption of anticoagulation. These were compared to 31 consecutive non-anticoagulated patients that underwent the procedure via a conventional femoral artery and vein approach.*
Results: *Arterial and venous accesses were achieved and complete angiographic and hemodynamic data obtained in all patients. There were no access site complications in the anticoagulated patients despite an International normalized ratio (INR) of 2.5 ± 0.5. Procedural duration was longer in the anticoagulated group of patients, but fluoroscopy time and patient radiation dose were similar in both groups.*

(INR) of 2.5 ± 0.5.

SUSPENDER ANTICOAGULACION

Catheterization and Cardiovascular Interventions 58:8–10 (2003)

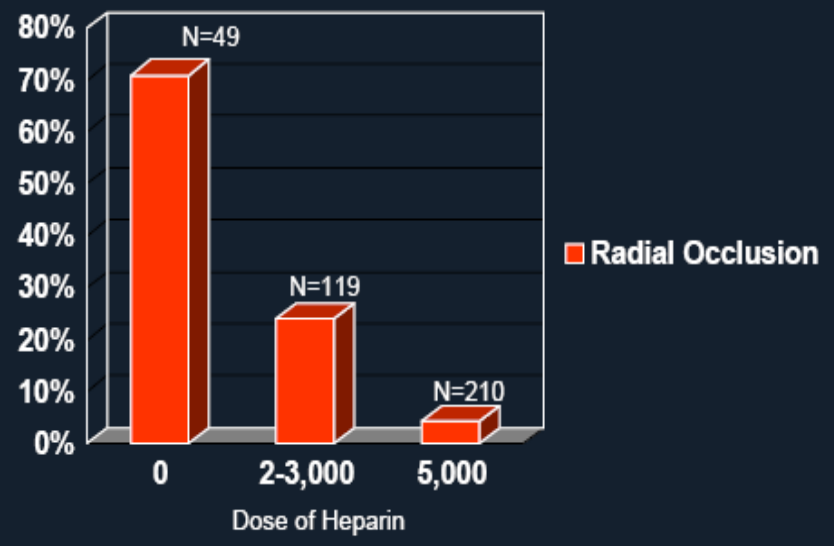
Coronary Angiography in the Fully Anticoagulated Patient: The Transradial Route Is Successful and Safe

David J.R. Hildick-Smith,* MD, John T. Walsh, MD, Martin D. Lowe, and Michael C. Petch, MD

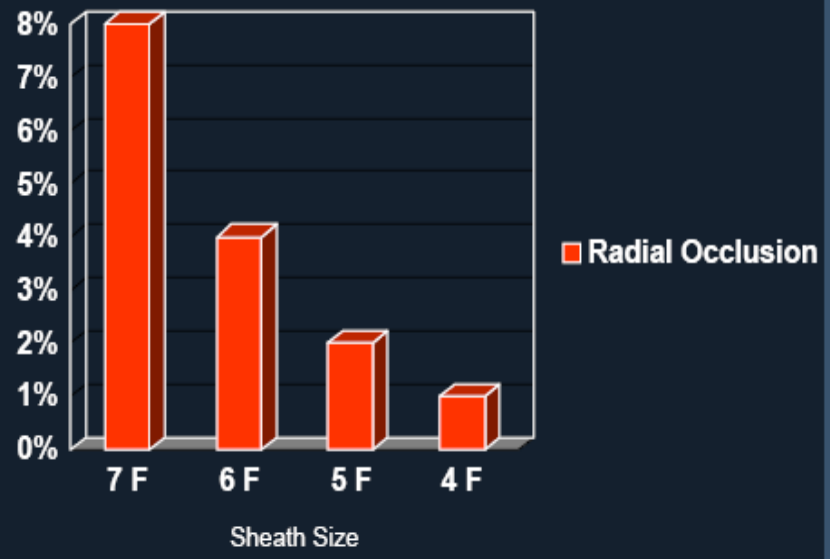
The radial approach to coronary angiography is intuitively attractive for fully anticoagulated patients (INR > 2) but no data exist concerning efficacy or safety of this procedure. The consensus view is that the femoral approach is contraindicated in fully anticoagulated patients, and though some operators undertake femoral catheterization in such patients and use closure devices, there are no data to suggest that it is safe to do so. At our institution, the radial approach for coronary angiography is reserved for patients in whom there is a relative contraindication to the femoral route. We have undertaken over 600 radial coronary angiograms in such patients since 1996, 66 of whom underwent transradial catheterization specifically because of anticoagulation status (INR > 2). Thirty-eight patients (58%) were male, average age 67 ± 11 years. All 66 patients had an INR > 2 but < 4.5. The approach was left radial in 26 (39%), right radial in the remainder; sheath size was 4 Fr in 4 (6%), 5 Fr in 13 (20%), and 6 Fr in 49 (74%). Seven operators in total were involved, though two operators undertook the majority of cases (47; 71%). Success rate was 97%, with no failure of access, and only one minor postprocedural hemorrhage. Failures were due to radial artery atherosclerosis (1) and subclavian tortuosity (1). The radial approach to coronary angiography is safe and to be recommended in the fully anticoagulated patient. *Cathet Cardiovasc Intervent 2003;58:8–10.*

MODIFICACION DEL RIESGO DE TROMBOSIS

Heparin ↓ Thrombosis[1]



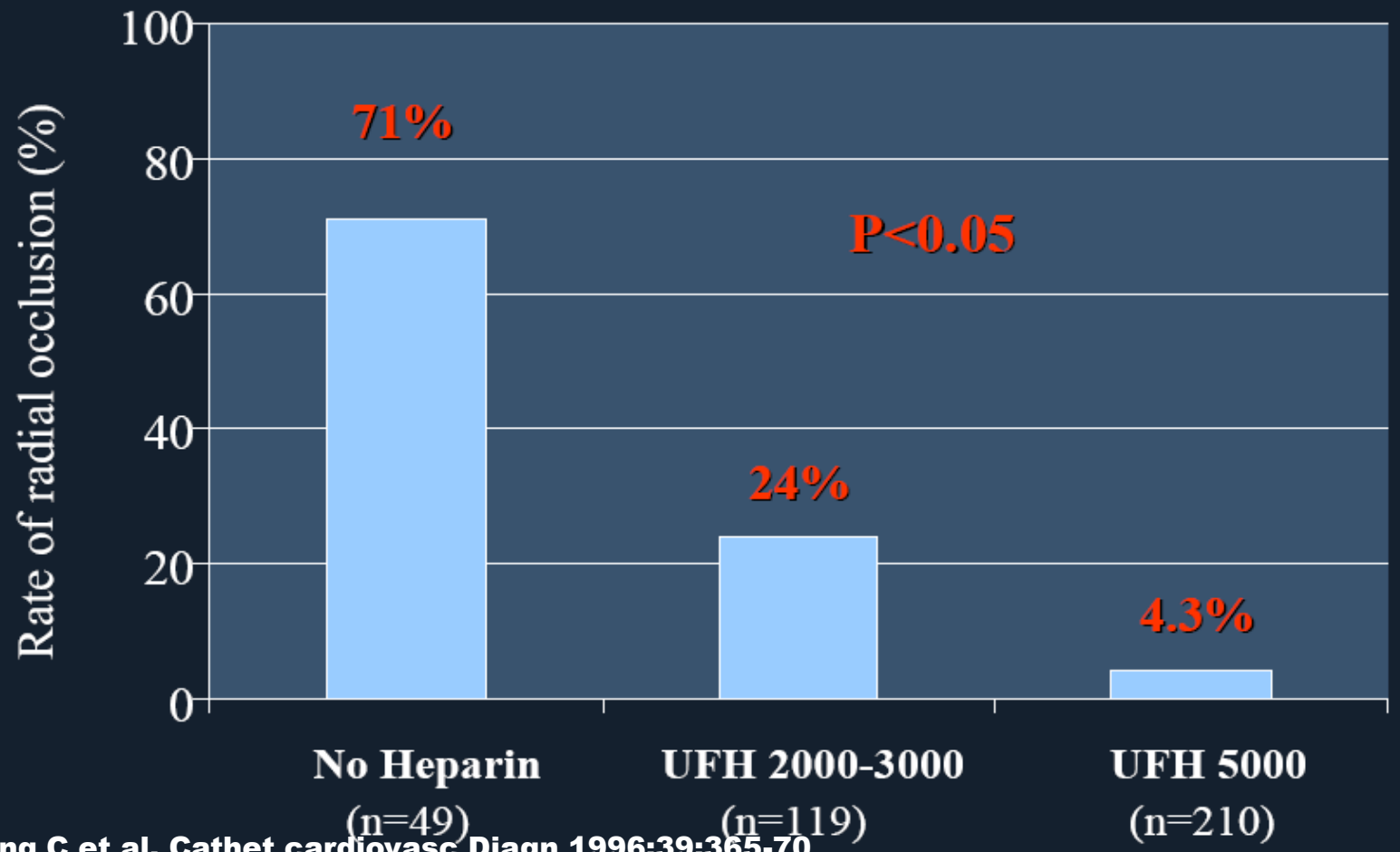
Smaller Sheaths ↓Thrombosis



1. Spaulding C, et al Cathet Cardiovasc Diag 1996;39:365-370..

OCLUSION RADIAL Y ANTICOAGULACION

415 consecutive patients
Radial artery occlusion assessment:
- post-procedure and 2 months later



Sapulding C et al. Cathet cardiovasc Diagn 1996;39:365-70

COMPLICACIONES RELACIONADAS CON ACCESO VASCULAR

Major vascular complications

- Radial 0%, brachial 2.3%, femoral 2.0% (P=0.035)

Radial (n=300)

- Bleeding 0%, asymp occlusion 5%, persistent 3%

Brachial (n=300)

- Bleeding 3 (1 transfusion; 1 medial nerve compression)
- Pseudoaneurysm 4 (3 to OR)

Femoral (n=300)

- Bleeding 4 (2 transfusion, 2 to OR)
- Pseudoaneurysms 3 (1 to OR)

Kiemeneij et al: JACC 29:1269, 1997

COMPLICACIONES DEL SITIO DE ACCESO

- Hematoma < 0.5%
- Pseudoaneurisma < 0.1%
- Fístula A-V < 0.1%
- Reparo Quirúrgico < 0.1%
- Transfusión de Sangre = 0
- Trombosis de la Arteria = 5%

  – Jean Fajadet, Clinique Pasteur, Tolouse, France

COMPLICACIONES LOCALES POR LA HEMOSTASIA

Lesión Por Torniquete

Edema de Mano

Rash petequial

Trombosis del Antebrazo

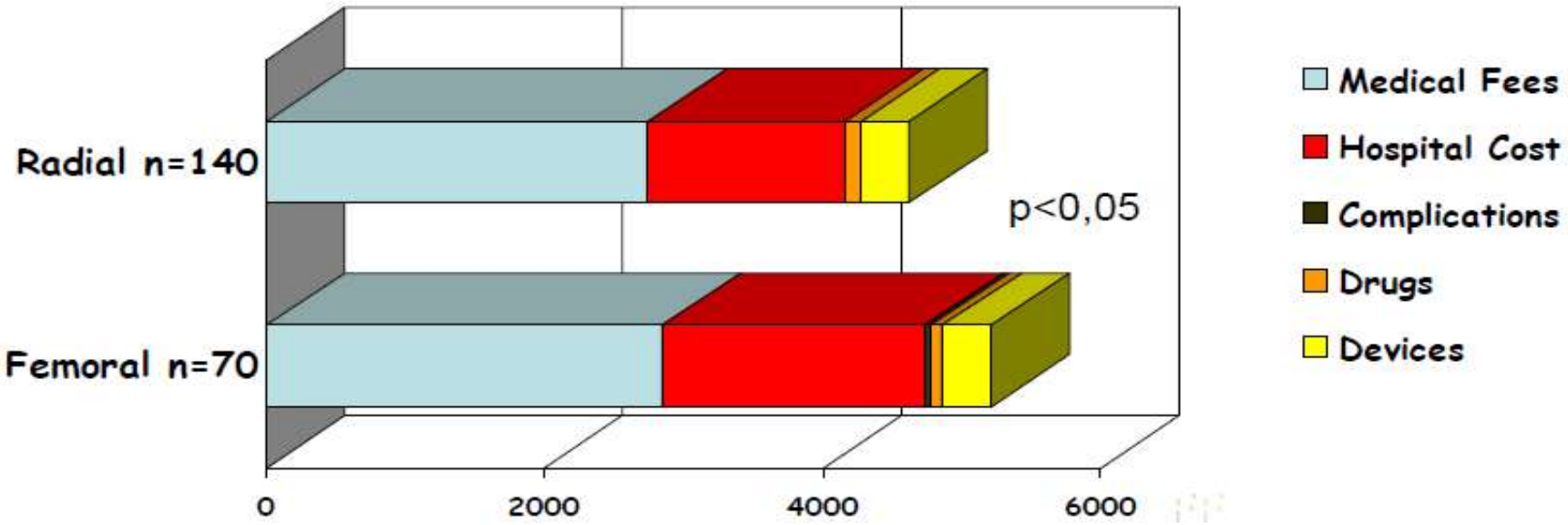
Cicatriz por Necrosis de Presión

OCLUSION DE LA ARTERIA RADIAL

- Usualmente asintomática

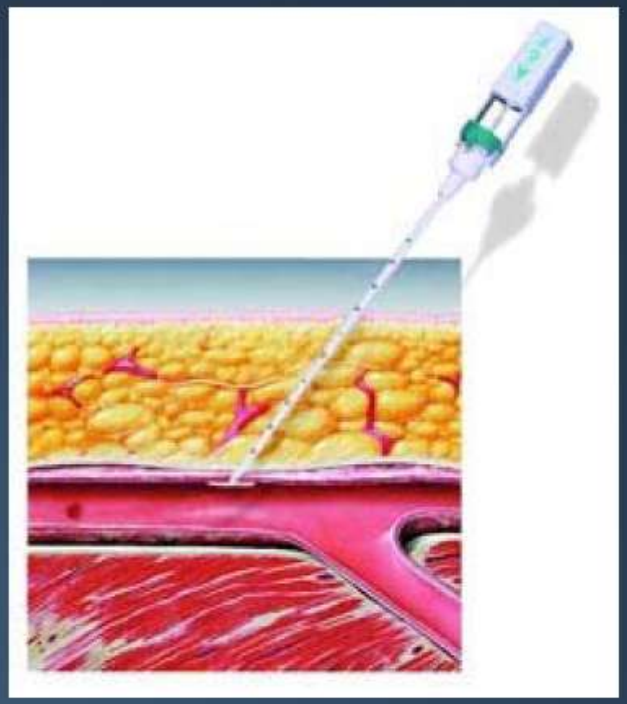
TECNICA RADIAL

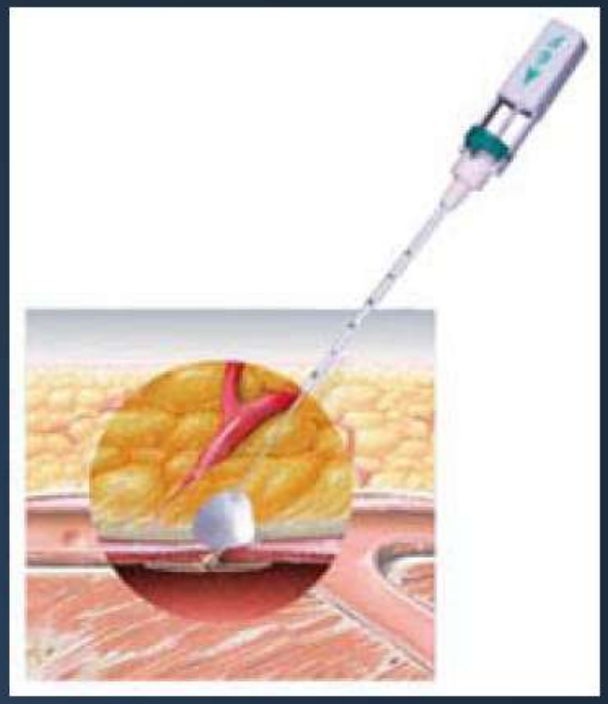
CARAFE: Costs



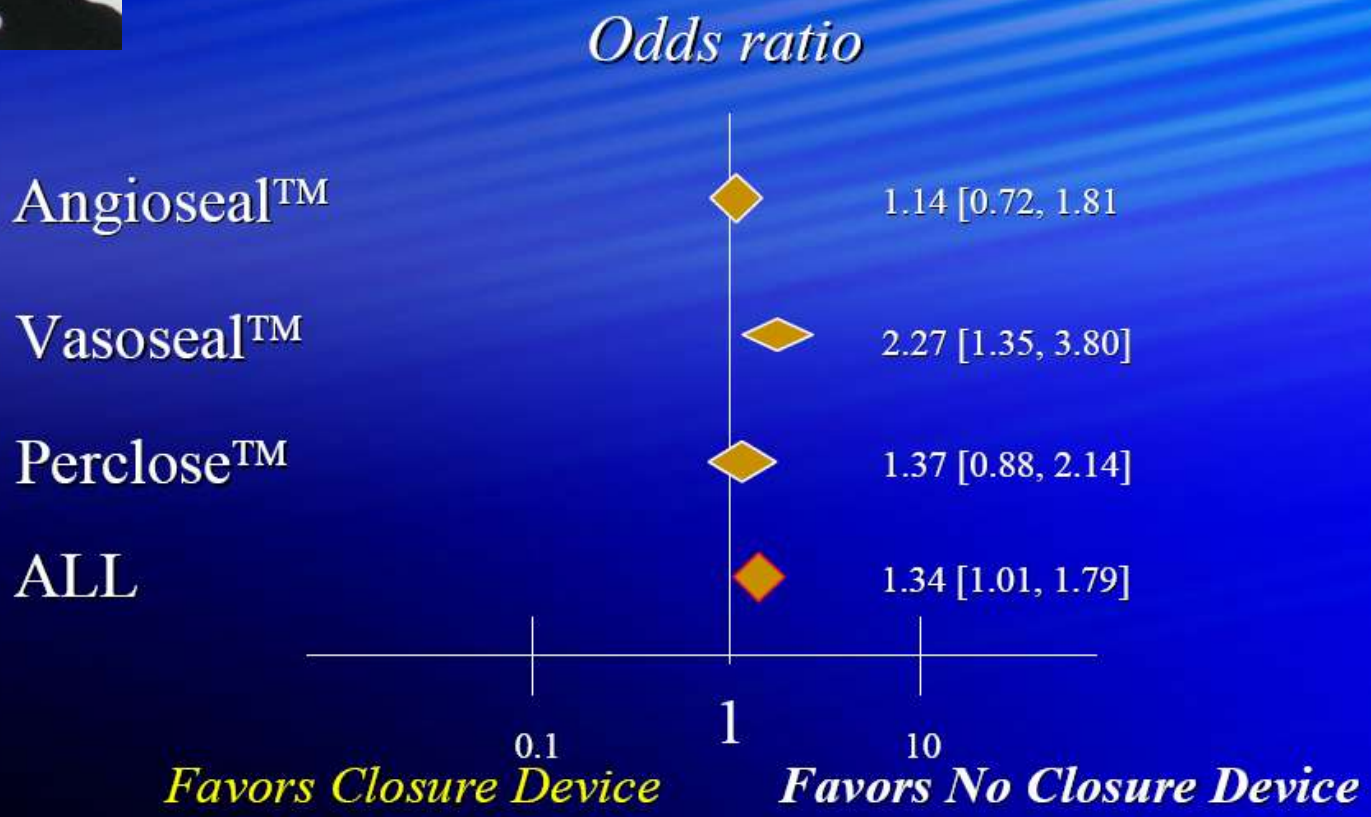
Y. Louvard CCVI 2001; 52: 181-187

ANGIOSEAL





Closure Devices?



Nikolsky. JACC 2004;44:1200-1209.

17300554
07-May-2008
RUZ PARADA
VIDIO

Visualiz.

LIH

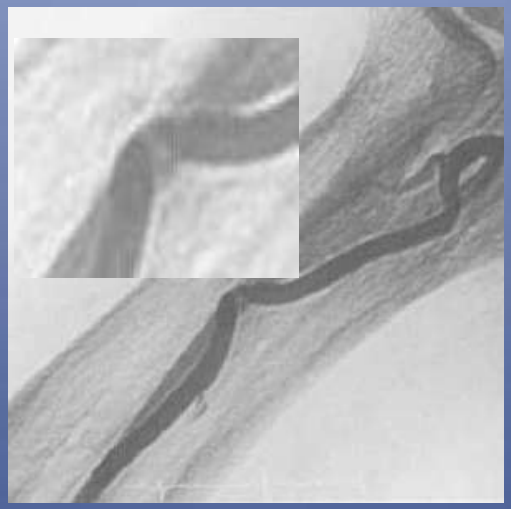
Geometria

20 cm
103 cm
18 cm

L 3 deg
RAO 0 deg
CRA 0 deg

ESPASMO RADIAL

LA MEJOR TECNICA Y MENOR TRAUMA LO EVITA. LA BUENA SEDACION Y ANESTESIA LOCAL, EVITA LOS COCKTAIL DE VASODILATADORES

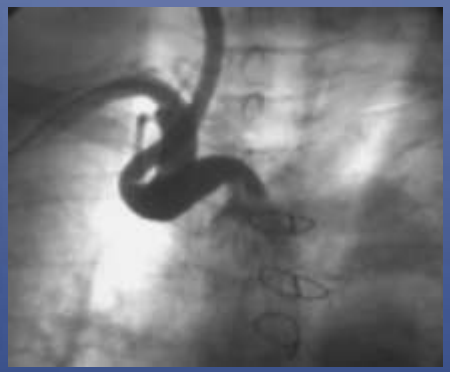


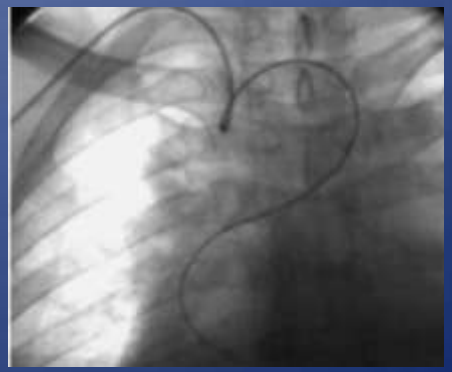
TORTUOSIDAD RADIAL Y BRAQUIAL

EVITAR TRAUMA CON LA GUIA, CAMBIAR A GUIAS CORONARIAS.

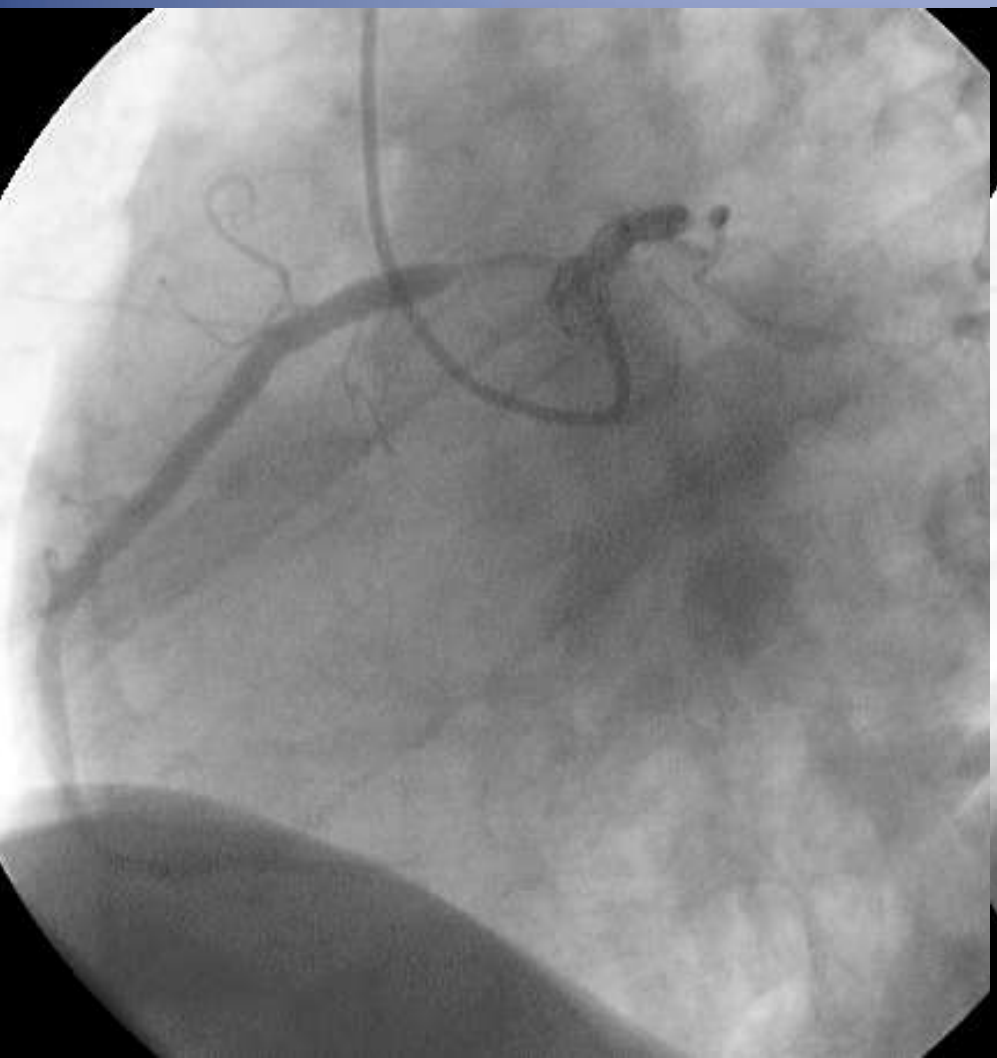
ANATOMIA SUBCLAVIA COMPLEJA Y TORTUOSA

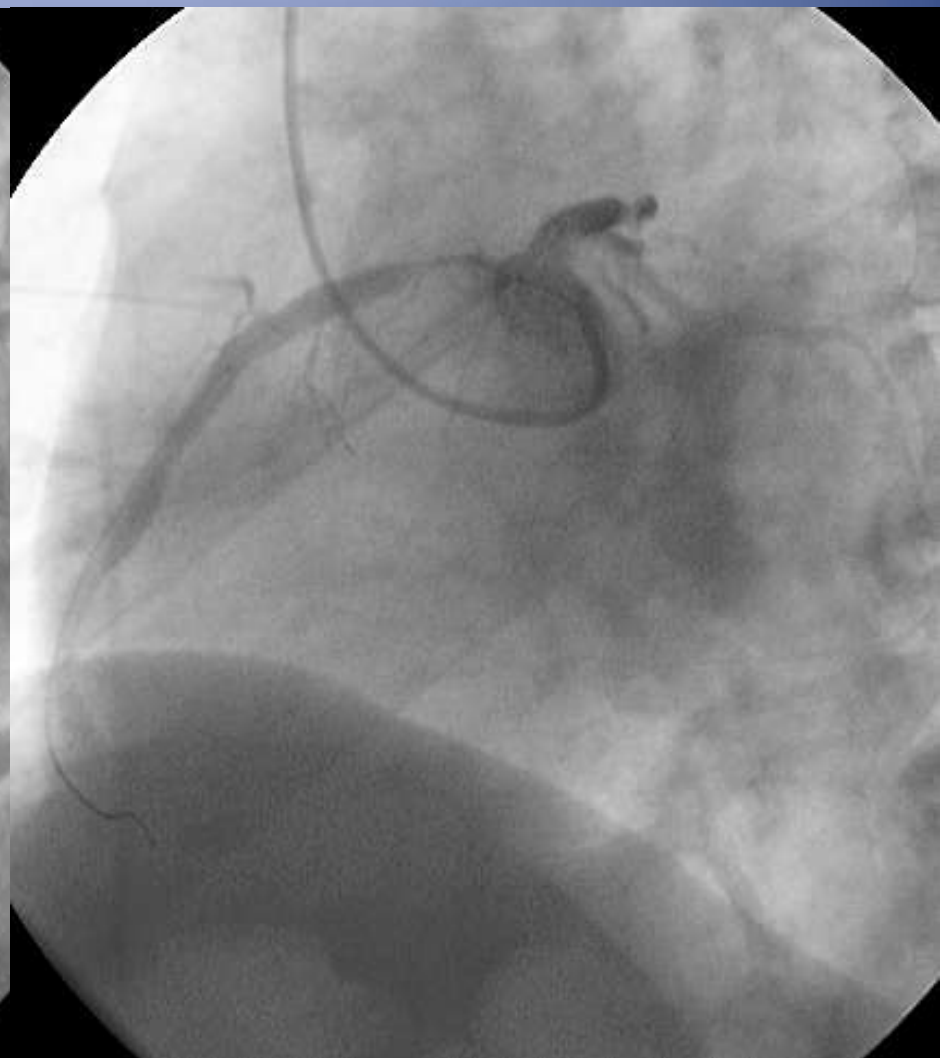
NUNCA PERDER EL AVANCE Y USAR CON CUIDADO GUIAS DE MAYOR SOPORTE



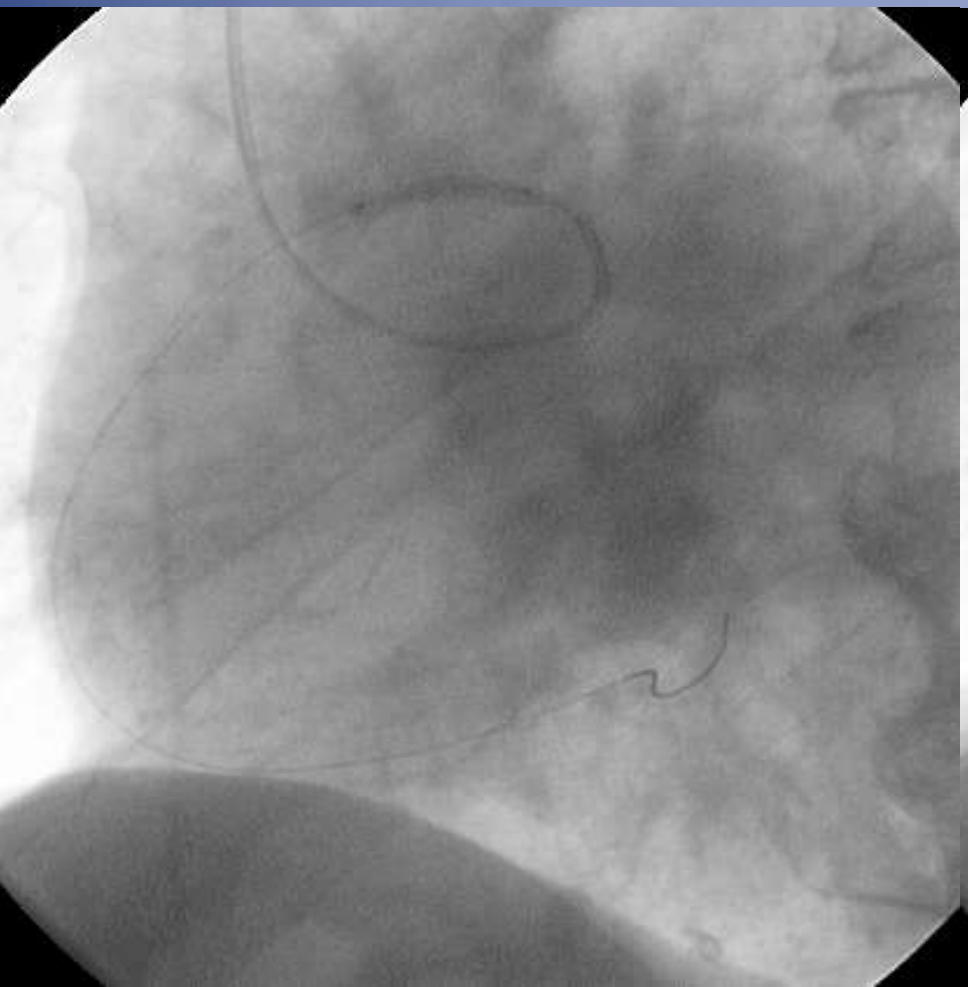


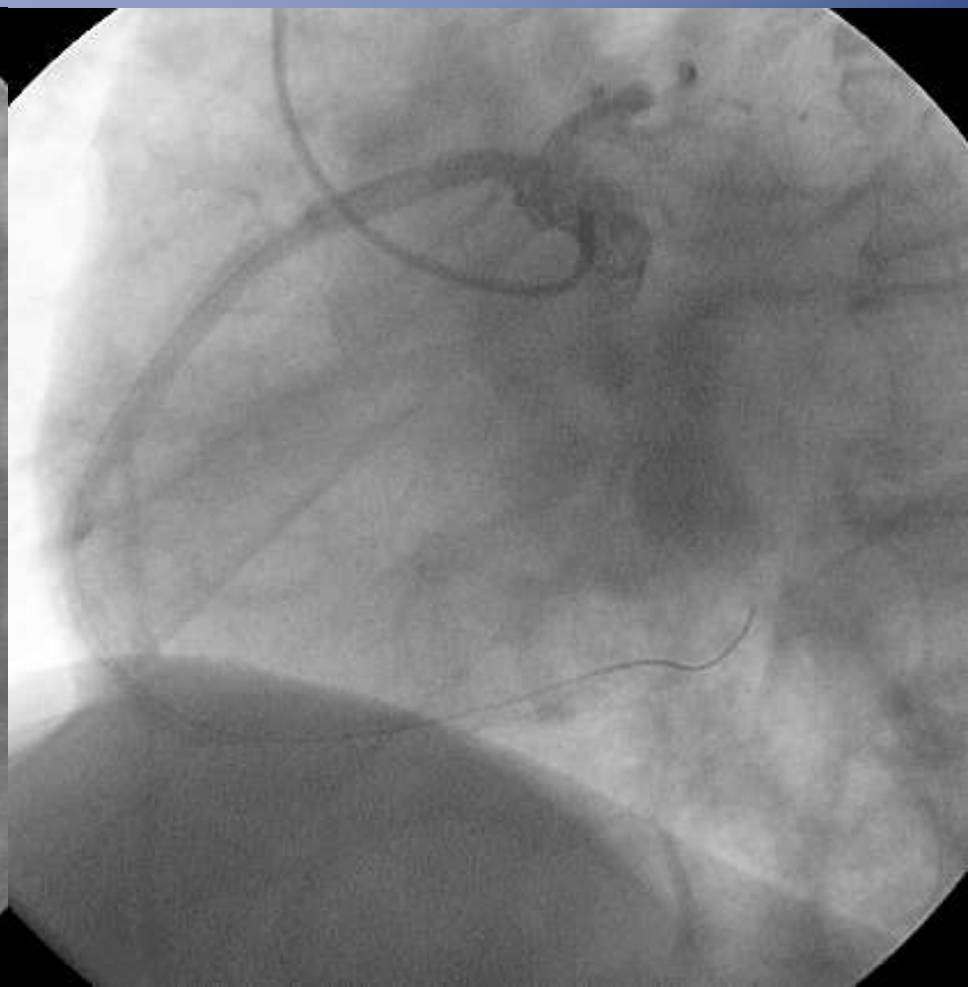
LESION OSTIAL DE CD CON ORIGEN ANOMALO





LESION OSTIAL DE CD CON ORIGEN ANOMALO





LESION OSTIAL COMPLEJA

OCLUSION TOTAL CRONICA

ABORDAJE RADIAL HOSPITAL DE LOS VALLES

AÑO	2007	2008	2009	2010	2011	2012(9)
DIAG	24	30	47	40	115	91
INTER	30	33	40	50	120	99
TOTAL	54	63	87	90	235	190
RA	10%	10%	26%	30%	36%	40%