

# L'ANGIOPLASTIE PÉRIPHÉRIQUE PAR PONCTION RADIALE



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# Historique

- 1<sup>ère</sup> ponction radiale pour cathétérisme cardiaque en 1989 (Campeau et al)
- 1<sup>ère</sup> ponction radiale pour angioplastie coronaire en 1993 (Kiemeneij et al)
- technique actuellement bien établie en cardiologie interventionnelle

# Introduction

- La ponction radiale est une alternative à la ponction fémorale historiquement utilisée pour les angioplasties percutanées.
- elle est meilleure que la ponction axillaire et humérale car
  - 1) moins de saignement
  - 2) moins de problème ischémique
  - 3) moins de complication nerveuse

# Intérêts et avantages (1)

- moins de complication au point de ponction:
  - de saignement
  - de pseudo-anévrisme
  - de fistule artério-veineuse
  - d'ischémie distale
- satisfaction du patient
- mobilisation plus rapide du patient
- diminution de la durée d'hospitalisation
- réduction du coût de la procédure

# Intérêts et avantages (2)

- fémorale inaccessible
- lésion cible:
  - sous-clavière (ostiale, push)
  - mésentérique
  - rénale
  - carotide gauche sur arche bovine

# Complications

- spasme
- thrombose
- saignement (hématome au syndrome de loges)
- perforation
- dissection
- introducteur coincé (par spasme ou tortuosité)
- éversion
- pseudo-anévrisme
- athéro/thrombo-embolie

# Limites (1)

- radiale absente ou occluse
- spasme
- diamètre de l'artère
- variations anatomiques
- pas de matériel nécessitant un introducteur >6F
- distance jusqu'au vaisseau cible

# Limites (2)

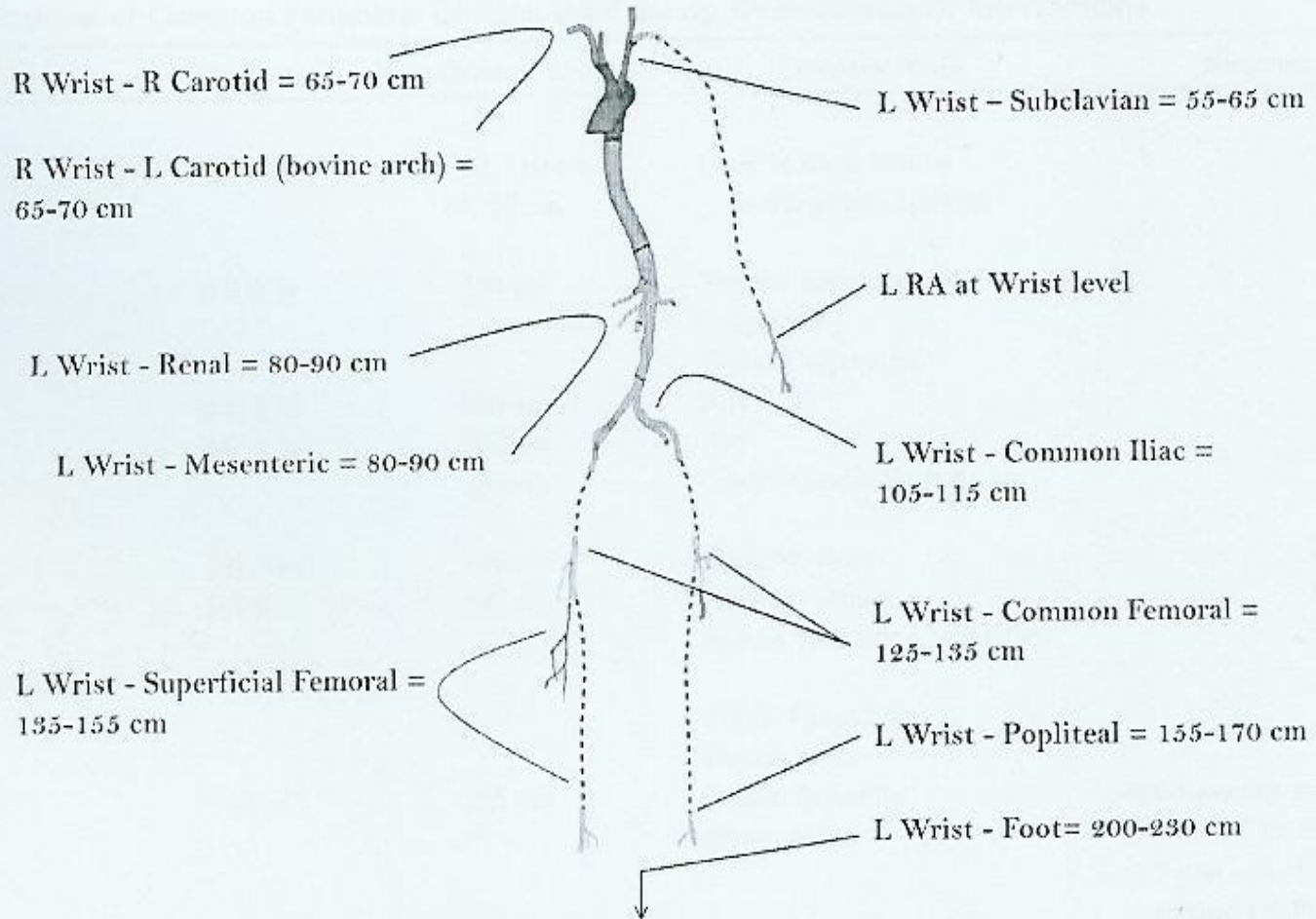


Fig. 1. Anthropometric measurements of distance from the right or left wrist to various vascular beds. (Abbreviations: L, left, R, right).



# Le spasme radial (1)

- incidence de 5 à 30%
- double mécanisme:
  - 1) récepteurs  $\alpha$ -adrénergiques
  - 2) tonus vasomoteur par friction et douleur
- favorisé par
  - jeune âge
  - sexe féminin
  - diabète
  - petit poignet
  - faible poids

# Le spasme radial (2)

- prévention par
  - 1) manipulations douces, y compris la compression
  - 2) introducteur hydrophile
  - 3) injection d'un « cocktail anti-spasme »
- en cardiologie interventionnelle au CHU de Liège:
  - 5mg de Valium IVD
  - soit Verapamil 5mg/2ml + 8ml LP
  - soit Rydene 2mg/2ml + 8ml LP
  - dérivé nitré ou Sufenta en plus si nécessaire

# Le spasme radial (3)

Table 2  
Comparison of antispasmodic cocktails for prevention of radial artery spasm (RAS)

Study medications with dose <sup>a</sup> (rates of spasm)		Result	Reference
Verapamil (2.5 mg) (13.2%)	Phentolamine (2.5 mg) (23.2%)	Verapamil superior <sup>b</sup> ( $P=.004$ )	Ruiz-Salmeron, <i>CCI</i> 2005;66:192–198
Nicorandil (4 mg) (50.7%)	Verapamil (0.1 mg)+NTG (200 µg) (52%)	No difference <sup>c</sup> ( $P>.05$ )	Kim, <i>Int J Cardiol</i> 2007;120:325–330
Verapamil (5 mg)+NTG (200 µg) (8%)	Placebo (22%)	Verapamil+NTG superior <sup>d</sup> ( $P=.029$ )	Kiemencij, <i>CCI</i> 2003;58:281–284
NTG (100 µg)+verapamil (1.25 mg) (3.8%)	NTG (100 µg) (4.4%)	<ul style="list-style-type: none"> <li>• No difference<sup>c</sup> (<math>P=.804</math>)</li> <li>• Both superior to placebo (<math>P=.001</math>, <math>P=.003</math>)</li> </ul>	Chen, <i>Cardiology</i> 2006;105:43–47
NTG (100 µg)+sodium nitroprusside (100 µg) (9.5%)	NTG (100 µg) (12.2%)	No difference <sup>b</sup> ( $P=.597$ )	Coppola, <i>J Invasive Cardiol</i> 2006;4155–8
NTG (100 µg)+sodium nitroprusside (100 µg) (9.5%)	Sodium nitroprusside (100 µg) (13.4%)	No difference <sup>b</sup> ( $P=.597$ )	Coppola, <i>J Invasive Cardiol</i> 2006;4155–8

NTG=Nitroglycerin.

<sup>a</sup> All routes of administration are IA. Rates of spasm in parentheses.

<sup>b</sup> Spasm determined by clinical assessment.

<sup>c</sup> Spasm determined by angiographic assessment.

<sup>d</sup> Spasm determined by MPF.

<sup>e</sup> Spasm determined by clinical and angiographic assessment.

# Littérature



## Percutaneous radial access for peripheral transluminal angioplasty

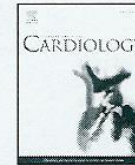
Raphaël Coscas, MD, Romain de Blic, MD, Clément Capdevila, MD, Isabelle Javerliat, MD, Olivier Goëau-Brissonniere, MD, PhD, and Marc Coggia, MD, *Boulogne-Billancourt and Montigny-le Bretonneux, France*

**Objective:** The radial approach is currently gaining popularity in the setting of coronary percutaneous transluminal angioplasty (PTA) because it decreases the incidence of vascular complications. This study reports our initial results with radial access for peripheral PTA.

**Methods:** Between November 2011 and January 2014, we performed peripheral PTA in 526 patients. PTA was performed through left radial access in 24 ambulatory patients (4.6%) presenting with TransAtlantic Inter-Society Consensus A or B lesions on preoperative computed tomography angiography. Materials included a 110-cm-long introducer, a 0.018-inch 400-cm-long wire, 150-cm-long angiography catheters, 180-cm-long shaft balloons and stents. Data were prospectively collected.

**Results:** There were 22 men (92%), median age was 65 years (range, 45-88 years), and 38 target lesions were treated. Indication for revascularization was disabling claudication in 22 patients (92%) and critical ischemia in two (8%). Indication for choosing the radial approach was bilateral hostile groins in 12 patients (50%), bilateral infrainguinal lesions in 4 (17%), need for a contralateral femoral approach in the setting of kissing iliac stents or bifurcated surgical aortic grafts in 3 (13%), and elective in 5 (21%). Radial puncture failed in one patient (4%), and PTA was performed through brachial access. Technical success was 91% (20 of 22 patients). Thirty-seven stents were implanted. Total procedure duration was 45 minutes (range, 30-120 minutes). Fluoroscopy time was 9 minutes (range, 5-35 minutes), and 40 mL (range, 20-90 mL) of contrast was necessary. Radial artery rupture secondary to spasm was noted at the end of the procedure in two patients (8%). All patients could ambulate 2 hours after the procedure. No patient died. Median follow-up was 8 months (range, 1-23 months). Three radial arteries (13%) were occluded at the last follow-up. At 6 months, freedom from target lesion revascularization and target vessel revascularization were 91% and 91%, respectively, for iliac lesions and 93% and 86%, respectively, for infrainguinal lesions.

**Conclusions:** This study demonstrates the feasibility of radial access for peripheral PTA. Radial access could represent an alternative to brachial access for peripheral and visceral interventions. Although complication rates of the present series are concerning, larger studies are needed to determine the role of transradial PTA once the learning curve is overcome. A wider diffusion of the technique mandates (1) smaller-diameter sheaths, (2) longer shaft devices, and (3) the development of specifically designed rescue devices such as covered stents and thromboaspiration catheters. (*J Vasc Surg* 2015;61:463-8.)



## Safety and feasibility of iliac endovascular interventions with a radial approach. Results from a multicenter study coordinated by the Italian Radial Force<sup>☆</sup>



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### ABSTRACT

**Background:** Percutaneous angioplasty of lower limb disease is commonly performed with a transfemoral access. In the coronary field, a transradial approach has shown to reduce access-site bleeding and adverse clinical events. This route has not yet been well studied for the majority of peripheral interventions, like those involving the iliac arteries. In this study we sought to evaluate the feasibility and safety of this approach for iliac interventions.

**Methods:** Multicenter study was performed at high-volume centers with experience in transradial percutaneous interventions. Primary endpoint of the study was procedural success; secondary endpoints included in-hospital bleeding, 1-month freedom from adverse events and the rate of radial occlusion. Feasibility of this technique was evaluated by recording procedural and fluoroscopy time and contrast load.

**Results:** A total of 149 patients from 5 centers were enrolled. The population had a medium risk profile, and 48% of patients having TASC 2 or 3 lesions. Procedural success was achieved in 98.7% of the population, and we did not register in-hospital complications, including both vascular access site and procedural-related complications. An ancillary transfemoral approach was used in 13% of patients. One-month freedom from symptoms was achieved in 97.3% of patients, and the rate of radial occlusion was 2.7%. Major determinants of an unsuccessful procedure were the use of normal 6 or 7-Fr introducer with guiding catheter, TASC D lesion attempt, lesion length >30 mm and total occlusion.

**Conclusions:** A transradial approach for iliac disease may be a feasible and safe alternative to the transfemoral route in experienced hands, in the light of significant technical improvements and dedicated devices.

# Considérations techniques

- gauche > droite
- test d'Allen pas absolument nécessaire mais prudent
- ponction sous échographie
- utiliser un « glidesheath » court
- ne pas dépasser 6F
- hépariniser d'emblée
- commencer par une artériographie radiale
- remplacer l'introducteur court par un long
- toujours penser à la distance et utiliser un matériel adapté
- prévenir ou soigner le spasme par un « cocktail anti-spasme »
- bracelet radial

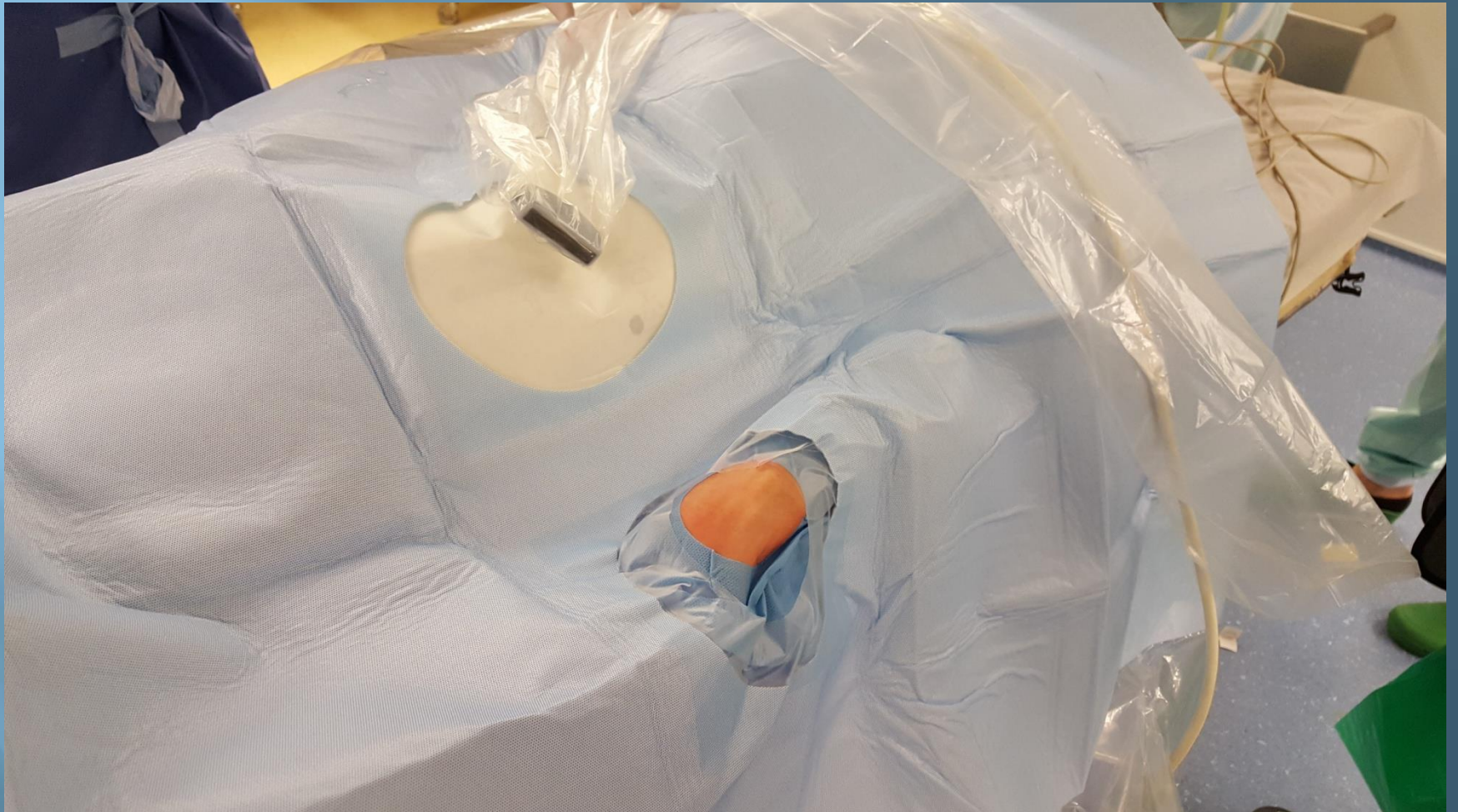
# Case report

- ♂ 50 ans, claudication du membre supérieur gauche
- tabac, diabète, dyslipémie
- antécédents de pancréatite éthylique, de stents iliaques, de cross-over fémoro-fémoral, de carrefour aorto-bifémoral et de cure de faux-anévrisme fémoral gauche









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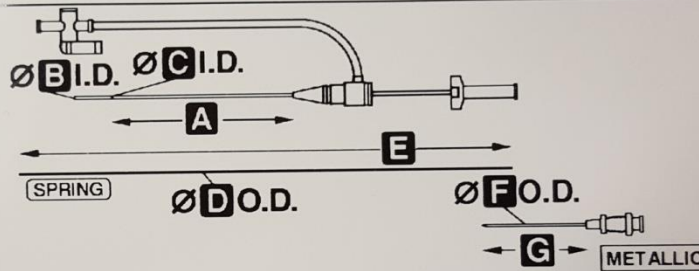
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<b>B</b> 0.021" (MIN. 0.56mm)	<b>E</b> 45cm
<b>C</b> 2.10mm (MIN. 1.98mm)	<b>F</b> 21G (0.80mm)
	<b>G</b> 1 2/5" (35mm)



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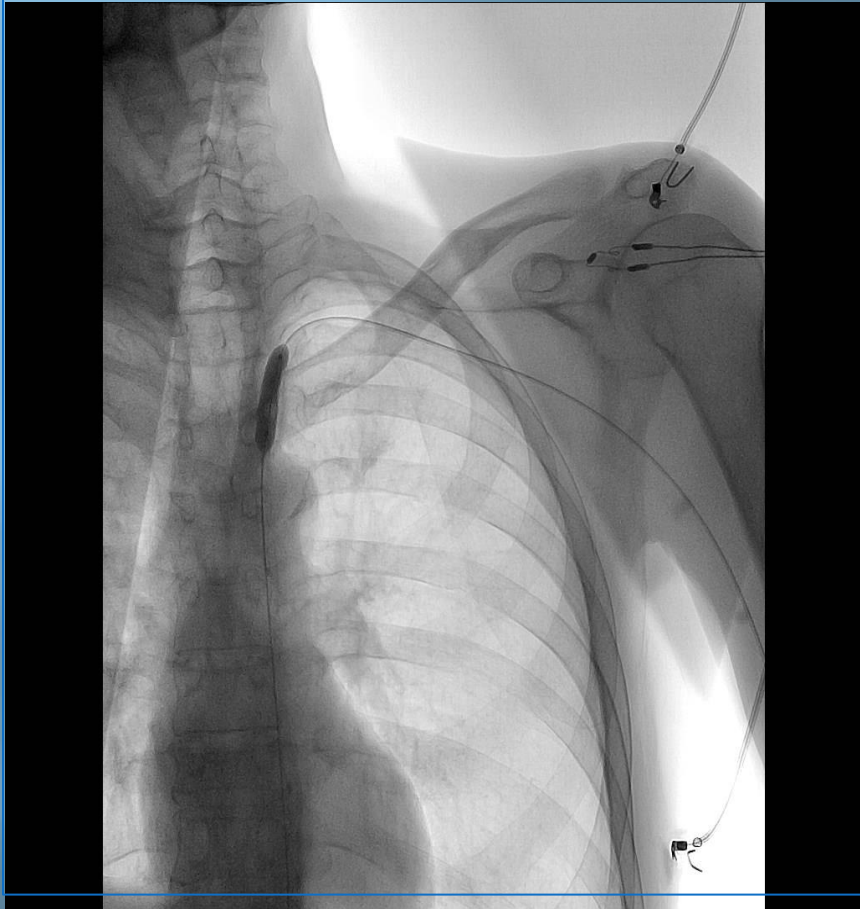
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# Conclusion

- ▣ La ponction radiale est bonne une alternative à la ponction fémorale.
- ▣ Elle est meilleure que la ponction axillaire et humérale.
- ▣ Elle nécessite du matériel adapté.
- ▣ Elle permet une hospitalisation de jour.