



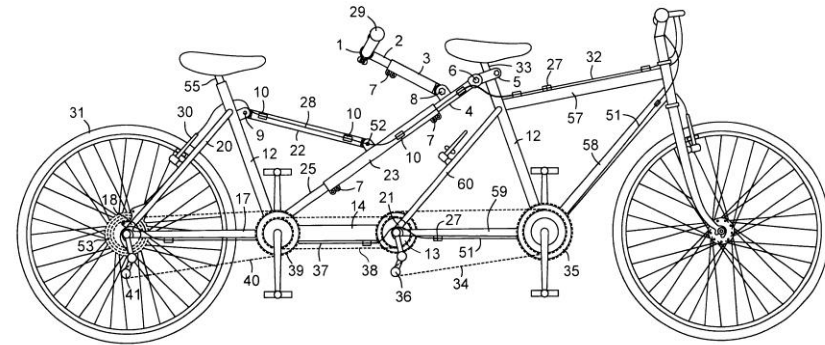
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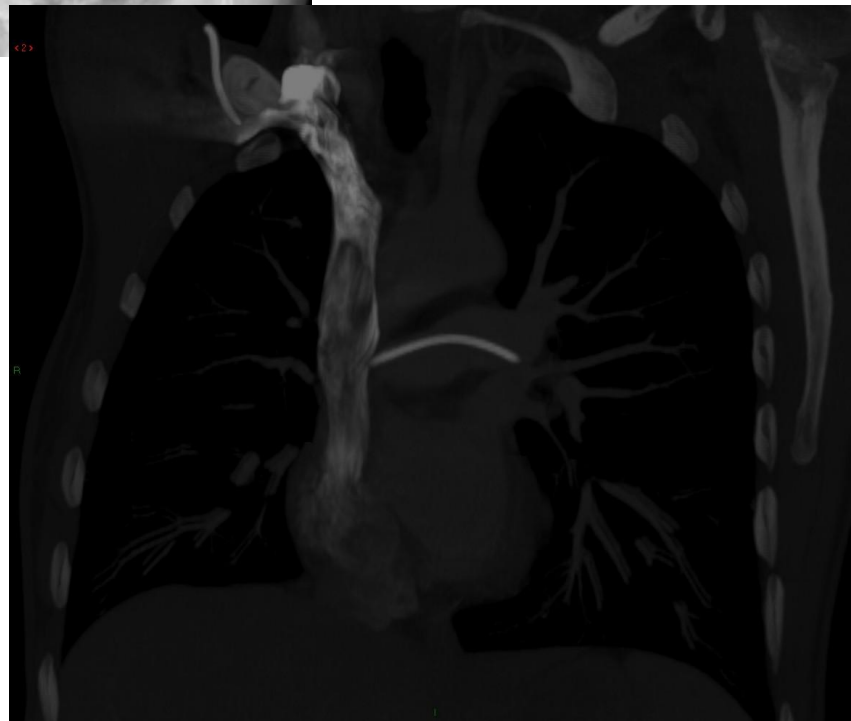
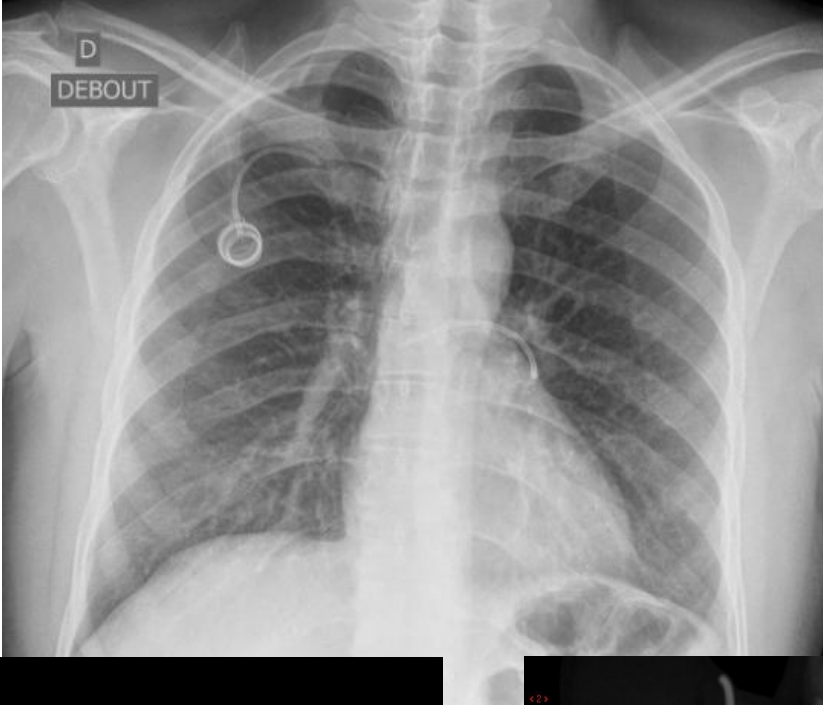


Accès Veineux

Complications Mécaniques

Marcy PY
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2013 / 11



DEFINITION

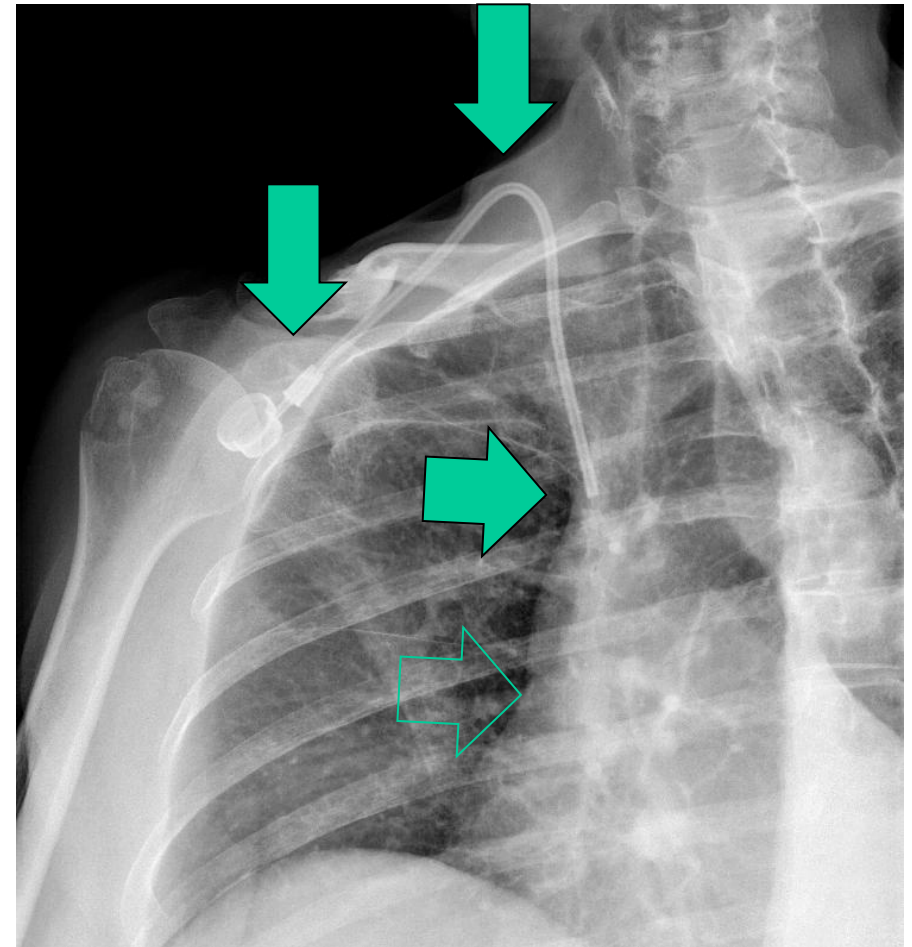
COMPLICATIONS

- Septiques
- Thrombotiques
- Mécaniques
 - **Dysfonction**: Impossibilité d'accès de l'aiguille de Huber ou de Retour (R)/ Flush (F)
 - **Malposition** 1° ou 2° du cathéter veineux (distal)
 - **Perte d'intégrité** (Fissure / Rupture)

CCI

CHAMBRE A CATHETER IMPLANTABLE

- Considérer les 3 composants de la CCI
 - 1. Chambre et connection
 - 2. Point d'entrée Veineux
 - 3. KT distal (Jonction Atrio- Cave JAV)



1.DYSFONCTION: R / F

2.MALPOSITION

3.PERTE D INTEGRITE



-R = Retour Veineux ?

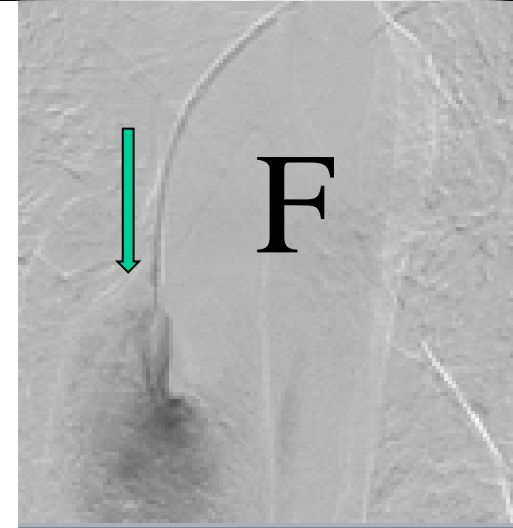
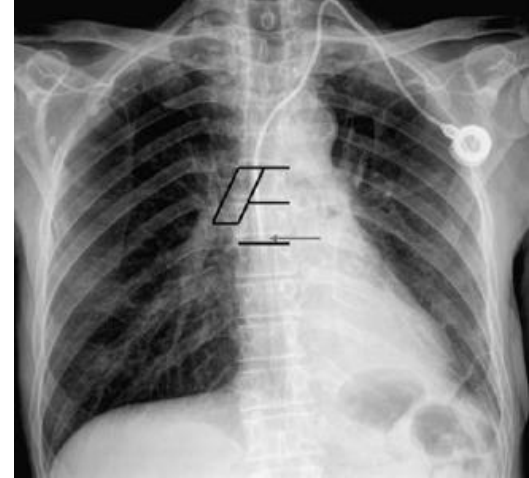
-F = Flush ?

Oui: possible / Non: Impossible (O/N)

-Douleur (O/ N)

-Gonflement (O / N)

Cliché THORAX



Injection test (F) est effectuée au:

-Serum physiologique

-Produit de contraste Rx opaque

1-Dysfonction

Retour Veineux Flush	DIAGNOSTIC
RETOUR R (-) Flush (+)	Manchon de Fibrine Fissure / Fracture KT extra- Vx
RETOUR R (-) Flush (-)	Occlusion Side-walling KT KT Extra- Vx
RETOUR R (+/-) Flush (+)	Fissure/ Fracture KT Extra vx
RETOUR R (+) Flush (+)	Normal KT Loop Intra arterial

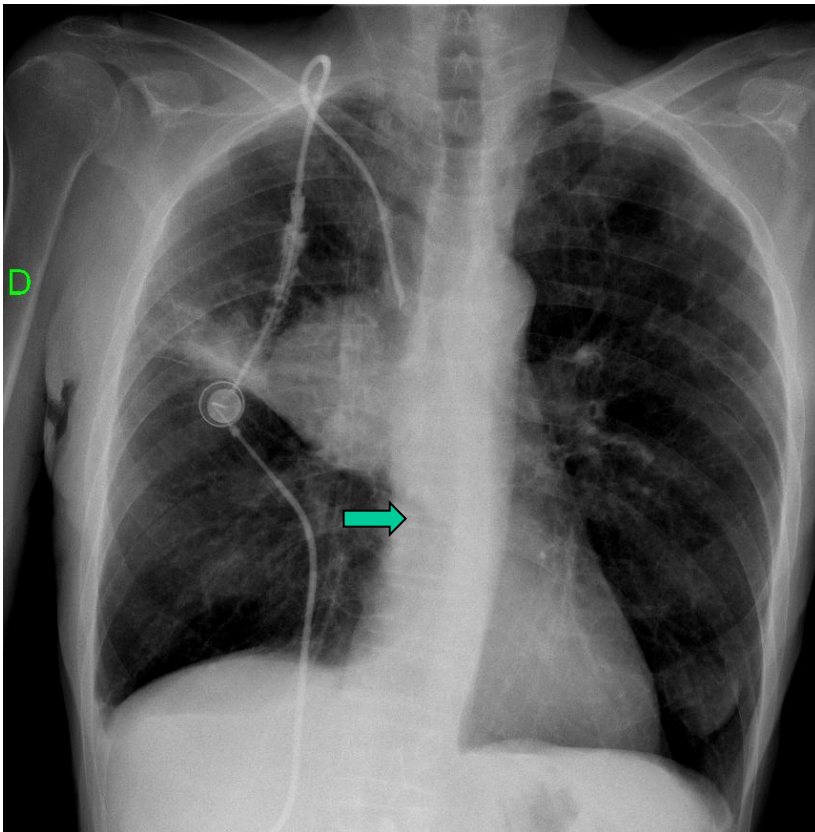
Manchon de Fibrine

Rechercher malposition CCI associée

Opacification de la CCI

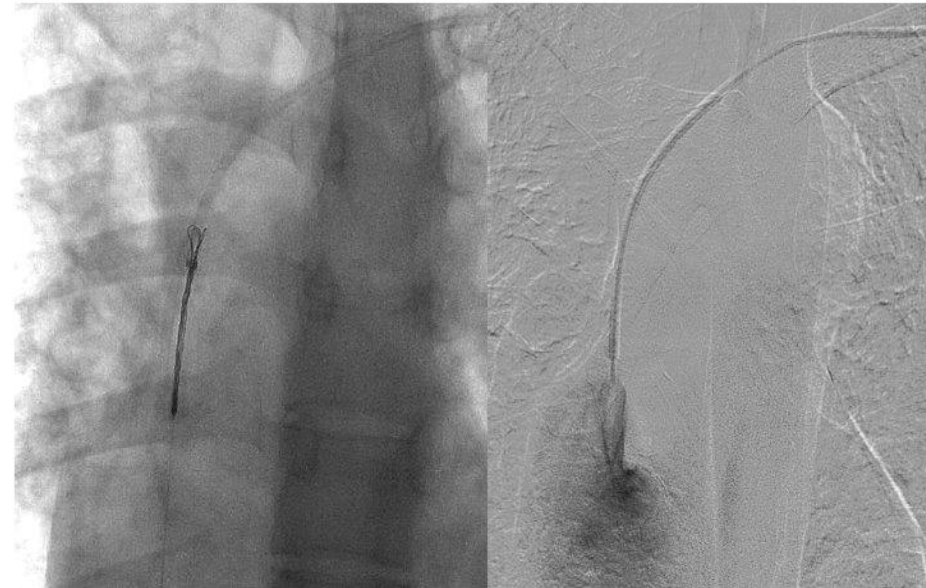
Apprécier la position du boîtier de CCI, le cheminement du
KT, le KT distal, la JAC (jonction atrio- cave)

KT Loop + Manchon



- R (-) / F (+)
- Pseudo élargissement du KT distal
- Opacification CCI retardée
- Stripping percutané (voie fémorale D)

Stripping

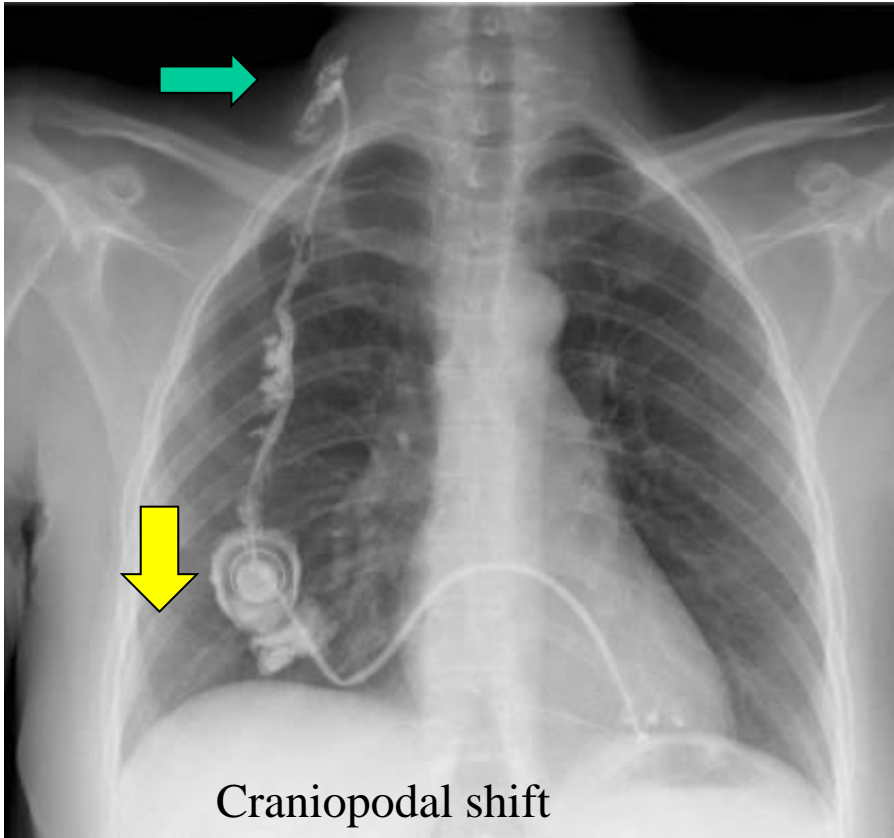


Dysfonction de CCI

Rechercher malposition CCI
Boitier, Connection, KT, KT distal, JAC

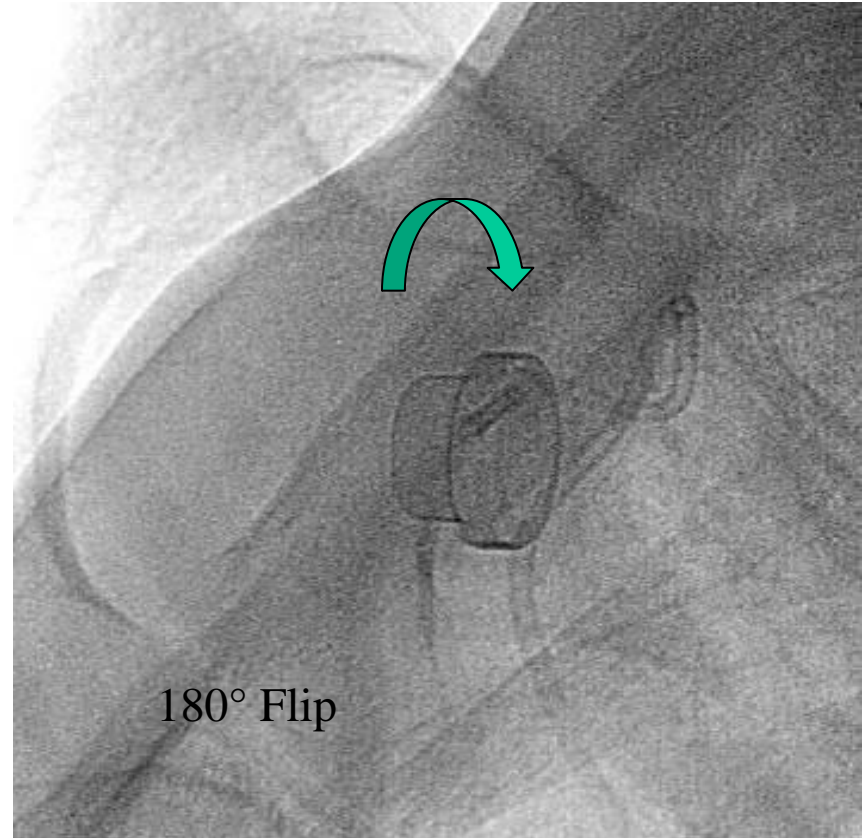
R (-) / F (+)

Cathéter Extra Vasculaire – Malposition 2°



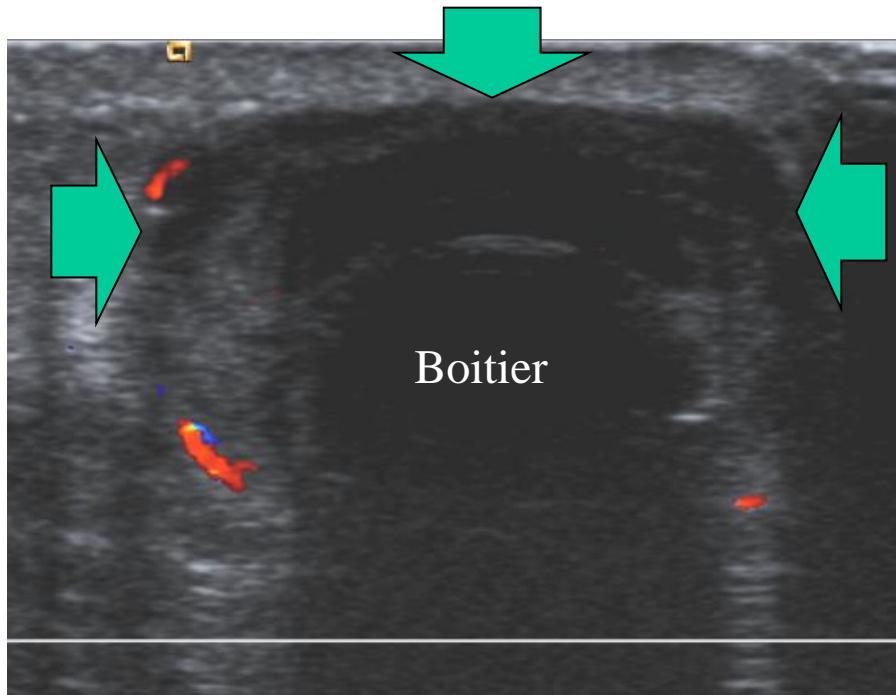
R (0) / F (0)

Accès Impossible de l'aiguille de Huber =
Flip ou « Twist » du boitier de CCI



Cas pathologiques d'accès au boitier

Accès difficile de l'aiguille de Huber
Hématome sous- cutané autour du boitier

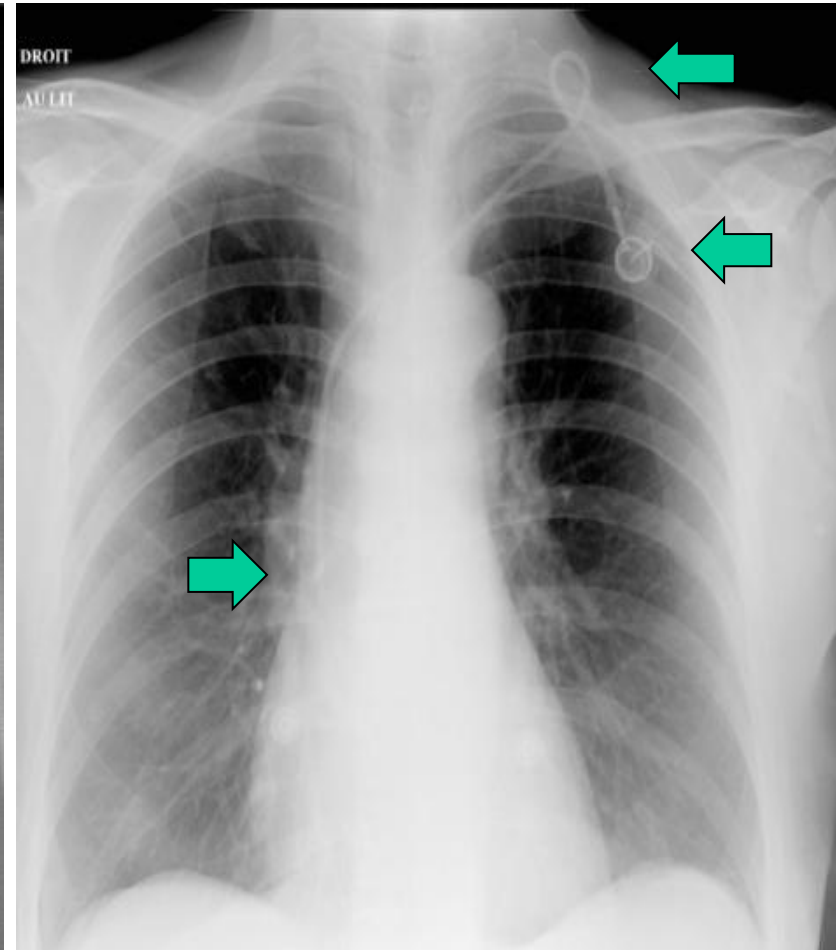
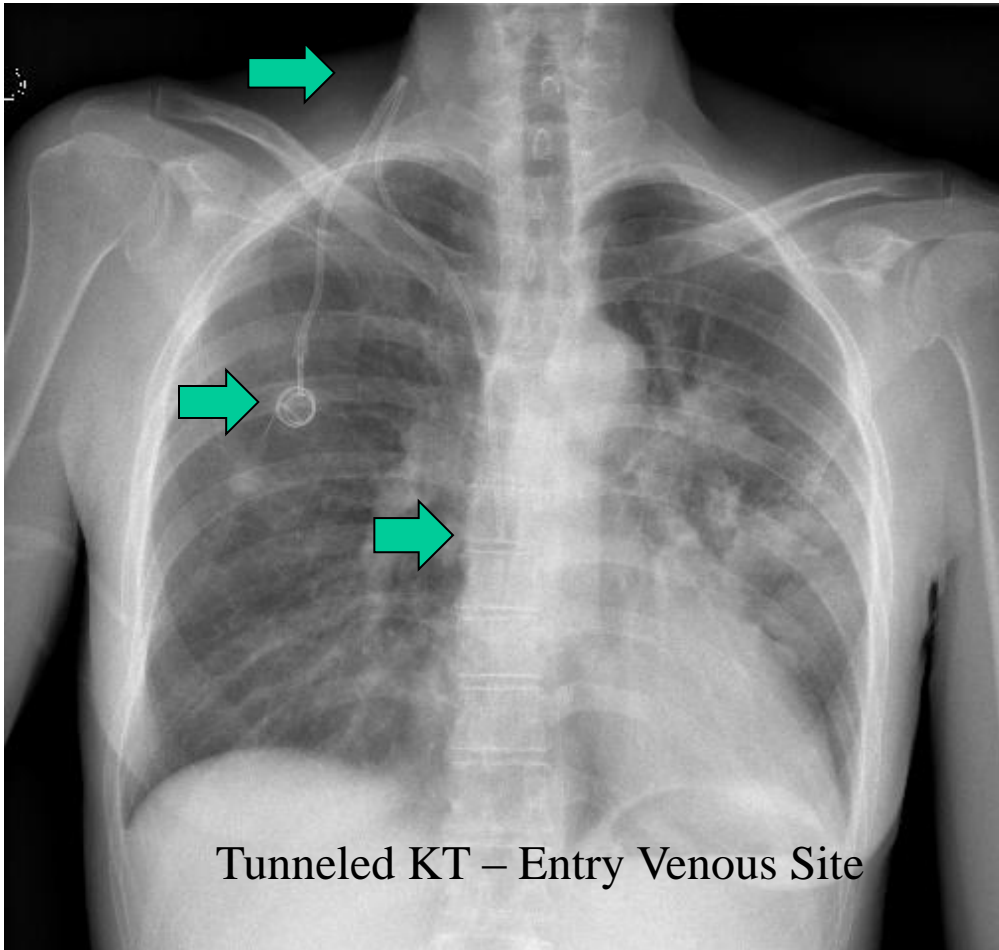


Exposition cutanée
Déperdition de poids / Dénutrition



Exemples de dysfonction de CCI

R (-) / F (+/-)

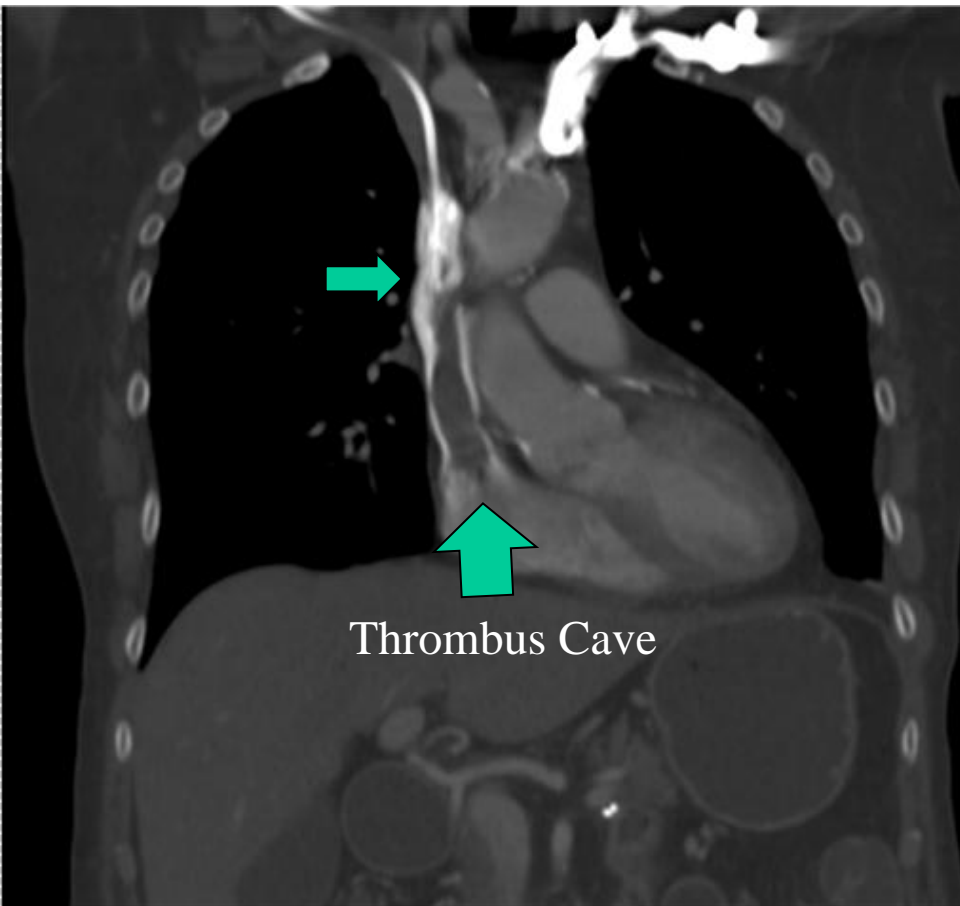


2-Malposition de CCI



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Thrombus Cave

KT trop court, surtout du côté Gauche

28.8 % risque de Thrombose / Occlusion de la Veine Cave Supérieure (VCS)

VCS Gauche:

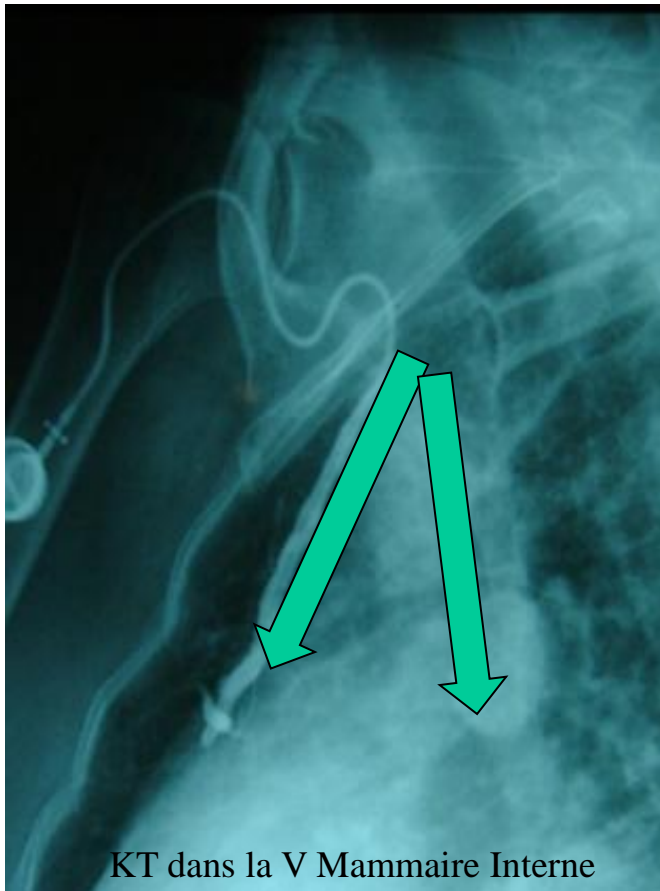
La VCSG se draine dans 8% des cas dans l'oreillette gauche
Attention aux bulles !!



Malposition de CCI

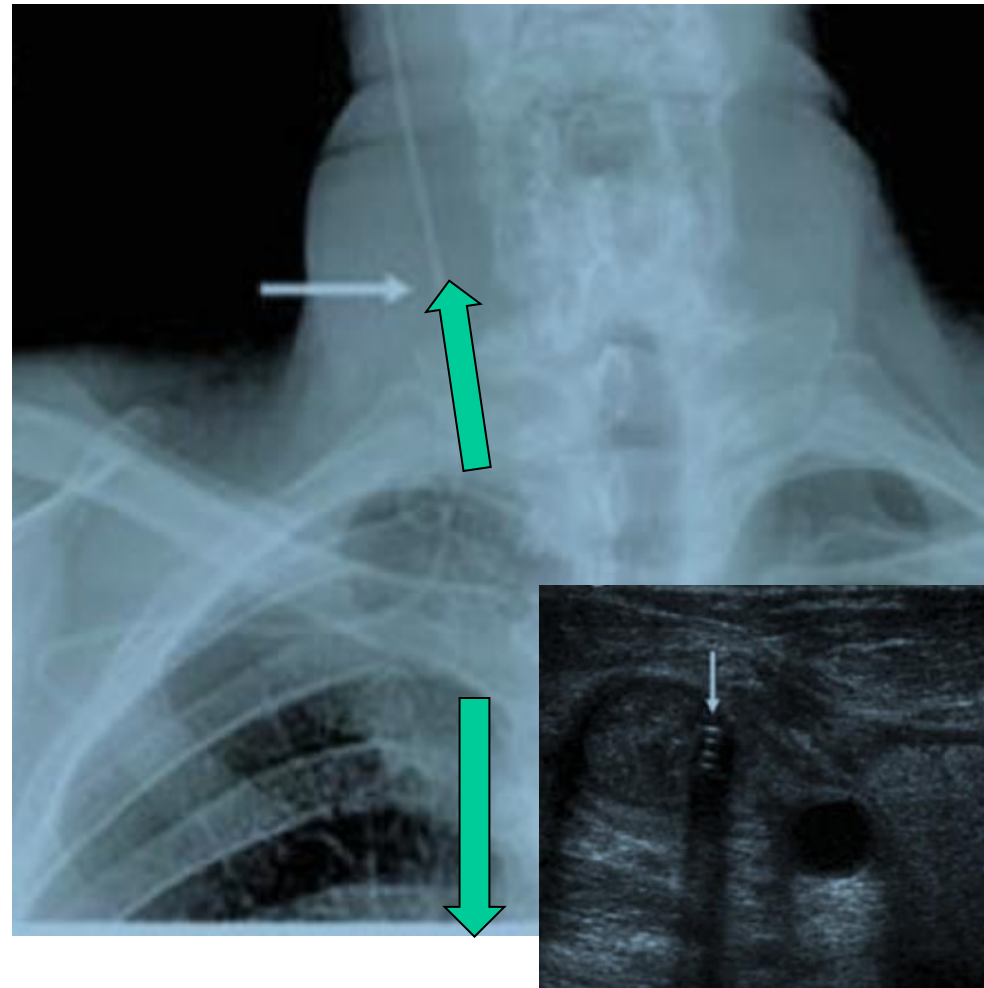
R (+/-) / F (+/-)

Rx Thorax de Profil



Douleur cervicale droite, R (-) / F (-)

Demander Echo Doppler veineux cervical et Rx Thorax/Cou



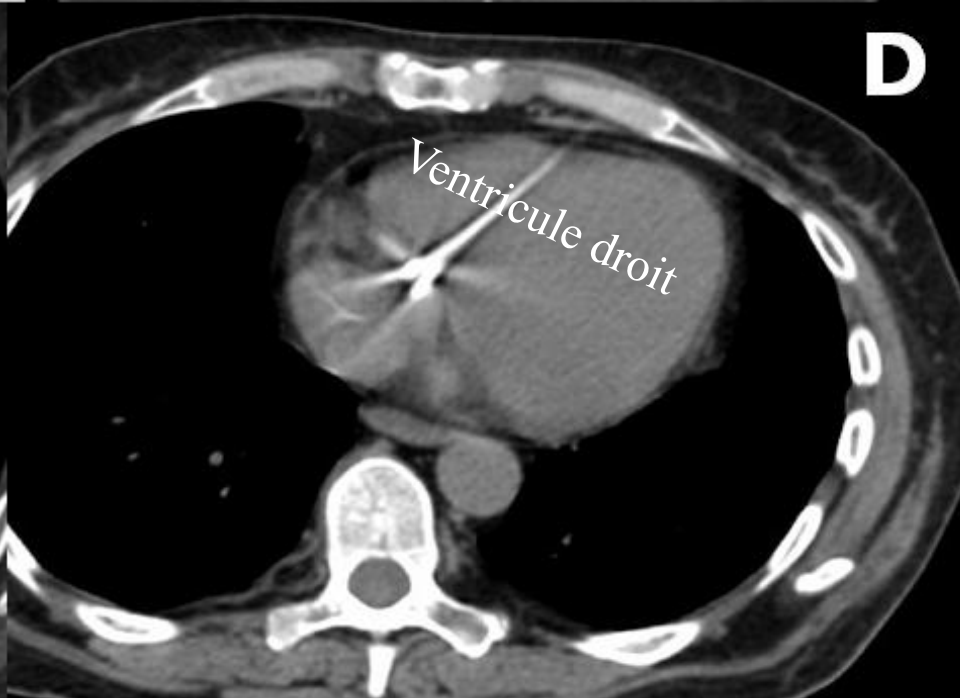
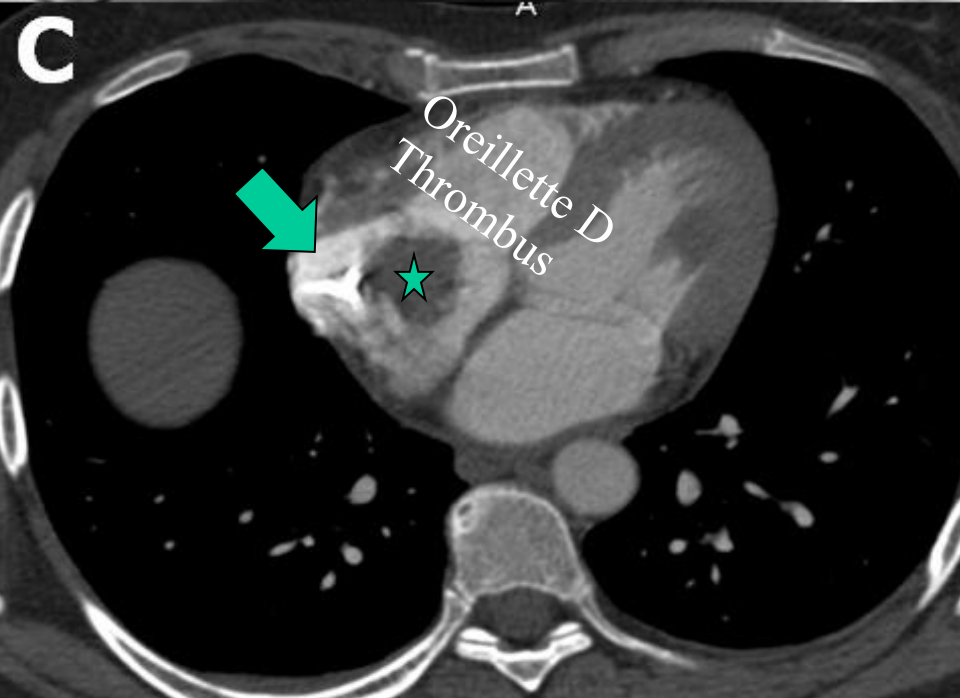
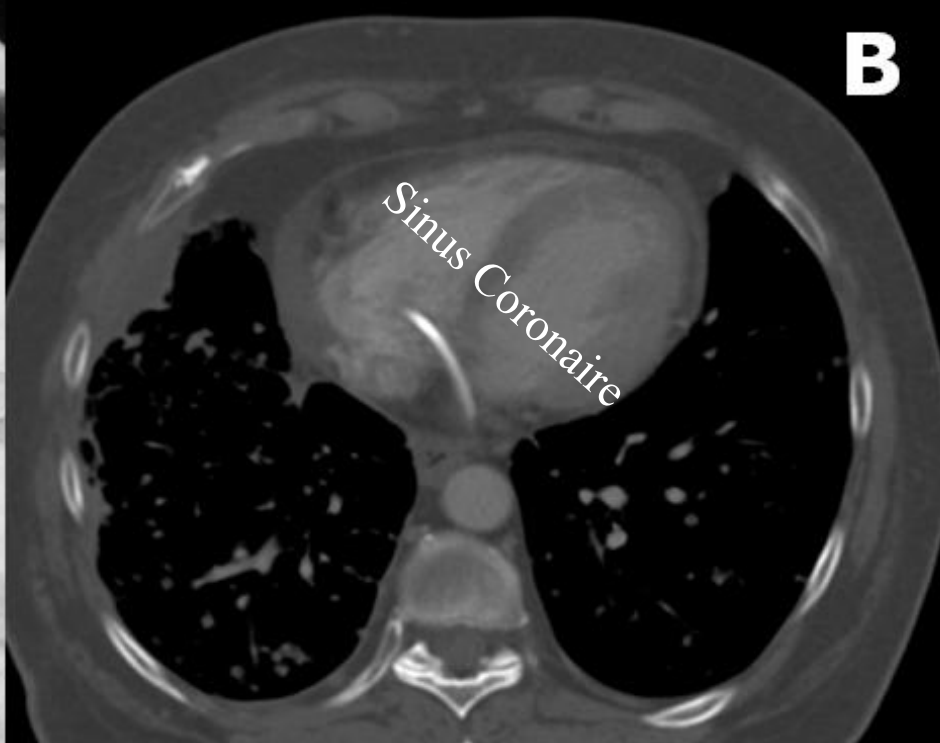


Table 3 Procedure complications

Author year S/R	Patient no. Implantation (months)	Access vein technical feasibility (%)	Global complication rate (%)	Procedural complication haematoma/pneumothorax/artery puncture/others rates (%)	Mechanical complications Catheter malposition (%)	Thrombosis (%) Sepsis (%)	Explanation rate (%) Death (%)
Schwarz 1997 (S) [20]	680	EJV, CVC, SCV	14.4	1	4.7	3	12.3
Kock 1998 (S) [31]	39	99		0/ 0/0/Bilateral PE, SVCO	2.5	8.8	NR
Lersch 1999 (S) [32]	1,500	CVC, SCV, IJV	13.5	1.9	4	2.5	11.9
Aldrighetti 2000 (S) [19]	9.3	NR		0.6/0.3/ NR/-	2.4	3.2	0.13*
Chang 2006 (S) [33]	100	Forearm/ Seldinger	31	1	6	8	6
Shetty 1997 (R) [34]	3	96		NR/0/NR/Intolerable pain	NR	10	NR
Hata 1998 (R) [25]	967	SCV/ Seldinger	22.1	12.9	3.7	1.2	4.5
Zahringer 2006 (R) [22]	NR	98.5		NR/2.3/7.8/Haemoptysis	1.7	4.4	NR
Cil 2007(R) [13]	533	CVC	14.1	2.1	5.3	0	NR
Marcy 2007 (R) [5]	NR	88		1.1/ 0/0/Cardiac failure	0.9	7.7	0.19**
Zahringer 2006 (R) [22]	346	SCV/ Venogram	8.6	2.3	2.4	2.9	1.7
Cil 2007(R) [13]	8.5	100		0.3/2/0.3/-	1.2	1.1	NR
Marcy 2007 (R) [5]	104	Forearm/US	18.1	4.8	7.5	5.8	3.8
Zahringer 2006 (R) [22]	2.9	100		3.8/0/NR/Intolerable pain	1	0	NR
Cil 2007(R) [13]	271	SCV/US	12.9	1.5	2.2	0.5	1.9
Marcy 2007 (R) [5]	8.8	100		2/0/0/Sepsis/ Phlebitis	NR	6.6	NR
Cil 2007(R) [13]	471	IJV/US	14.1	0.6	7.4	1	3.2
Marcy 2007 (R) [5]	12.3	99.6		0.6/0/0/-	0.2	1.9	NR
Cil 2007(R) [13]	1,000	Arm/ Venogram	10.4	0.9	4.4	1.9	5.3
Marcy 2007 (R) [5]	8.4	94.2		0.4/ 0/0.4/Nerve stimulation	0.5	3.2	0.4***

ANAT. LANDMARKS**RADIOLOGY**

S/R: Surgical or radiological insertion of the device; NR: data not reported

Procedure-related death includes pulmonary embolism and superior vena cava occlusion (SVCO) (*) [Kock], cardiac shock (**) [Chang] in surgical series, and drug extravasation, septic shock and pulmonary embolism in radiological series (***) [Marcy]

EJV: external jugular vein; IJV: internal jugular vein; CVC: cephalic vein cutdown; SCV: subclavian vein; US: ultrasound guidance; venogram: venography guidance

[Central venous access: techniques and indications in oncology.](#)

Marcy PY.

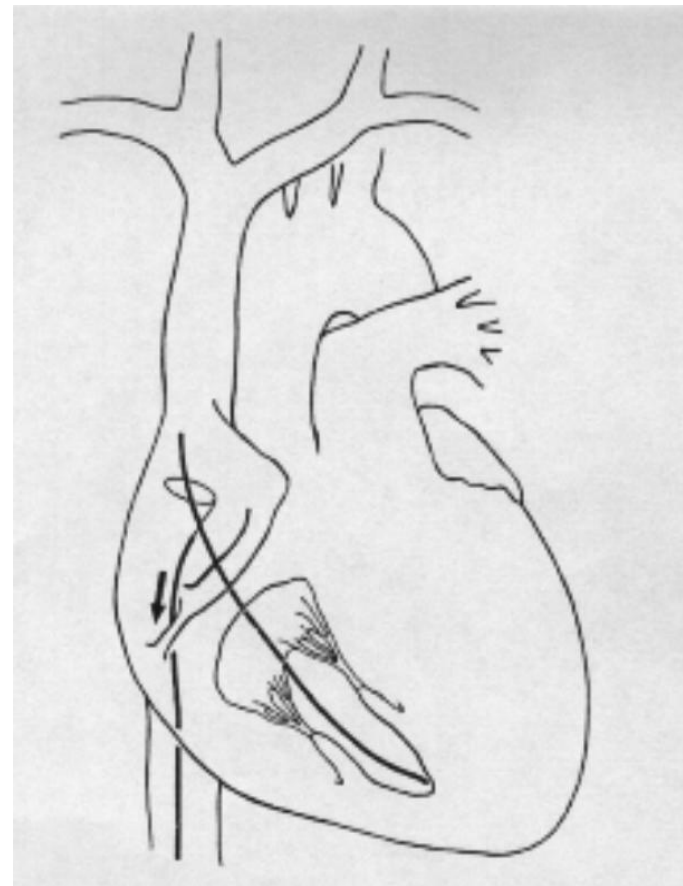
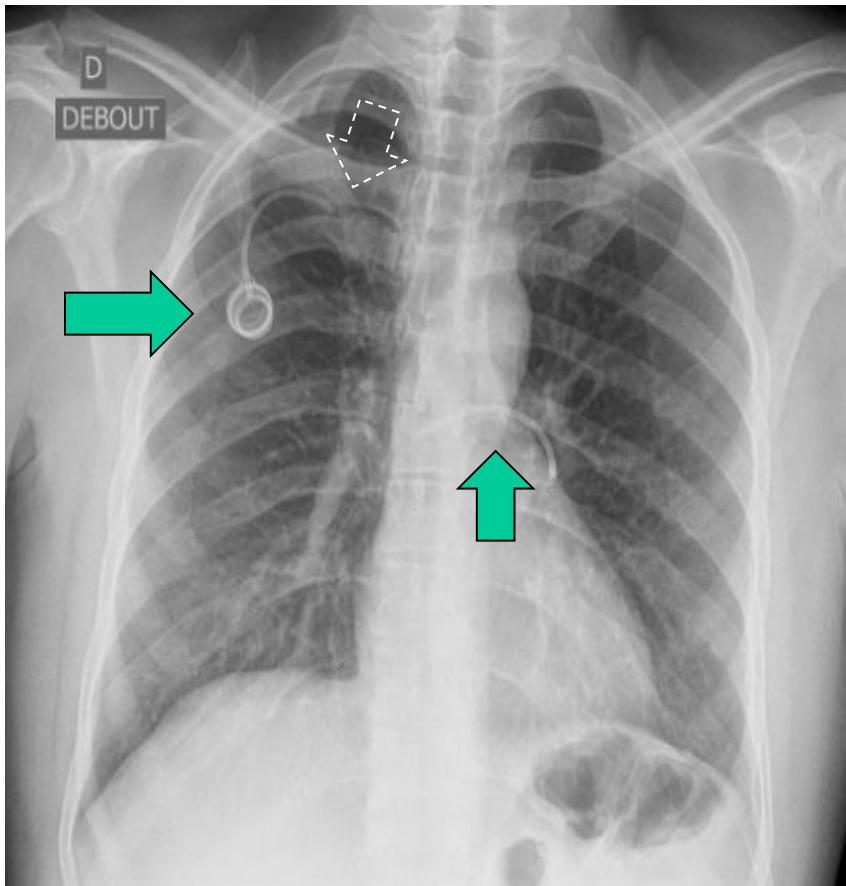
Eur Radiol. 2008 Oct;18(10):2333-44. Epub 2008 May 6. Review.

Perte d'Intégrité de la CCI

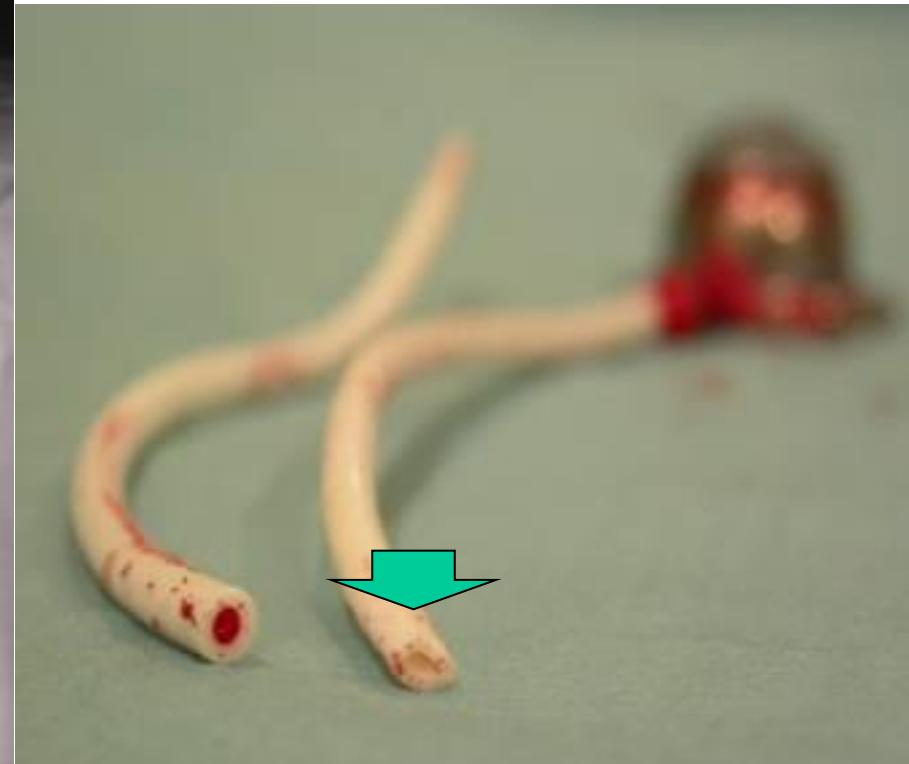
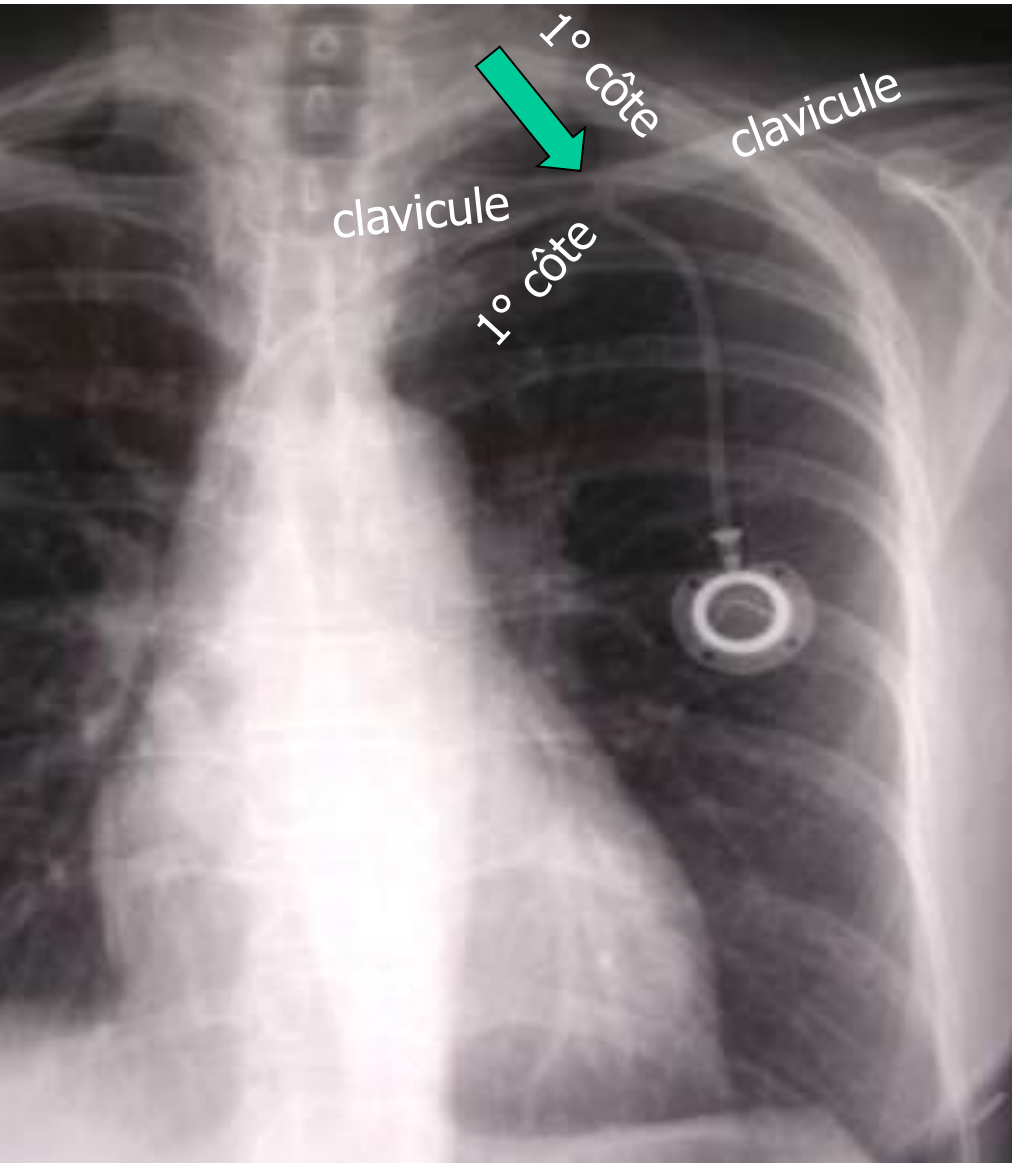
Fissure/ Fracture

RETOUR R (-) / (- /+); Flush (+)

Appeler le Rx Interventionnel de garde



PINCH OFF SIGN



Radiology. 1990 Nov;177(2):353-6.

Pinch-off syndrome: a complication of implantable subclavian venous access devices.

Hinke DH, Zandt-Stastny DA, Goodman LR, Quebbeman EJ, Krzywda EA, Andris DA.

Department of Radiology, Medical College of Wisconsin, Milwaukee 53226.

Abstract

Implantable central venous access devices placed via the subclavian vein may become obstructed by thrombosis, impingement against a vein wall, or compression between the clavicle and first rib. The latter has been termed pinch-off syndrome (POS). Eleven patients with POS were studied, including one whose catheter had fractured and one whose catheter had fragmented. They were compared with 22 matched control patients and 100 consecutive routine clinic patients. Each catheter was graded: 0 = normal, 1 = abrupt change in course with no luminal narrowing, 2 = luminal narrowing, and 3 = complete catheter fracture. POS was present in most (eight of 11) cases within 3 weeks after placement. A grade 1 catheter was common (33%) among control subjects, but grades 2 and 3 were uncommon (1%). Catheter fracture or fragmentation was seen in two of five cases with long-term (greater than 3 weeks) pinching (grade 2 catheter). The following conclusions were reached: Grade 2 represents significant catheter compression and the potential for serious complications. Grade 1 is of uncertain clinical significance, due to its high prevalence in control subjects.

CCI thoracique

Incidence du Pinch Off = 0.8%



Pathol Biol (Paris). 1999 Mar;47(3):269-72.

[Mechanical complications at implantation sites]

[Article in French]

Desruennes E.

Département Anesthésie-Analgésie-Réanimation, Institut Gustave-Roussy, Villejuif, France.

Abstract

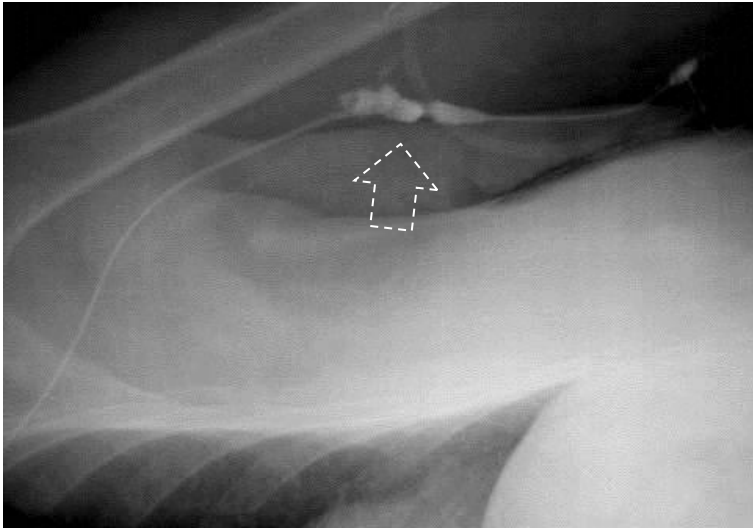
Mechanical complications of implanted venous access devices are more common than suggested by the literature. Among them, the most severe is catheter embolism, which is due primarily to costoclavicular pinch-off syndrome (POS). POS occurs mainly after infraclavicular approach of the subclavian vein, the incidence being 8/1000 in our experience. Clinical and radiological findings suggestive of rupture should be well known since they require removal of the device. Other access sites (internal jugular vein, cephalic vein, subclavian vein by the supraclavicular approach) seem preferable for long-term catheterization. Loss of adaptation between the site and catheter, precipitated by inopportune attempts at relieving obstruction or by a defective connector, is the second most common cause of embolism. Irrespective of the cause, the embolized fragment must be removed using vascular interventional radiological techniques in order to avoid severe thrombo-embolism. Thrombo-embolism can also result from secondary migration into a vein adjacent of a catheter that was properly positioned initially. This complication can be produced by forceful injections or by intrathoracic pressure changes generated by coughing or intrathoracic disorders. Clinicians should watch carefully for the evidence of central venous line dysfunction that usually accompanies these complications.

PMID: 10214621 [PubMed - indexed for MEDLINE]

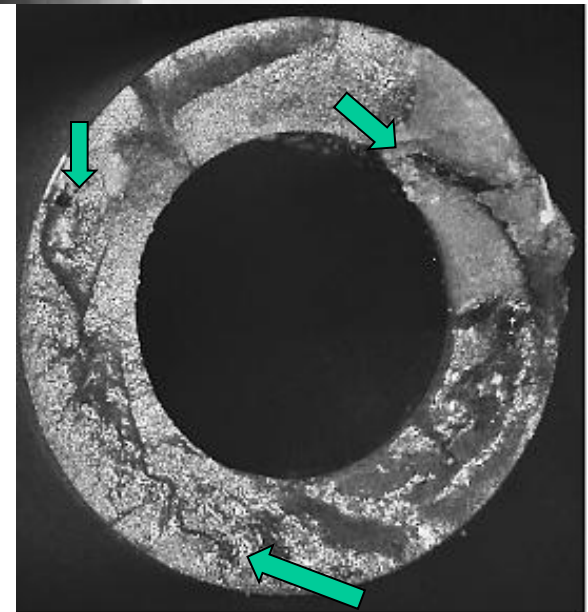
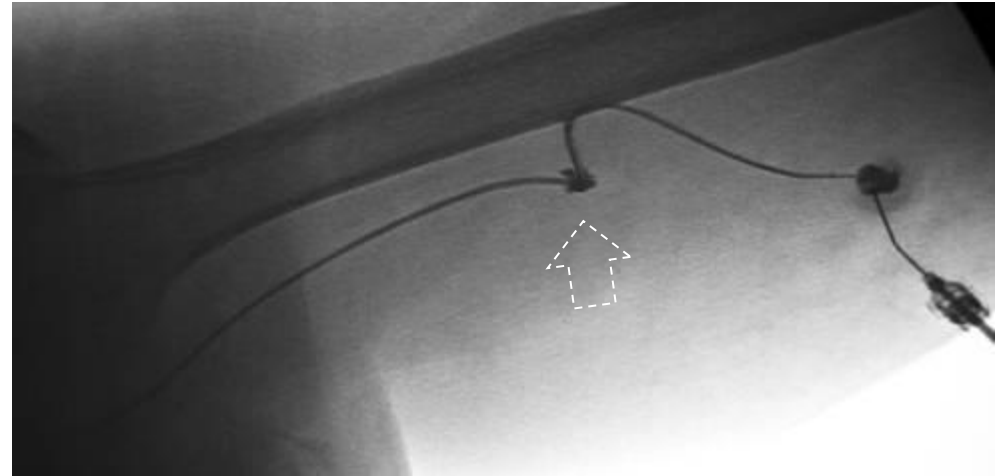
CCI Brachiales

Incidence de fissure / Fracture : 1,2%

Bras en ADDuction



Bras en ABDuction



Intravascular embolization of venous catheter--causes, clinical signs, and management: a systematic review.

Surov A, Wienke A, Carter JM, Stoevesandt D, Behrmann C, Spielmann RP, Werdan K, Buerke M.

Department of Radiology, Martin Luther University, Halle, Germany. alex.surov@medizin.uni-halle.de

Abstract

BACKGROUND: Intravascular embolization of device fragments is a rare but potentially serious complication.

METHOD: A systematic search of the PubMed and MEDLINE databases for all articles pertaining to central catheter related embolization published in English between 1985 and 2007 was made.

RESULTS: A total of 215 cases of intravenous catheter embolization were identified. There were 143 totally implanted venous devices (TIVD) or port catheters and 72 percutaneous venous catheters (PVC). Sites of catheter fragments following embolization were the superior vena cava or peripheral veins (15.4%), the right atrium (27.6%), right ventricle (22%), and pulmonary arteries (35%). Clinical signs of catheter embolization included catheter malfunction (56.3%), arrhythmia (13%), pulmonary symptoms (4.7%), and septic syndromes (1.8%), but 24.2% of cases were asymptomatic. The causes of intravascular catheter embolization were pinch-off syndrome (40.9%), catheter injury during explantation (17.7%), catheter disconnection (10.7%), and catheter rupture (11.6%). In 19.1% of cases, the cause of catheter embolization could not be identified. Most embolized catheter fragments (93.5%) were removed percutaneously. In 4.2% of cases, fragments were retained in the vascular bed; in 2.3%, embolized fragments were removed surgically via thoracotomy.

CONCLUSION: Intravascular catheter embolization can go undiagnosed for prolonged periods. Patients might be asymptomatic or may develop severe systemic clinical signs. The mortality rate is 1.8%. There were no significant differences in clinical features of embolization between TIVD and PVC groups.

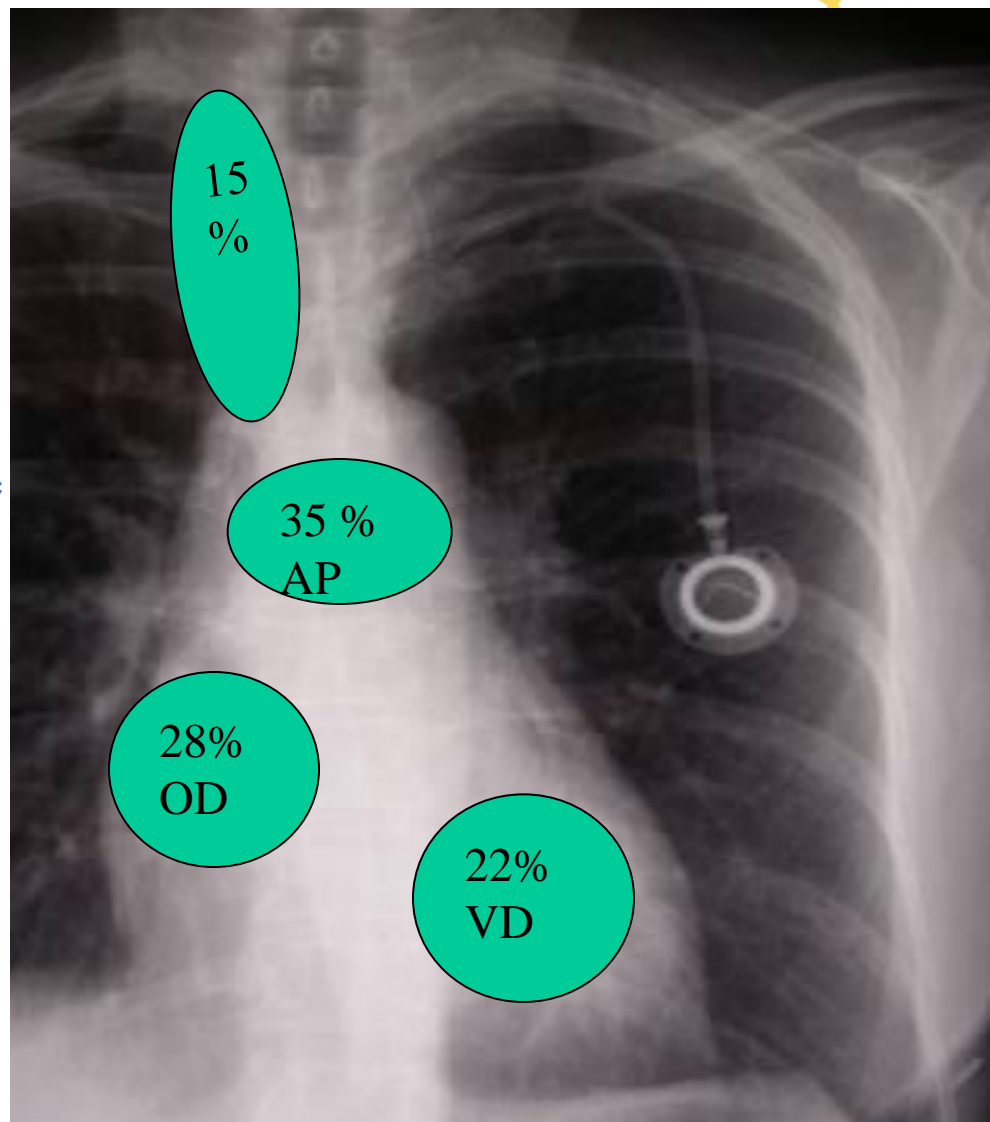
PUB: 19977304 (PubMed) - 15/11/14 - 14/11/14

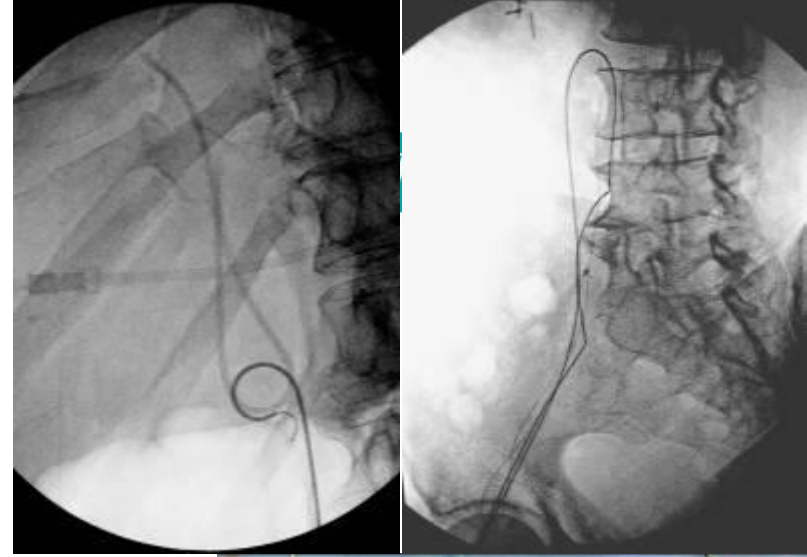
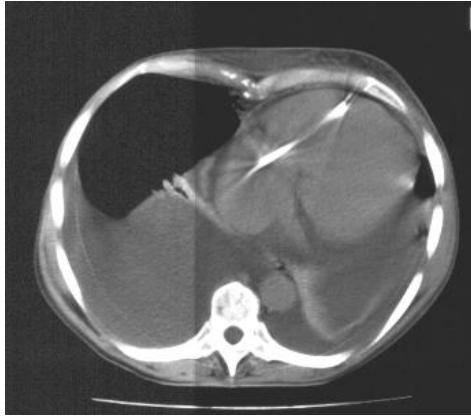
- Malfunction KT: 56%**
- Arrhythmia: 13%**
- Thoracic Symptoms: 5%**
- Sepsis shock 2%**
- Asymptomatic: 25%**

Embolized KT tip location

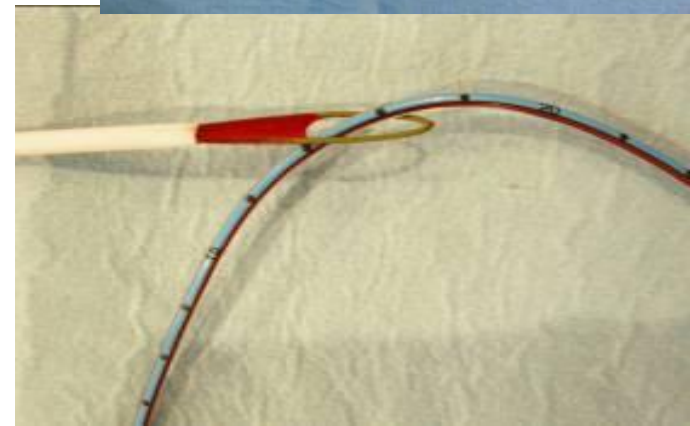
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- Abord Fémoral Dt
- Introducteur 6F
- Guide 0.0035 in-in.
- KT PigTail 5F
- X ray / Cardiac monitoring
- HDJ
- Succes: >95%



*Bessoud AJR 2003; Gebauer CVIR 2007,
Marcy Cath Cardiovasc Interv 2008*

- PIG TAIL
- LASSO

AJR Am J Roentgenol. 2003 Feb;180(2):527-32.

Experience at a single institution with endovascular treatment of mechanical complications caused by implanted central venous access devices in pediatric and adult patients.

Bessoud B, de Baere T, Kuoch V, Desruennes E, Cosset MF, Lassau N, Roche A

Department of Interventional Radiology, Institut Gustave Roussy, 39 rue Camille Desmoulins, 94805 Villejuif, France.

>95%

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Radiology

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Cardiovasc Intervent Radiol (2007) 30:216–221
DOI: 10.1007/s00270-006-0218-1

Radiological Interventions for Correction of Central Venous Port Catheter Migrations

Bernhard Gebauer, Ulf Karl Teichgräber, Petr Podrabsky, Michael Werk, Enrique Lopez Hänninen, Roland Felix

Department of Radiology, Charité, Universitätsmedizin-Berlin, Campus Virchow-Klinikum, Augustenburger Platz 1, 13353 Berlin, Germany

>93%

[Percutaneous removal of embolized port catheter: The standard option.](#)

Marcy PY, Thariat J, Amoretti N.

Catheter Cardiovasc Interv. 2008 Dec 1;72(7):1025-6. No abstract available.

PMID: 19004075 [PubMed] - Indexed for MEDLINE

Key Points

- **1-Dysfonction**
 - R () ; F ()
 - Douleur / Gonflement
 - Manchon de Fibrine
- **2-Malposition**
- **3-Perte d'intégrité** : Fissure /Fracture
- Test Seringue 10ml= (R) ? ; (F) ?;
Douleur, Gonflement
- Demander Cliché Thorax +/-
Opacification ° /- Doppler veineux