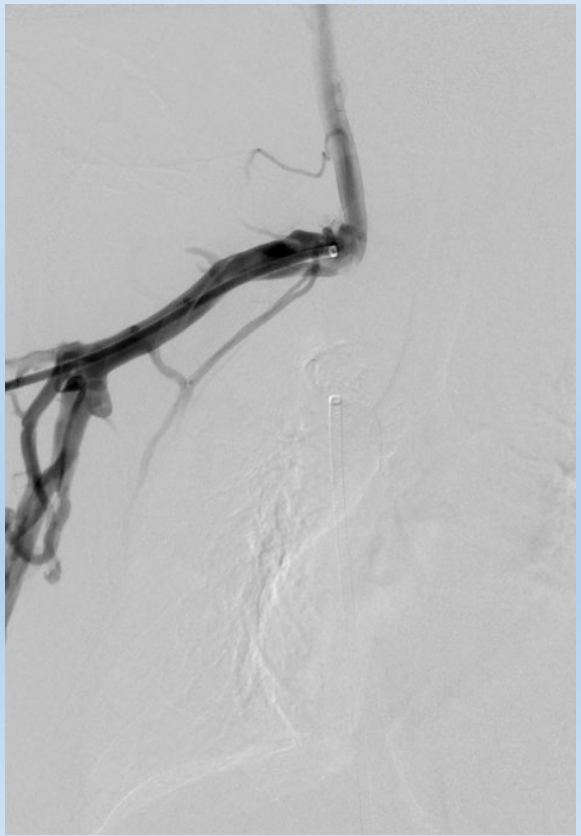
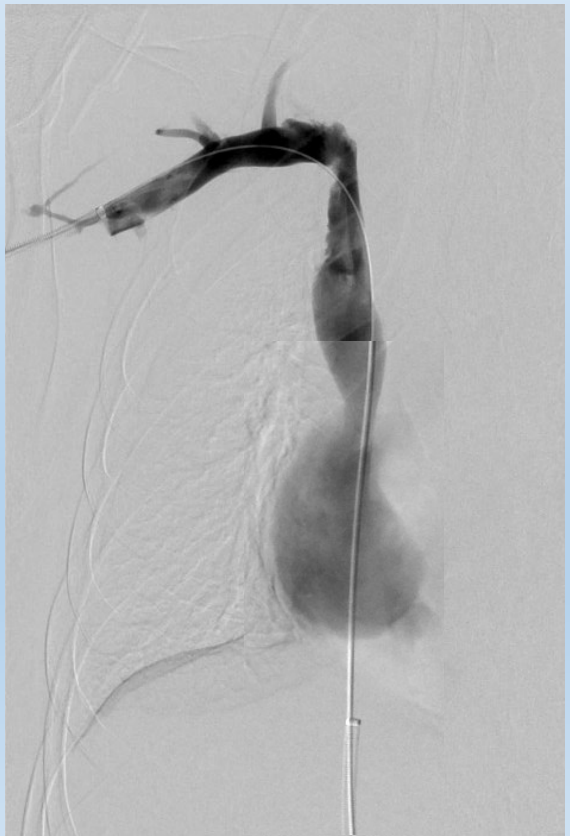
Prise en charge de la sténose veineuse centrale et de l'occlusion chez les patients en dialyse



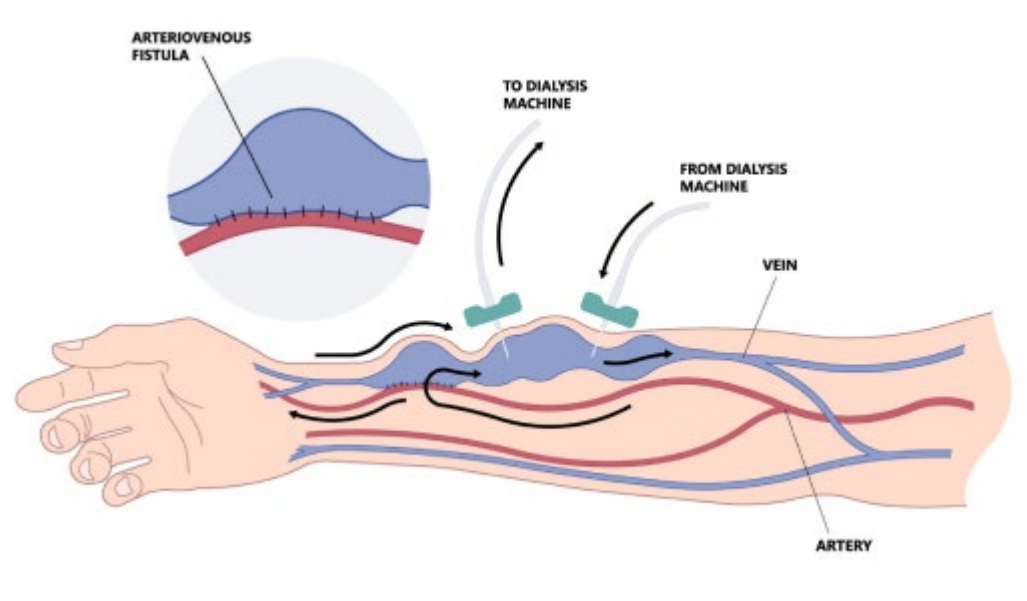


Valérie Monnin-Bares

CHU Montpellier

Introduction

FAV

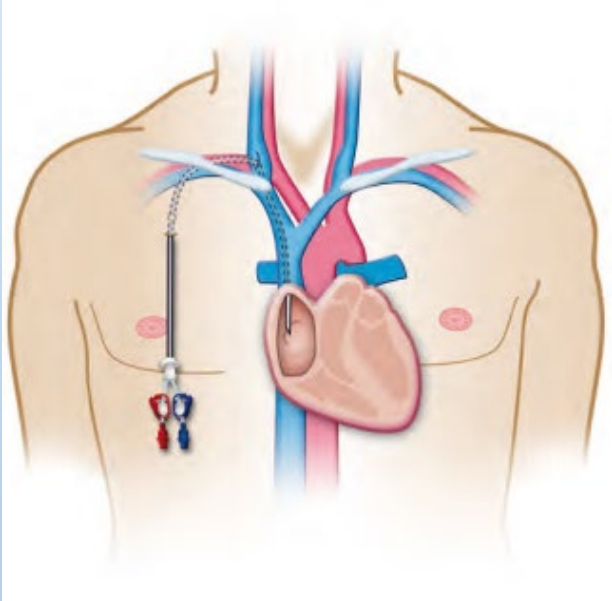


↪ *Forces de cisaillement induites par connexion artério-veineuse ⇨ ↗cellules musculaires lisses ⇨ hyperplasie intimale ⇨* ***sténose para-anastomotique ou veine de drainage***

Stress pariétal

STENOSES

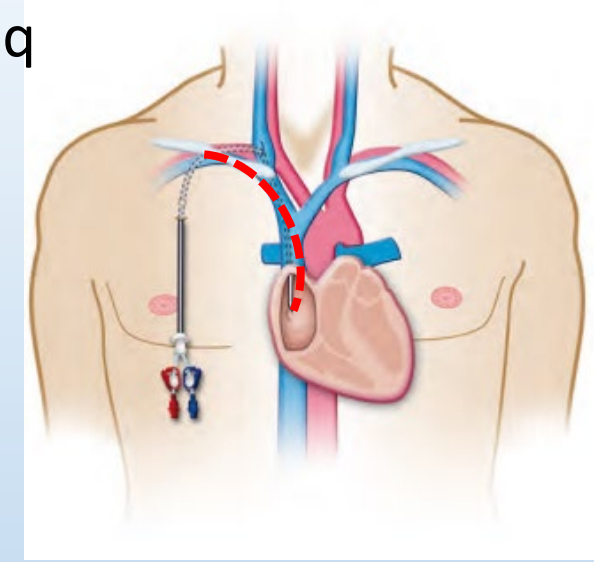
KT dialyse



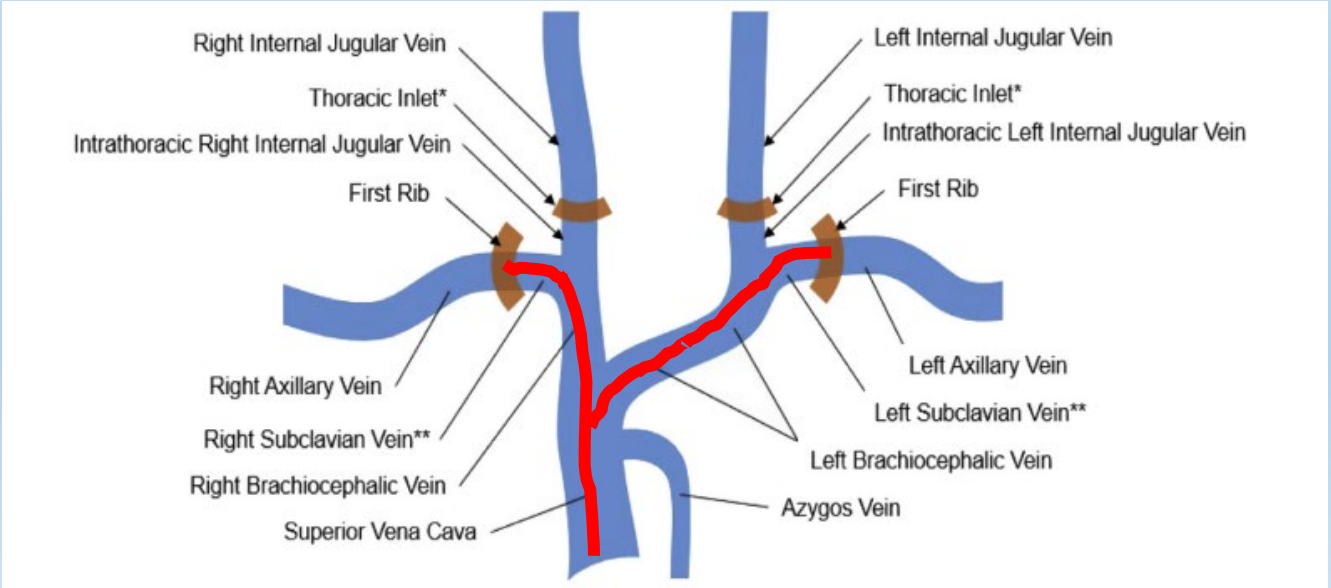
↪ *Contraintes mécaniques KT / paroi veineuse ⇨* ***Sténose veineuse centrale***

Physiopathologie des sténoses sur KT

- Contact prolongé KT avec paroi veineuse ⇨ érosion intima ⇨ dépôt pq et fibrine ⇨ thrombose et/ou sténose
- Turbulences de flux sanguin pendant les séances de dialyse, battements cardiaques, mobilisation KT lors des pansements (intérêt KT tunnélisé) ⇨agrégation plaquettaire à la surface du KT + dépôt de fibrine
- Mobilité permanente extrémité libre du KT ⇨ micro-traumatismes répétés de la paroi veineuse
- Traumatisme constant du KT sur courbure veineuse ⇨ zone préférentielle de sténose



STENOSE VEINEUSE CENTRALE :
Veines sous-clavières, brachio-céphaliques ou cave sup



STANDARDS OF PRACTICE

Society of Interventional Radiology Reporting Standards for Thoracic Central Vein Obstruction

J Vasc Interv Radiol 2018; 29:454–460

Obstruction unilat VJI ou VSC mais perméabilité TVBC homolat; perméabilité inconnue des autres troncs veineux sup

1a

Obstruction unilat VJI ou VSC mais perméabilité TVBC homolat; perméabilité inconnue des autres troncs veineux sup

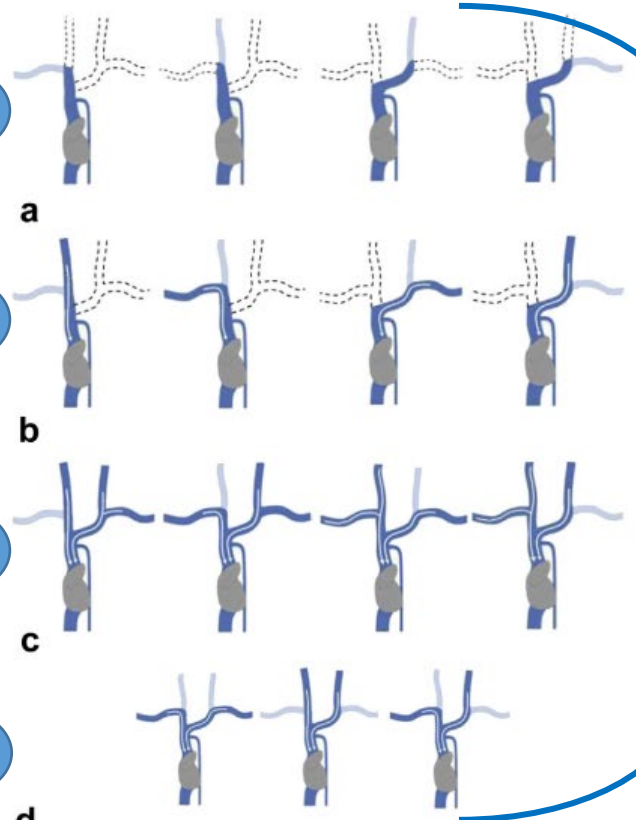
1b

Obstruction unilat VJI ou VSC mais perméabilité TVBC homolat; perméabilité controlat

1c

Obstruction bilat VJIx2 ou VSCx2 ou Obstruction VJI + VSC controlat mais perméabilité bilat TVBC

1d



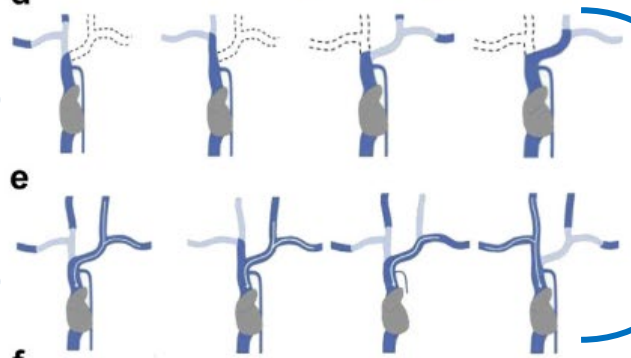
Type 1 : atteinte VJI ou VSC (perméabilité VCS et TVBC)

Obstruction unilat TVBC; perméabilité inconnue côté controlatéral

2a

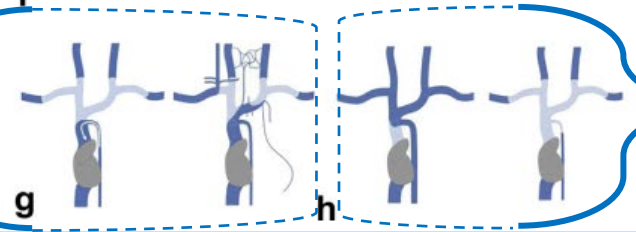
Obstruction unilat TVBC; perméabilité côté controlatéral

2b



Type 2 : atteinte unilat TVBC ou atteinte ipsilat VJI + VCS

Type 3 : atteinte bilat TVBC mais VCS perméable



Type 4 : atteinte VCS ± autres troncs veineux sup

Prise en charge
des sténoses/occlusions sur KT

- Indications thérapeutiques = Patient symptomatique :
  - **Œdème du bras** (décompensation +++ si FAV ⇨intérêt dépistage avant création FAV si ATCD de cathéter veineux central; possible dysfonction FAV avec ↗ temps saignement, ↘ débit)
  - **Syndrome cave supérieur** (VCS et /ou atteinte bilatérale des TVBC) : œdème visage, céphalées, orthopnée, toux, cyanose…

- **1ère intention = TTT endovasculaire** (angioplastie ± stenting) > chirurgie

From the Society for Vascular Surgery

Benign superior vena cava syndrome: Stenting is now the first line of treatment

Adnan Z. Rizvi, MD,[a] Manju Kalra, MBBS,[a] Haraldur Bjarnason, MD,[b] Thomas C. Bower, MD,[a] Cathy Schleck, BS,[c] and Peter Gloviczki, MD,[a] *Rochester, Minn*

Conclusions: OSR of benign SVC syndrome is effective, with durable long-term relief from symptoms. EVR is less invasive but equally effective in the mid-term, albeit at the cost of multiple secondary interventions, and is an appropriate primary treatment for benign SVC syndrome. OSR remains an excellent choice for patients who are not suitable for EVR or in whom the EVR fails. (J Vasc Surg 2008;47:372-80.)

- Contexte **chronique** : installation progressive des symptômes, sténose ± compensée par la collatéralité (≠ sténose maligne)⇨ Geste programmé, consultation préalable (risques / bénéfices attendus et limites du traitement endovasc)

Eur J Vasc Endovasc Surg (2017) 53, 238–254

REVIEW

A Review of Open and Endovascular Treatment of Superior Vena Cava Syndrome of Benign Aetiology

G.S. Sfyroeras [a,*], C.N. Antonopoulos [a], G. Mantas [a], K.G. Moulakakis [a], J.D. Kakisis [a], E. Brountzos [b], C.R. Lattimer [c], G. Geroulakos [a,c]

[a] Department of Vascular Surgery, National and Kapodistrian University of Athens Medical School, Attikon University Hospital, Athens, Greece
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[c] Department of Surgery and Cancer, Imperial College, London, UK

WHAT THIS PAPER ADDS

There is an increased incidence of benign causes of superior vena cava syndrome (SVCS) mainly as a result of the use of intravenous devices such as central venous catheters, pacemakers, and defibrillators. This review of the indications, technical details, and the results of open and endovascular treatment of benign SVCS shows that while surgery is used for more advanced cases of SVCS, both techniques appear to be effective in relieving clinical symptoms and there is a need for continuous follow-up and re-intervention to achieve good early and mid-term results.

Background: The widespread use of central venous catheters, ports, pacemakers, and defibrillators has increased the incidence of benign superior vena cava syndrome (SVCS). This study aimed at reviewing the results of open and endovascular treatment of SVCS.

Method: Medical literature databases were searched for relevant studies. Studies with more than five adult patients, reporting separate results for the SVC were included. Nine studies reported the results of endovascular treatment of SVCS including 136 patients followed up for a mean of 11–48 months. Causes of SVCS were central venous catheters and pacemakers (80.6%), mediastinal fibrosis (13.7%), and other (5.6%). Percutaneous transluminal angioplasty (PTA) and stenting was performed in 73.6%, PTA only in 17.3%, and thrombolysis, PTA, and stenting in 9%. Four studies reported the results of open repair of SVCS including 87 patients followed up between 30 months and 10.9 years. The causes were mediastinal fibrosis (58.4%), catheters and pacemakers (28.5%), and other (13%). Operations performed included a spiral saphenous interposition graft, other vein graft, PTFE graft, and human allograft. Thirteen patients required re-operations (15%) before discharge mainly for graft thrombosis.

Results: In the endovascular group technical success was 95.6%. Thirty day mortality was 0%. Regression of symptoms was reported in 97.3%. Thirty-two patients (26.9%) underwent 58 secondary procedures. In the open group the 30 day mortality was 0%. Symptom regression was reported in 93.5%. Twenty-four patients (28.4%) underwent a total of 33 secondary procedures.

Conclusions: Endovascular is the first line treatment for SVCS caused by intravenous devices, whereas surgery is most often performed for mediastinal fibrosis. Both treatments show good results regarding regression of the symptoms and mid-term primary patency, with a significant incidence of secondary interventions.

Article history: Received 23 May 2016, Accepted 13 November 2016, Available online 19 December 2016
Keywords: Superior vena cava syndrome, Thrombosis, Obstruction, Endovascular treatment, Surgical treatment

Table 3. Pooled primary patency rates for endovascular and open surgica

Month	Endovascular repair	
	Pooled primary patency %, (95% CI)	Heterogeneity
1	90.7 (80.9–96.6)	$I^2 = 0\%$, $p = .8$
2	85.4 (75.5–92.4)	$I^2 = 20.1\%$, $p = .3$
4	76.9 (65.4–86.1)	$I^2 = 47.8\%$, $p = .1$
8	76.0 (62.8–86.3)	$I^2 = 0\%$, $p = .8$
12	71.2 (56.6–83.1)	$I^2 = 0\%$, $p = .7$
26	58.1 (33.9–80.4)	$I^2 = 68.6\%$, $p = .04$
36	48.0 (34.2–62.9)	$I^2 = 0\%$, $p = .4$
48		
60		

Cardiovasc Intervent Radiol (2022) 45:1236–1254
https://doi.org/10.1007/s00270-022-03178-z

CIRSE

REVIEW VENOUS INTERVENTIONS

Endovascular Stenting in Superior Vena Cava Syndrome: A Systematic Review and Meta-analysis

Eri Yin-Soe Aung[1] · Maha Khan[1] · Norman Williams[2] · Usman Raja[3] · Mohamad Hamady[4]

Received: 20 June 2021 / Accepted: 15 May 2022 / Published online: 12 July 2022

Abstract

Purpose Endovascular stenting has been used to manage superior vena cava syndrome for several decades and has become standard firstline practice. This study aims to investigate the outcomes of endovascular stenting in the management of superior vena cava syndrome (SVCS).

Methods MEDLINE, EMBASE and PUBMED online databases were searched, with studies involving more than ten adult patients included. Studies identified spanned 27 years, from 1993 to 2020. Meta-analyses were performed based on Clopper–Pearson estimation.

Results Fifty-four studies were identified, for a total of 2249 patients, of which 2015 had malignant SVCS and 222 benign SVCS. Pooled technical success and clinical success rates were 96.8% (95% CI 96.0–97.5%) and 92.8% (95% CI 91.7–93.8%). Technical success and clinical success rates for studies investigating benign SVCS alone were identical at 88.8% (95% CI 83.0–93.1%). Pooled patency remained above 90% for the first year. Average complication and re-intervention rates were 5.78% (SD = 9.3182) and 9.11% (SD = 11.190).

Conclusions This review confirms the effectiveness of endovascular stenting in managing SVCS. Further directions of research may include specific outcomes of endovascular stenting in benign SVCS, and the impact of procedural characteristics, such as the use of anticoagulation and type of stent used, on outcomes.

Level of Evidence Level III, systematic review of retrospective cohort studies.

Keywords Endovascular stenting · Superior vena cava syndrome · Systematic review · Meta-analysis

Introduction

Superior vena cava syndrome (SVCS) arises when the superior vena cava (SVC) becomes partially or completely obstructed. Depending on the speed of onset, allowing the development of venous collaterals over time, the symptomology of SVCS ranges from asymptomatic to minor symptoms (e.g. headache, cough or neck vein distension), to acute respiratory compromise and rarely, mortality from laryngeal or cerebral oedema [1–3].

2249 pts : **222** pts avec syndrome cave sup d'origine bénigne versus 2015 maligne

Succès technique global = 97% mais **88,8%** pour syndrome cave sup d'origine bénigne

Problématique spécifique en contexte bénin :

- *Indication anticoagulation*
- *Type de stent*
- *Résultats (± long terme)*

Cardiovasc Intervent Radiol (2018) 41:712–717
https://doi.org/10.1007/s00270-018-1906-3

CIRSE CrossMark

Comparison of Covered Versus Uncovered Stents for Benign Superior Vena Cava (SVC) Obstruction

Mustafa M. Haddad[1] · Benjamin Simmons[2] · Ian R. McPhail[3] · Manju Kalra[4] · Melissa J. Neisen[1] · Matthew P. Johnson[5] · Andrew H. Stockland[1] · James C. Andrews[1] · Sanjay Misra[1] · Haraldur Bjarnason[1]

Received: 19 December 2017 / Accepted: 17 February 2018 / Published online: 28 February 2018

ABSTRACT

Purpose To identify whether long-term symptom relief and stent patency vary with the use of covered versus uncovered stents for the treatment of benign SVC obstruction.

Methods and Materials We retrospectively identified all patients with benign SVC syndrome treated to stent placement between January 2003 and December 2015 ($n = 59$). Only cases with both clinical and imaging follow-up were included ($n = 47$). In 33 (70%) of the patients, the obstruction was due to a central line or pacemaker wires, and in 14 (30%), the cause was fibrosing mediastinitis. Covered stents were placed in 17 (36%) of the patients, and 30 (64%) patients had an uncovered stent. Clinical and treatment outcomes, complications, and the percent stenosis of each stent were evaluated.

Results Technical success was achieved in all cases at first attempt. Average clinical and imaging follow-up in years was 2.7 (range 0.1–11.1) (covered) and 1.7 (range 0.2–10.5) (uncovered), respectively. There was a significant difference ($p = 0.044$) in the number of patients who reported a return of symptoms between the covered (5/17 or 29.4%) and uncovered (18/30 or 60%) groups. There was also a significant difference ($p = < 0.001$) in the mean percent stenosis after stent placement between the covered [17.9% (range 0–100) ± 26.2] and uncovered [48.3% (range 6.8–100) ± 33.5] groups. No significant difference ($p = 0.227$) was found in the time (days) between the date of the procedure and the date of clinical follow-up where a return of symptoms was reported [covered: 426.6 (range 28–1554) ± 633.9 and uncovered 778.1 (range 23–3851) ± 1066.8]. One patient in the uncovered group had non-endovascular surgical intervention (innominate to right atrial bypass), while none in the covered group required surgical intervention. One major complication (SIR grade C) occurred that consisted of a pericardial hemorrhagic effusion after angioplasty that required covered stent placement. There were no procedure-related deaths.

Conclusion Both covered and uncovered stents can be used for treating benign SVC syndrome. Covered stents, however, may be a more effective option at providing symptom relief and maintaining stent patency if validated by further studies.

Keywords SVC syndrome · Benign · Stent

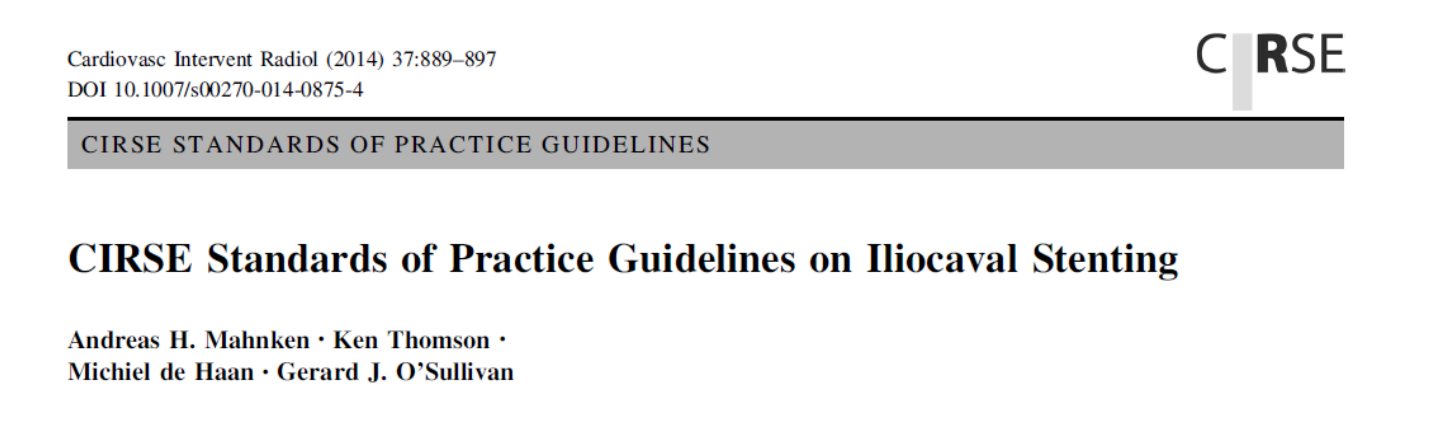
Prior material was presented at SIR 2017.

Intérêt du stent couvert?

- 47/59 patients inclus (suivi clinique et imagerie): 17 /stent couvert vs 30 /stent nu (libre choix de l'opérateur)
- Récidive symptomatique 29% pour stent couvert vs 60%
- Sténose intra stent 18% pour stent couvert vs 48%
- ***Supériorité stent couvert???***

Traitement anticoagulant?

- Pas de consensus pour indication d'anticoagulant après stenting VCS (bénin ou malin)
- *Mais anticoagulation recommandée après recanalisation ilio-cave…*


Cardiovasc Intervent Radiol (2014) 37:889–897
DOI 10.1007/s00270-014-0875-4

CIRSE

CIRSE STANDARDS OF PRACTICE GUIDELINES

CIRSE Standards of Practice Guidelines on Iliocaval Stenting

Andreas H. Mahnken · Ken Thomson ·
Michiel de Haan · Gerard J. O'Sullivan

⇨ *Par extension, assez largement utilisée après stent VCS*

- Contexte néoplasique : anticoagulation logiquement indiquée si thrombose cruorique ou thrombophilie para-néoplasique
- Sténose / occlusion **bénigne** : intérêt discutable…

J Vasc Interv Radiol 2018; 29:1741–1747

CLINICAL STUDY

Is Long-Term Anticoagulation Required after Stent Placement for Benign Superior Vena Cava Syndrome?

Mustafa M. Haddad, MD, Scott M. Thompson, MD, PhD, Ian R. McPhail, MD, Emily C. Bendel, MD, Manju Kalra, MBBS, Andrew H. Stockland, MD, Newton B. Neidert, MD, James C. Andrews, MD, Sanjay Misra, MD, Haraldur Bjarnason, MD, and Melissa J. Neisen, MD

ABSTRACT

Purpose: To identify whether symptom relief and stent patency vary with use of long-term anticoagulation after stent placement for benign superior vena cava (SVC) syndrome.

Materials and Methods: Patients with benign SVC syndrome treated with stent placement between January 1999 and July 2017 were retrospectively identified (n = 58). Average age was 49 years (range, 24–80 y); 34 (58%) were women, and 24 (42%) were men. Average follow-up was 2.4 years (range, 0.1–11.1 y, SD 2.6). Of cases, 37 (64%) were due to a long-term line/pacemaker, and 21 (36%) were due to fibrosing mediastinitis. After stent placement, 36 (62%) patients were placed on long-term anticoagulation, and 22 (38%) were not placed on anticoagulation. Percent stenosis was evaluated on follow-up imaging by dividing smallest diameter of the stent by a normal nonstenotic segment of the stent and multiplying by 100.

Results: Technical success was achieved in all cases. There was no significant difference in number of patients who reported a return of symptoms characteristic of benign SVC syndrome between the anticoagulated (16 of 36; 44.4%) and nonanticoagulated (11 of 22; 50%) groups ($P = .68$). There was no significant difference in the mean percent stenosis between the anticoagulated (40.4% ± 34.7% [range, 0–100%]) and nonanticoagulated (32.1% ± 29.2% [range, 1.7%–100%]) groups ($P = .36$). No significant difference was found in the time (days) between date of procedure and date of return of symptoms (anticoagulated, 735.9 d ± 1,003.1 [range, 23–3,851 d]; nonanticoagulated, 478 d ± 826.6 [range, 28–2,922 d]) ($P = .49$). There was no difference in primary patency between groups ($P = .59$). Finally, 1 patient (2.8%) in the anticoagulated group required surgical intervention, whereas none in the nonanticoagulated group required surgical intervention.

Conclusions: No significant difference was observed in clinical and treatment outcomes in patients who did and did not receive anticoagulation after stent placement for benign SVC syndrome. Management of benign SVC syndrome after stent placement may not require anticoagulation if confirmed by additional studies.

ABBREVIATION

SVC = superior vena cava

- 58 patients traités par angioplastie + stent pour syndrome cave sup bénin : **36** pts (62%) sous anticoag au long cours versus **22** pts (38%) sans anticoag

Table 2. Pre-existing Conditions Requiring Anticoagulation after Stent Placement

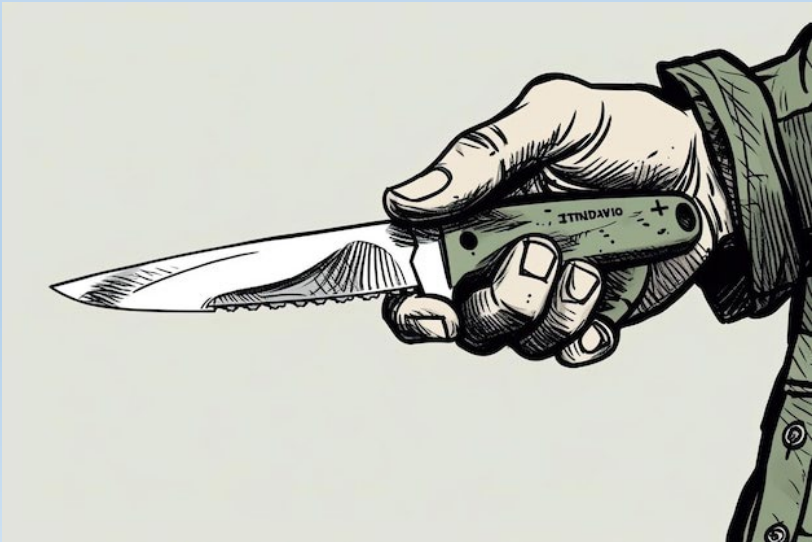
Condition Requiring Anticoagulation	N
DVT and/or PE	10
Atrial fibrillation	6
Cardiac valve prosthesis	1
Hypercoagulable condition	2
Total	19

- Évaluation clinique M3, M6 et /an

- Pas de différence entre les 2 groupes
  - ⇨ Récidive symptomatique
  - ⇨ Récidive sténose
  - ⇨ Taux de réintervention (44% groupe anticoag vs 36%)

Occlusions réfractaires

- Échec technique de recanalisation standard
- Occlusion fibreuse sur KT +++
- Alternative ⇨ vivre avec ou pontage chirurgical…
- Ultime recours endovasculaire : Sharp recanalization



Sharp recanalization

- Double abord veineux (fémorale + jug ou brachiale)

- Placement d'un repère cible d'un côté (lasso) et progression du dispositif de recanalisation (**guide RF, aiguille trans-septale, TIPS, Chiba**…) à l'aveugle dans alignement de la cible

- Plus simple de placer le repère par voie basse et avancer par voie haute (sens du flux par voie haute et ↗ mouvements cardiaques par voie basse avec risque faux trajet)

- Occlusion parfois longue (jusqu'à 10 cm)

Radiofrequency Wire for the Recanalization of Central Vein Occlusions that Have Failed Conventional Endovascular Techniques

Marcelo Guimaraes, MD, Claudio Schonholz, MD, Christopher Hannegan MD, Michael Bret Anderson, MD, June Shi, RN, and Bayne Selby Jr, MD

Guide RF

ABSTRACT

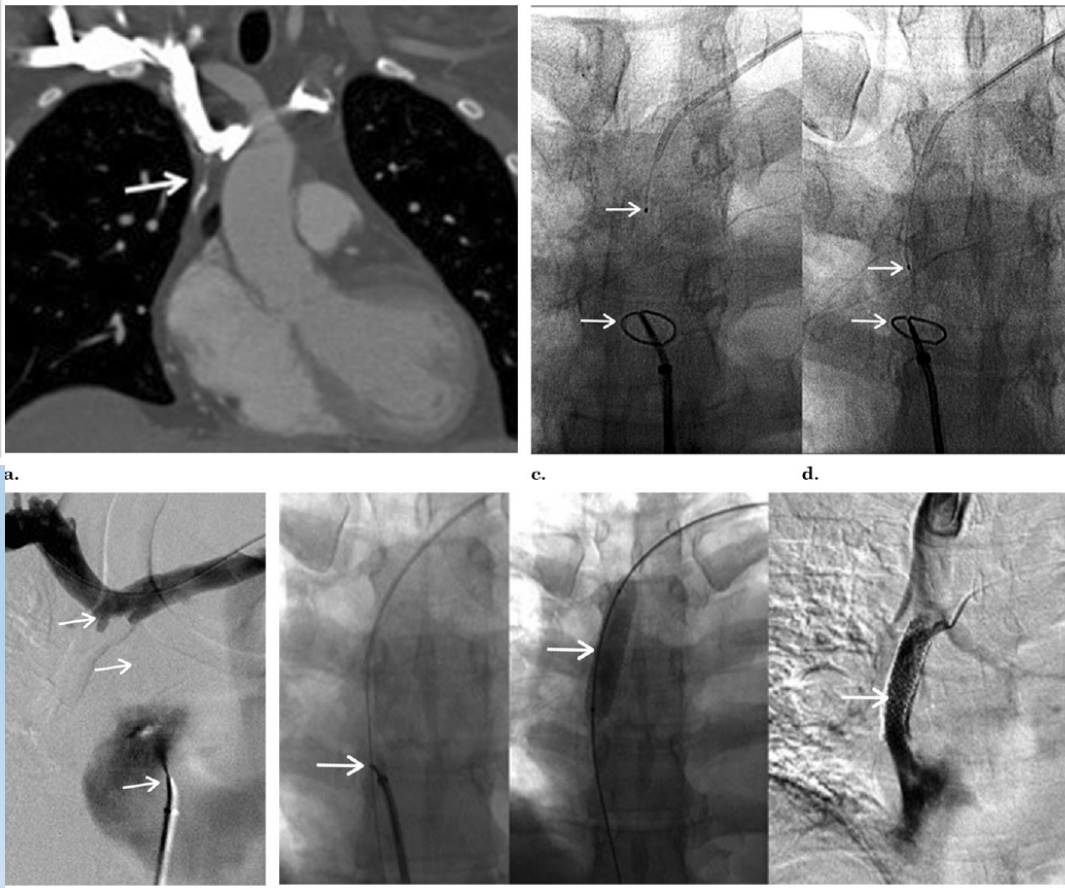
Purpose: To report the technique and acute technical results associated with the PowerWire Radiofrequency (RF) Guidewire used to recanalize central vein occlusions (CVOs) after the failure of conventional endovascular techniques.

Materials and Methods: A retrospective study was conducted from January 2008 to December 2011, which identified all patients with CVOs who underwent treatment with a novel RF guide wire. Forty-two symptomatic patients (with swollen arm or superior vena cava [SVC] syndrome) underwent RF wire recanalization of 43 CVOs, which were then implanted with stents. The distribution of CVOs in central veins was as follows: six subclavian, 29 brachiocephalic, and eight SVC. All patients had a history of central venous catheter placement. Patients were monitored with regular clinical evaluations and central venography after treatment.

Results: All 42 patients had successful recanalization of CVOs facilitated by the RF wire technique. There was one complication, which was not directly related to the RF wire: one case of cardiac tamponade attributed to balloon angioplasty after stent placement. Forty of 42 patients (95.2%) had patent stents and were asymptomatic at 6 and 9 months after treatment.

Conclusions: The present results suggest that the RF wire technique is a safe and efficient alternative in the recanalization of symptomatic and chronic CVOs when conventional endovascular techniques have failed.

J Vasc Interv Radiol 2012; 23:1016–1021



42 pts avec atteinte VSC/TVBC/VCS après échec reca standard
=> 95% succès, 1 cas tamponnade

Cardiovasc Intervent Radiol (2021) 44:784–788
https://doi.org/10.1007/s00270-020-02728-7

TECHNICAL NOTE VENOUS INTERVENTIONS

Sharp Recanalization of Chronic Central Venous Occlusions of the Thorax Using a Steerable Coaxial Needle Technique from a Supraclavicular Approach

Christopher J. R. Gallo[1] · James Ronald[1] · Waleska M. Pabon-Ramos[1] · Paul V. Suhocki[1] · Alan A. Sag[1] · Jonathan G. Martin[1] · Tony P. Smith[1] · Charles Y. Kim[1]

36 pts
94% succès technique
1 hémothorax / stent couvert

Received: 12 August 2020 / Accepted: 25 November 2020 / Published online: 3 January 2021

Abstract

Purpose To evaluate the technical success and safety of a steerable coaxial sharp recanalization technique that utilizes routine needles in patients with refractory thoracic central venous occlusions.

Materials and Methods This retrospective study was performed on 36-attempted sharp recanalizations in 35 patients (mean age 50 years, 23 male) performed via a supraclavicular approach. In all cases, an 18-gauge trocar needle was custom curved to provide directional control during fluoroscopic triangulation. A 22-gauge Chiba needle was then advanced coaxially across the occlusion. A tractogram was performed to assess for traversal of unintended structures. Procedures were completed by catheter placement, angioplasty, or stenting follow successful recanalizations.

Results Sharp recanalization using this steerable coaxial needle technique demonstrated a technical success rate of 94% (34/36). The mean occlusion length was 30 mm (range 3–53 mm). In 11 patients, success was achieved using this technique after failure of other advanced techniques. In five procedures, stent interstices were traversed. Sharp recanalization was the direct cause of one major complication consisting of pleural transgression causing mild hemothorax treated successfully with a stent graft.

Conclusion The proposed technique is effective and safe for patients who have failed traditional blunt recanalization techniques.

Level of Evidence Level 4, Case Series.

Introduction

Recanalization of chronic thoracic central venous occlusions is routinely achieved using blunt guidewire and catheter techniques. However, refractory lesions may require advanced recanalization techniques utilizing often costly devices such as transjugular intrahepatic portosystemic shunt (TIPS) kits, transseptal needles, or radiofrequency wires with technical success rates ranging from 83 to 100% and major complication rates ranging from 0 to 29% [1–13]. The authors have utilized an inexpensive coaxial sharp recanalization technique in which an 18-gauge trocar needle is manually curved to provide a customized degree of directional control from a supraclavicular approach. A 22-gauge needle is then advanced coaxially through the curved trocar needle and across the occlusion during fluoroscopic triangulation. The purpose of

Cardiovasc Intervent Radiol (2018) 41:73–79
https://doi.org/10.1007/s00270-017-1787-x

CLINICAL INVESTIGATION VENOUS INTERVENTIONS

Success Rate and Complications of Sharp Recanalization for Treatment of Central Venous Occlusions

Emil I. Cohen[1] · Christopher Beck[1] · Jesse Garcia[2] · Ryan Muller[2] · Hyun J. Bang[2] · Keith M. Horton[2] · Farris Hakki[2]

39 pts
95% succès
2 hémopéricardes /stent couvert

Received: 5 April 2017 / Accepted: 31 August 2017 / Published online: 6 September 2017

Abstract

Purpose To evaluate success and safety of needle (sharp) recanalization as a method to re-establish access in patients with chronic central venous occlusions.

Materials and Methods Thirty-nine consecutive patients who underwent this procedure were retrospectively reviewed to establish success rate and associated complications. In all cases, a 21- or 22-gauge needle was used to restore connection between two chronically occluded segments after conventional wire and catheter techniques had failed. The needle was guided toward a target placed through a separate access by fluoroscopic guidance. When successful, the procedure was completed by placing a catheter, ballooning the segment, and/or stenting.

Results The procedure was successful in 37 of the 39 patients (95%). The vast majority of the treated lesions were in the SVC and/or right innominate vein. Occlusions ranged in length between 10 and 110 mm, and the average length of occluded venous segment was 40 mm in the treated group. There were four minor (SIR classification B) complications involving pain management after the procedure. There were two major (SIR classification D) complications both of which involved hemorrhage into the pericardium treated with covered stents (5.1%).

Conclusions Sharp recanalization is a viable procedure for patients who have exhausted standard wire and catheter techniques. The operator performing this procedure should be familiar with potential complications so that they can be addressed urgently if needed.

Keywords Venous occlusion · Sharp recanalization · SVC syndrome

Introduction

Patients on chronic hemodialysis frequently develop central venous occlusions with a reported incidence of 29% [1]. Symptomatic central venous obstruction is less frequent in patients who are not dialysis dependent and can be caused by central line placement, malignant obstructions from tumors, and mediastinal fibrosis. Venous occlusions are associated with increased hemorrhage from the dialysis shunt after cannulation, upper extremity and facial swelling, and an increased rate of shunt thrombosis [2]. Treatment of these occlusions traditionally involves wire and catheter techniques followed by angioplasty with or without stenting. Patients who fail traditional recanalization methods have limited treatment options such as femoral catheters and grafts as well as last resort sites such as translumbar and transhepatic venous access. These options expose patients to increased risks of complications such as infection [3].

Gupta et al. [4] and Ferrell et al. [5] first described sharp

Aiguille Chiba

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CLINICAL INVESTIGATION VENOUS INTERVENTIONS

Approach, Technical Success, Complications, and Stent Patency of Sharp Recanalization for the Treatment of Chronic Venous Occlusive Disease: Experience in 123 Patients

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Abstract

Purpose To report the technical success and complications following sharp recanalization of chronic venous occlusions.

Materials and Methods A total of 123 patients, including 75 (61.0%) men and 48 (39.0%) women, with mean age of 50.5 ± 17.5 years (range 19–90 years), underwent sharp recanalization of chronic venous occlusions. The etiologies of occlusion were chronic deep venous thrombosis (n = 43; 35.0%), prior central venous access (n = 39; 31.7%), indwelling cardiac leads (n = 21; 17.1%), and occluded venous stents (n = 20; 16.3%). The sites of venous occlusion included 59/123 (48.0%) thoracic central veins, 37 (30.1%) non-thoracic central veins, and 27 (22.0%) peripheral veins. Median length of occlusion was 3.2 ± 1.4 cm (range 1.3–10.9 cm).

Results Sharp recanalization was most commonly attempted with transseptal needles in 108/123 (87.8%), with a mean number of 1.2 ± 0.4 crossing devices per patient (range 1–4 devices). Targeting devices included a loop snare (n = 92; 74.8%), partially deployed Wallstent (n = 21; 17.1%), partially deployed Amplatzer vascular plug (n = 8; 6.5%), and an angioplasty balloon (n = 3; 2.4%). Technical success was achieved in 111 (90.2%) patients. There were 3 (2.4%) severe, 1 (0.8%) moderate, and 7 (5.7%) minor adverse events. Severe adverse events included 1 case each of pericardial tamponade, hemothorax, and inferior vena cava filter occlusion. 88 (71.5%) patients had venous stents placed; at the last follow-up examination, 68/86 (79.0%) stents were patent.

Conclusion Sharp recanalization has a high technical success and low rate of adverse events in the recanalization of chronic venous occlusions.

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s00270-018-2090-1) contains supplementary material, which is available to authorized users.

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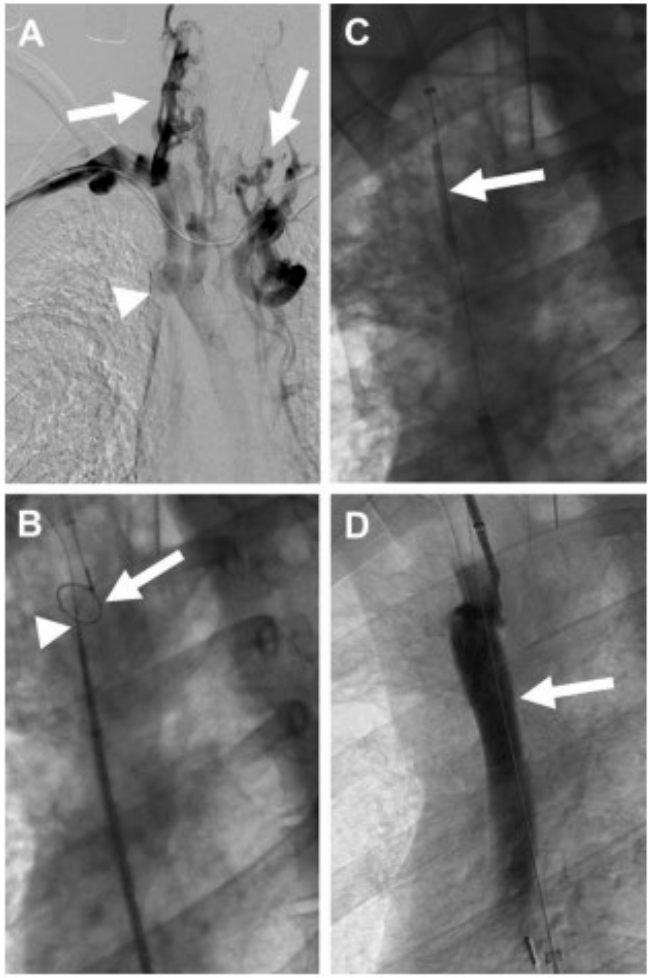

Fig. 1 A 25-year-old man with cystic fibrosis and multiple prior central venous lines and ports, complicated by chronic occlusion of the superior vena cava (SVC). Patient presented with chronic SVC syndrome. **A** Central venogram demonstrating occlusion of the brachiocephalic vein and superior vena cava with collaterals in the neck (white arrows) as well as prominent filling of the azygous vein (white arrowhead). **B** A BRK-1 (white arrowhead) needle (St. Jude Medical) was used to target an Amplatz Gooseneck snare (ev3; Paris, France) positioned from a right neck approach (white arrow) for sharp recanalization. **C** Balloon dilatation of the recanalized segment was performed (white arrow). **D** Stent-graft reconstruction was performed using a Palmaz 3110 (Cordis) and an overlapping 16 × 60 mm Wallstent Endoprosthesis (Boston Scientific) which were dilated to 16 mm. Following stent reconstruction, contrast injection revealed free flow through the superior vena cava (white arrow)

Aiguille transseptale

123 pts dont 48% atteinte thoracique

Succès technique 90%

1 tamponnade péricardique + 1 hémothorax

CONCLUSION

- Occlusions bénignes fibreuses sur KT dialyse = véritable **challenge** du traitement endovasculaire ⇨ arsenal thérapeutique de + en + large dans le matériel de recanalisation

- **Amélioration** clinique immédiate

- **Récidives** fréquentes à distance ⇨ reprise endovasculaire

- **Guidelines**?
  - ⇨ PTA vs stent
  - ⇨ Type de stent : auto-expansible / sur ballon / stent couvert
  - ⇨ Anticoagulation post stenting