



## The dark side of the guidelines

1<sup>st</sup> Interventional Radiologist under 40 Meeting

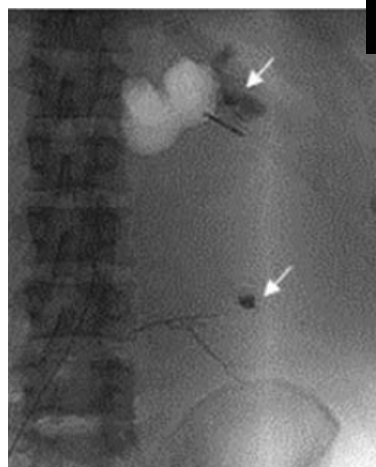
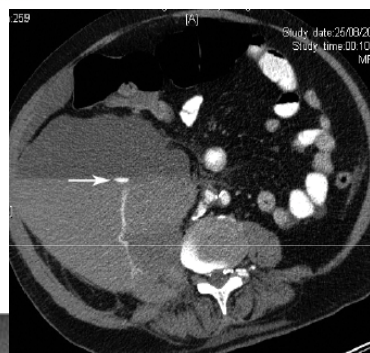
*Emergencies in Interventional Radiology*



21-23 Novembre 2016

Bologna

Società Medica Chirurgica - Palazzo dell'Archiginnasio



### IV Sessione

Trattamento delle emorragie  
(traumatiche e non-traumatiche)

# Emorragie retroperitoneali

*Giulio Lombardi*



SAN GIUSEPPE MOSCATI - AVELLINO

AZIENDA OSPEDALIERA DI RILIEVO NAZIONALE E DI ALTA SPECIALIZZAZIONE

*U.O.C. Radiologia Direttore Dr C. Lombardi*

*U.O. Radiologia Intervetistica*

Ciascun relatore presenterà, per l'argomento affidatogli:

- le indicazioni alle procedure secondo linee guida e raccomandazioni internazionali basate sulle evidenze più forti della letteratura (RCT, studi osservazionali, etc);
- i protocolli esecutivi consolidati e pubblicati;
- i risultati delle metodiche supportati dai più recenti dati di letteratura.

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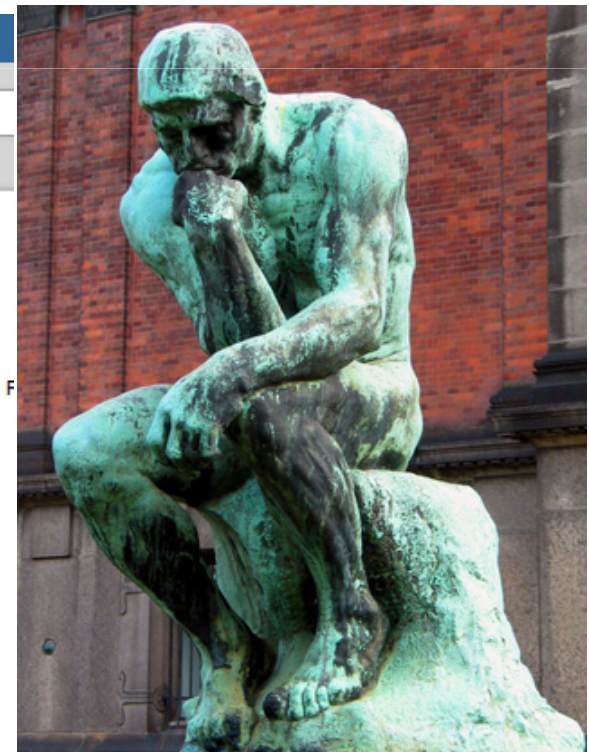
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Abstract

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## Role of percutaneous transcatheter embolization (PTE) in the treatment of spontaneous bleeding associated with anticoagulant therapy

Anna Maria Ierardi · Chiara Floridi · Carlo Pellegrino · Mario Petrillo · Antonio Pinto · Isabella Iadevito · Erica Golia · Alessandra Perillo · Roberto Grassi · Antonio Rotondo · Gianpaolo Carrafiello

Llitijs et al. *Ann. Intensive Care* (2016) 6:8  
DOI 10.1186/s13613-016-0106-z

### RESEARCH

 **Annals of Intensive Care**  
a SpringerOpen Journal

### Open Access



## Ilio-psoas hematoma in the intensive care unit: a multicentric study

J. F. Llitijs<sup>1,2\*</sup>, F. Daviaud<sup>1,2</sup>, D. Grimaldi<sup>1,2</sup>, S. Legriel<sup>3</sup>, J. L. Georges<sup>4</sup>, E. Guerot<sup>2,5</sup>, J. P. Bedos<sup>3</sup>, J. Y. Fagon<sup>2,5</sup>, J. Charpentier<sup>1,2</sup> and J. P. Mira<sup>1,2</sup>

## Spontaneous non-aortic retroperitoneal hemorrhage: etiology, imaging characterization and impact of MDCT on management. A multicentric study

Oliviero Caleo · Giorgio Bocchini · Sonia Paoletta · Anna Maria Ierardi · Alessandra Scionti · Michele Tonerini · Franco Guida · Giacomo Sica · Alessandra Perillo · Gianpaolo Carrafiello · Mariano Scaglione

## Transcatheter Arterial Embolization of Spontaneous Life-Threatening Extraperitoneal Hemorrhage

Cormac Farrelly, MD, Nicholas Fidelman, MD, Jeremy C. Durack, MD, MS, Eugene Hagiwara, MD, and Robert K. Kerlan, Jr, MD

## Quality Improvement Guidelines for Percutaneous Transcatheter Embolization

Society of Interventional Radiology  
Standards of Practice Committee



John F. Angle, MD, Nasir H. Siddiqi, MD, Michael J. Wallace, MD, Sanjoy Kundu, MD, LeAnn Stokes, Joan C. Wojak, MD, and John F. Cardella, MD

## Endovascular treatment of spontaneous extraperitoneal haemorrhage: immediate and long-term clinical efficiency

Giuseppe Guzzardi · Rita Fossaceca · Paolo Cerini · Marco De Bonis · Emanuele Malatesta · Ignazio Divenuto · Mariangela Lombardi · Alessandro Carriero

*Pak J Med Sci*. 2013 Apr; 29(2): 573–576.

PMCID: PMC3805

## The diagnosis and treatment of traumatic retroperitoneal hematoma

Fengbiao Wang<sup>1</sup> and Fang Wang<sup>2</sup>



*Int J Clin Pract.* 2008 Oct;62(10):1804-13. Epub 2007 Oct 19.

### **Management of spontaneous and iatrogenic retroperitoneal haemorrhage: conservative management, endovascular intervention or open surgery?**

Chan YC<sup>1</sup>, Morales JP, Reidy JF, Taylor PR.

#### **⊕ Author information**

#### **Abstract**

**BACKGROUND:** Retroperitoneal haematoma is a rare clinical entity with variable aetiology, which is increasing in incidence mainly due to complications related to interventional procedures. There is no general consensus as to the best management plan for patients with retroperitoneal haematoma.

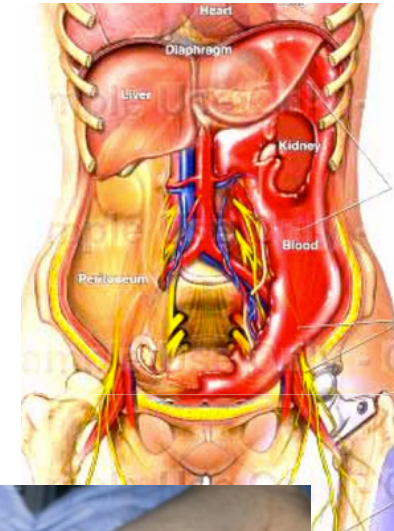
**METHODS:** A literature review was undertaken using MEDLINE, all relevant papers on retroperitoneal haemorrhage or haematoma were used.

**RESULTS:** The diagnosis is often delayed as symptoms are nonspecific. Retroperitoneal haematoma should be suspected in patients with significant groin, flank, abdominal, back pain or haemodynamic instability following an interventional procedure. Spontaneous haemorrhage usually occurs in patients who are anticoagulated. Multi-slice CT and arteriography are important for diagnosis. Most haemodynamically stable patients can be managed with fluid resuscitation, correction of coagulopathy and blood transfusion. Endovascular treatment involving selective intra-arterial embolisation or the deployment of stent-grafts over the punctured vessel is attaining an increasingly important role. Open repair of retroperitoneal bleeding vessels should be reserved for cases when there is failure of conservative or endovascular measures to control the bleeding. Open repair is also required if endovascular facilities or expertise is unavailable and in cases where the patient is unstable. If treated inappropriately, the mortality of patients with retroperitoneal haematoma remains high.

**CONCLUSION:** There is a lack of level I evidence for the best management plans for retroperitoneal haematoma, and evidence is based on small cohort series or isolated case reports. Conservative management should only be reserved for patients who are stable. Interventional radiology with intra-arterial embolisation or stent-grafting is the treatment of choice. Open surgery is now rarely required.

# BACKGROUND

- ❑ L'ematoma retroperitoneale è un'entità clinica conosciuta, ma **rara**
- ❑ La **sopravvivenza** del paziente spesso dipende da una **diagnosi rapida e precisa**, considerando che il sanguinamento può essere insidioso ed inizialmente non riconosciuto
- ❑ I **tassi** di morbidità e mortalità sono **alti** (30%)

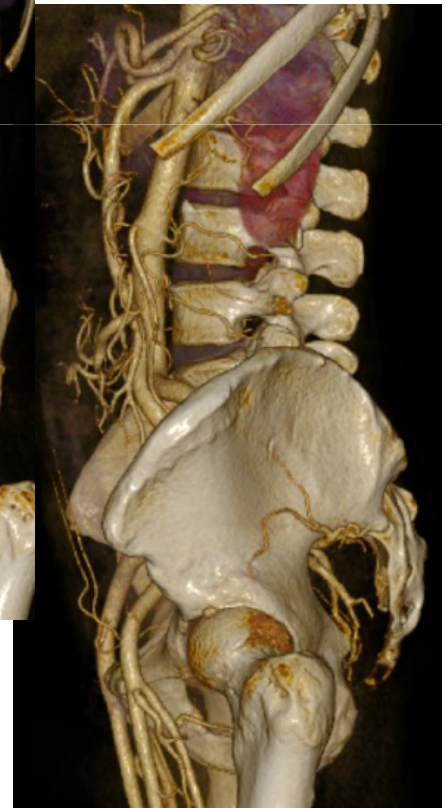
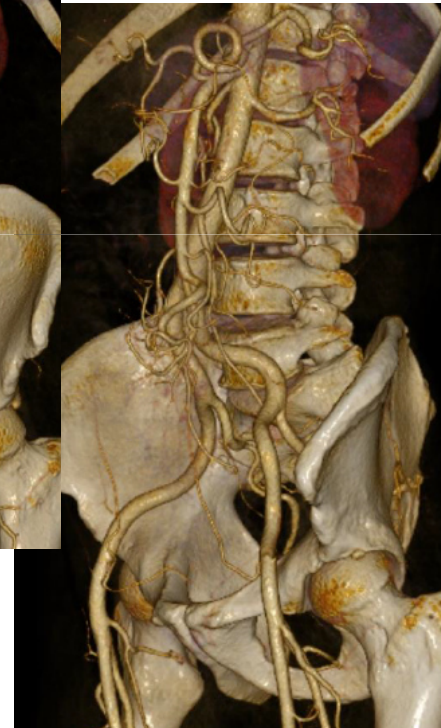
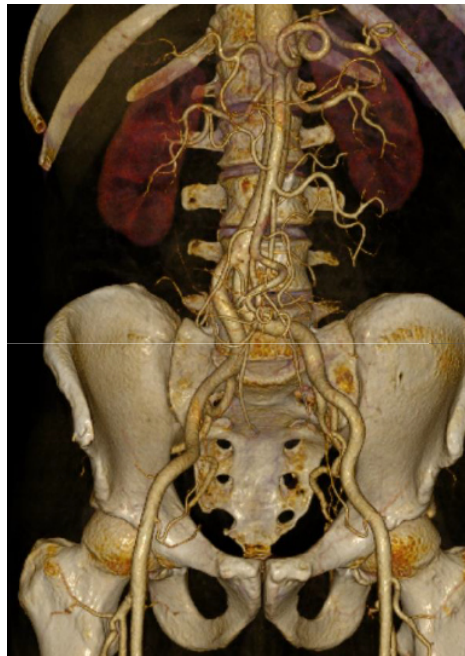




# BACKGROUND

## Vasi retroperitoneali

- ✓ Aorta Addominale
- ✓ Origine vasi viscerali
- ✓ Arterie Renali
- ✓ Arterie Lombari
- ✓ Arterie Iliache



# BACKGROUND

## Spontanei

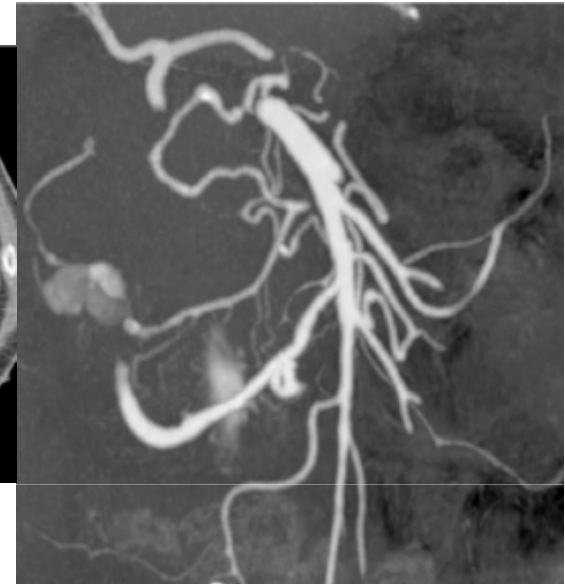
- ✓ Terapia anticoagulante
- ✓ Problematiche coagulative
- ✓ Emodialisi
- ✓ Rottura aneurismi e/o MAV
- ✓ Neoplasie retroperitoneali

## Traumatici

- ✓ Iatrogeni (accessi vascolari)
- ✓ Trauma lombare o pelvico



# DIAGNOSI



## TC con mdc

- ✓ Sito ed estensione della lesione
- ✓ Identificazione del vaso target
- ✓ Lesioni associate

# DIAGNOSIS

## TC imprescindibile???

### Role of percutaneous transcatheter embolization (PTE) in the treatment of spontaneous bleeding associated with anticoagulant therapy

#### Transcatheter Arterial Embolization of Spontaneous Life-Threatening Extraperitoneal Hemorrhage

Cormac Farrelly, MD, Nicholas Fidelman, MD, Jeremy C. Durack, MD, MS, Eugene Hagiwara, MD, and Robert K. Kerlan, Jr, MD

*Hemodialysis International* 2016;

#### Three cases of spontaneous lumbar artery rupture in hemodialysis patients

Na Kyoung HWANG,<sup>1</sup> Harin RHEE,<sup>1,3</sup> Il Young KIM,<sup>2</sup> Eun Young SEONG,<sup>1,3</sup> Dong Won LEE,<sup>2</sup> Soo Bong LEE,<sup>2</sup> Ihm Soo KWAK,<sup>1</sup> Chang Won KIM,<sup>2</sup> Sang Heon SONG<sup>1</sup>

### Endovascular treatment of spontaneous extraperitoneal haemorrhage: immediate and long-term clinical efficiency

*Int J Clin Pract.* 2008 Oct;62(10):1604-13. Epub 2007 Oct 19.

#### Management of spontaneous and iatrogenic retroperitoneal haemorrhage: conservative management, endovascular intervention or open surgery?

Chan YC<sup>1</sup>, Morales JP, Reidy JF, Taylor PR.

1<sup>st</sup> Interventional Radiologist under 40 Meeting

*Emergencies in Interventional Radiology*

All patients underwent 64 slices multidetector CT (Aquilon

CT in 80% of cases. In almost half (46.4%) of all cases,

patients were hemodynamically unstable, and all were

transfusion-depen-

ds. The findings

Multiple bleeding vessels are typical, and thorough regional vascular interrogation, guided by CT findings, is recommended. Despite the potentially high technical suc-

CT is useful for the initial evaluation of spontaneous lumbar artery rupture. The retroperitoneal mass is homo-

In 28/30 cases (93 %), angiography with contrast-enhanced computed tomography (CT) was performed with a 64- and 16-slice multidetector-row CT scanner (GE Medical Systems, Milwaukee, WI) to identify the bleeding

In 2/30 cases (6.6 %), the CT study was not performed because of haemodynamic instability (systolic blood pressure <90 mmHg), and the patients underwent digital subtraction angiography (DSA). DSA was performed in all

In patients who are haemodynamically unstable, urgent digital subtraction angiography with a view to selective embolisation or placement of a stent graft is indicated. The transfemoral route from the contralateral artery is usually used for access.

# DIAGNOSI

## Sito di sanguinamento

✓ TC → 91%

✓ Angiografia selettiva → 79%

✓ Aortografia → 55%

Table 4. Arteries with Extravasation on Digital Subtraction Angiography

Arteries Involved	No. Cases
Lumbar	11
Inferior epigastric	8
Profunda femoris	3
Deep circumflex iliac	2
Intercostal	2
Iliolumbar	2
Lateral thoracic	1
Inferior gluteal	1

Nel 30% dei casi, multipli siti di sanguinamento

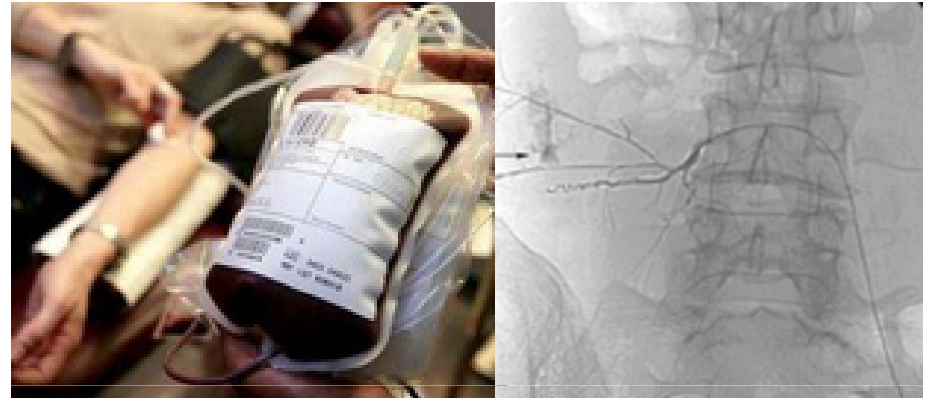
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# MANAGEMENT

- ❑ La **gestione** dell'emorragia retroperitoneale può risultare **difficile** poiché i sintomi sono vaghi e la **diagnosi** può essere **ritardata**
- ❑ Qualunque sia l'eziologia, tutti i pazienti **inizialmente** devono essere ben monitorati, reidratati, trasfusi e normalizzati i fattori della coagulazione
- ❑ Se il trattamento risulta **inappropriato**, la mortalità rimane **alta**



The dark side of the guidelines

# MANAGEMENT

NOM



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# MANAGEMENT

PAKISTAN JOURNAL OF  
**MEDICAL SCIENCES**  
Bi-Monthly

[Pak J Med Sci](#). 2013 Apr; 29(2): 573–576.

PMCID: PMC3805

## The diagnosis and treatment of traumatic retroperitoneal hematoma

[Fengbiao Wang](#)<sup>1</sup> and [Fang Wang](#)<sup>2</sup>

108 pt

There are two treatment approaches for traumatic retroperitoneal hematoma, operative and conservative<sup>9</sup>. Retroperitoneal hematoma results from the ruptured solid organs, retroperitoneal blood vessels or associated with injuries of intra peritoneal organs. In our opinion, once the injury of organs was confirmed, exploratory laparotomy should be performed without delay. The sources of hemor-

in some patients.<sup>10</sup> The effect of angiographic embolization and packing on hemodynamically unstable multiple trauma patients with pelvic injury has been highlighted by some authors.<sup>11-13</sup>



# MANAGEMENT

**Role of percutaneous transcatheter embolization (PTE) in the treatment of spontaneous bleeding associated with anticoagulant therapy**

**Transcatheter Arterial Embolization of Spontaneous Life-Threatening Extraperitoneal Hemorrhage**

**Spontaneous non-aortic retroperitoneal hemorrhage: etiology, imaging characterization and impact of MDCT on management. A multicentric study**

**Endovascular treatment of spontaneous extraperitoneal haemorrhage: immediate and long-term clinical efficiency**

*Conclusions* PTE could be considered a safe and effective “first line” approach to treat SB associated with anticoagulation therapy.

Early referral for angiography after CT angiography is recommended, particularly if SEH is not quickly controlled with noninvasive medical management, contrast extravasation is identified on CT, or a patient has multiple comorbidities. Multiple bleeding vessels are typical, and thorough

plication. Finally, an initial more conservative approach can be adopted in patients without signs of contrast extravasation (Urgent embolization should be performed in cases of arterial bleeding or contained vascular injuries supplying the

The first-line treatment of SEH is conservative: suspension, when possible, of anticoagulant therapy, identification and correction of coagulation disorders, fluid infusion and blood transfusion [3, 4].

Endovascular treatment with transcatheter embolisation has become the first choice in SEH management because surgery is limited by the difficulty identifying and treating bleeding vessels the context of a massive haematoma and the risk that surgical manoeuvres may increase bleeding or re-start a tamponaded bleed [30].

# MANAGEMENT

Litjos et al. *Ann. Intensive Care* (2016) 6:8  
DOI 10.1186/s13613-016-0106-z

 Annals of Intensive Care  
a SpringerOpen Journal

## RESEARCH

## Open Access



### Ilio-psoas hematoma in the intensive care unit: a multicentric study

J. F. Litjos<sup>1,2\*</sup>, F. Daviaud<sup>1,2</sup>, D. Grimaldi<sup>1,2</sup>, S. Legriel<sup>3</sup>, J. L. Georges<sup>4</sup>, E. Guerot<sup>2,5</sup>, J. P. Bedos<sup>3</sup>, J. Y. Fagon<sup>2,5</sup>, J. Charpentier<sup>1,2</sup> and J. P. Mira<sup>1,2</sup>

coagulated patients remains controversial. Whether conservative treatment is recommended in hemodynamically stable patient with no evidence of ongoing bleeding, the usefulness of embolization or surgery in case of bleeding is far from being demonstrated. Surgery seems to be indicated when the patient remains unstable despite medical resuscitation, if interventional radiology is not successful or unavailable or in case of abdominal compartment syndrome [2]. Open surgery consists in identification and control of the bleeding source, evacuation of the hematoma and packing of the muscular compartment, with a reexploration at 24–48 h [16]. We observed open surgery was performed in our study as a salvage therapy in uncontrolled patients after maximal medical treatment failure and is not associated in univariate analysis with a good outcome. In contrast, even when there is no significant statistical association, embolization seems to be useful for the investigation of active bleeding and its treatment. In a recent retrospective cohort of 36 patients presenting with anticoagulation-related soft tissue bleeding, with 21 hematoma located in the ilio-psoas compartment, embolization is efficient and safe for selective arterial embolization. However, the over-

# MANAGEMENT

Int J Clin Pract. 2008 Oct;62(10):1604-13. Epub 2007 Oct 19.

## **Management of spontaneous and iatrogenic retroperitoneal haemorrhage: conservative management, endovascular intervention or open surgery?**

Chan YC<sup>1</sup>, Morales JP, Reidy JF, Taylor PR.

Most patients with spontaneous or iatrogenic retroperitoneal haematoma can be monitored closely and treated conservatively without further intervention. Emergency angiography with a view to embolise or stent-graft the bleeding vessel(s) is indicated if the CT examination shows active extravasation of contrast. Surgery can have its place in very selective cases, but removal of the haematoma may increase bleeding by removing the tamponade effect, and packing with large abdominal gauze may be the only surgical option, if no specific arterial bleed but general ooze can be identified per-operatively. Abdominal compartment syndrome may require decompression laparostomy.



# MANAGEMENT

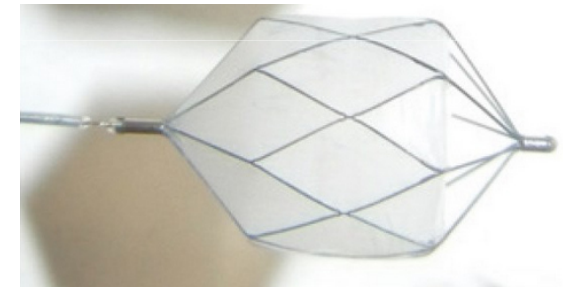
Pazienti emodinamicamente instabili senza  
segni di sanguinamento attivo alla TC???



# MANAGEMENT

## Embolizzazione: come?

- ✓ Microcatetere
- ✓ Agenti embolizzanti



## Role of percutaneous transcatheter embolization (PTE) in the treatment of spontaneous bleeding associated with anticoagulant therapy

lar the use of different embolic agents. The choice and/or the combination of different embolic materials (fiber platinum microcoils, absorbable gelatin sponge pledgets, synthetic glue, microparticles) is strictly linked, primarily, on the operator confidence. In our experience, we prefer to use mechanical agents as first line embolic agents to avoid irreversible ischemic damages due to permanent mechanic embolization of microparticles. The absorbable gelatin

Anna Maria Ierardi · Chiara Floridi · Carlo Pellegrino · Mario Petrillo ·  
Antonio Pinto · Isabella Iadevito · Erica Golia · Alessandra Perillo · Roberto Grassi ·  
Antonio Rotondo · Gianpaolo Carrafiello



VASCULAR AND INTERVENTIONAL RADIOLOGY

## **Endovascular treatment of spontaneous extraperitoneal haemorrhage: immediate and long-term clinical efficiency**

Treatment modalities depend on the operator's confidence with different materials: in our experience we favoured the use of coils and microparticles as we believe these materials to be more easily handled. Other reports,

Giuseppe Guzzardi • Rita Fossaceca • Paolo Cerini • Marco De Bonis •  
Emanuele Malatesta • Ignazio Divenuto • Mariangela Lombardi •  
Alessandro Carriero

VASCULAR AND INTERVENTIONAL RADIOLOGY

## **Endovascular treatment of spontaneous extraperitoneal haemorrhage: immediate and long-term clinical efficiency**

The treatment algorithm was as follows: in the case of a bleeding vessel calibre of <1.5 mm (calculated on the basis of the calibre of the 5F catheter used in the diagnostic phase) we employed microparticle embolisation, whereas in the case of a calibre larger than 1.5 mm we always used coils, with preliminary use of microparticle injection before coil release in the presence of multiple haemorrhagic foci. After angiography to evaluate the success of the treatment [22], we proceeded with haemostasis by manual compression in 18 cases and in 12 cases by Proglide Perclose system (Boston Scientific, Natick, MA, USA).

Giuseppe Guzzardi • Rita Fossaceca • Paolo Cerini • Marco De Bonis •  
Emanuele Malatesta • Ignazio Divenuto • Mariangela Lombardi •  
Alessandro Carriero

# CONCLUSIONI

- ❑ Considerando la possibile **diagnosi in tempi brevi** e la precisione nella **localizzazione** del sito di **sanguinamento**, che può ben indirizzare l'atto terapeutico, potremmo considerare la **TC imprescindibile**, anche nei pazienti emodinamicamente instabili
- ❑ La scelta **terapeutica** deve essere posta **criticamente**, da un **TEAM** multidisciplinare, valutando tutte le **opzioni**, non perdendo mai di vista il **paziente**, con le sue comorbidità, e non dimenticando che il buon risultato è legato al raggiungimento dell'**equilibrio emodinamico**





# CONCLUSIONI

- L'embolizzazione è ritenuta l'opzione terapeutica di **prima scelta** nei pazienti con **sanguinamento attivo**, essendo una tecnica **sicura, rapida ed efficace**.  
Non c'è, ad oggi, un'indicazione univoca sugli agenti embolizzanti da utilizzare

