


**AUTHOR QUERY FORM**

	<b>Journal:</b> DIII	<b>Please e-mail your responses and any corrections to:</b>
ELSEVIER	<b>Article Number:</b> 656	<b>E-mail:</b> <a href="mailto:corrections.esme@elsevier.thomsondigital.com">corrections.esme@elsevier.thomsondigital.com</a>

Dear Author,

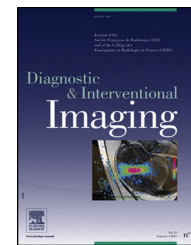
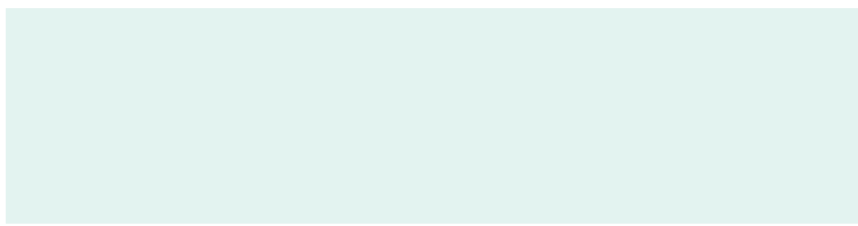
Please check your proof carefully and mark all corrections at the appropriate place in the proof (e.g., by using on-screen annotation in the PDF file) or compile them in a separate list. Note: if you opt to annotate the file with software other than Adobe Reader then please also highlight the appropriate place in the PDF file. To ensure fast publication of your paper please return your corrections within 48 hours.

For correction or revision of any artwork, please consult <http://www.elsevier.com/artworkinstructions>.

Any queries or remarks that have arisen during the processing of your manuscript are listed below and highlighted by flags in the proof. Click on the 'Q' link to go to the location in the proof.

<b>Location in article</b>	<b>Query / Remark: <a href="#">click on the Q link to go</a> Please insert your reply or correction at the corresponding line in the proof</b>
<a href="#">Q1</a> <a href="#">Q2</a>	<p>Please confirm that given names and surnames have been identified correctly. Please provide an update for reference [1].</p> <div data-bbox="337 1136 1032 1255" style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p>Please check this box or indicate your approval if you have no corrections to make to the PDF file <input type="checkbox"/></p> </div>

Thank you for your assistance.



## LETTER TO THE EDITOR / Digestive

### Glubran2<sup>®</sup>, Histoacryl<sup>®</sup> or Trufill<sup>®</sup>: Which cyanoacrylate glue for endovascular use?

We read with great interest the article by Won et al. [1] published recently in *Diagnostic and Interventional Imaging* and reporting effectiveness of transcatheter arterial embolization (TAE) using N-butyl cyanoacrylate (NBCA) in selected patients with visceral artery pseudoaneurysms (PAs). We have several comments. First of all, we would like to congratulate the authors for their study, which represents one of the main series to date reporting results on TAE with NBCA glue as an embolic agent in such a setting. Recently, TAE has generated considerable interest as the first-line treatment for PAs. The success rate is high, ranging from 62 to 100% in visceral PAs, and the morbidity and mortality rates are low [2–4]. Most investigators agree that coils are the most appropriate embolic material [2]. The present study shows that embolization using NBCA as the sole embolic agent is a safe and effective technique for treatment of visceral PAs at various locations. We absolutely agree with the authors about efficacy and safety of glue embolization of the vessel supplying the PA. We find the use of NBCA particularly interesting, especially in hemodynamically unstable bleeding patients and in cases of underlying coagulopathy, because it provides faster and better hemostasis than other embolic agents. In addition, glue may reach distal targets in tortuous vessels that cannot be navigated with microcatheters. In our institution, TAE using NBCA as the only embolic agent has also become the salvage treatment of choice in this indication, whenever patency of the parent vessel may be compromised. However, we would like to stress the fact that few glues are officially available on the market worldwide for endovascular use: Glubran2<sup>®</sup> (GEM, Viareggio, Italy) and Trufill<sup>®</sup> (Cordis, Miami Lakes, FL) which have CE marking and FDA approval, respectively [4]. Histoacryl<sup>®</sup> (B/Braun, Tuttlingen, Germany), which was used in the present study as in many previous series, is normally not allowed for endovascular purpose because of the absence of CE marking and FDA approval. Its use is considered as off-label in such a setting. Furthermore, Histoacryl<sup>®</sup> polymerises faster than other glues resulting in more challenging use [5]. Regarding authorized glues, Glubran2<sup>®</sup> is now a well-known surgical glue in which NBCA is combined with another monomer, metacryloxysulpholane, to produce a more pliable and stable polymer whose milder exothermic reaction (45 °C) results in less inflammation and histotoxicity than Histoacryl<sup>®</sup> or Trufill<sup>®</sup> [5]. Lastly, Glubran2<sup>®</sup> has the advantages of being very cheap in comparison with Trufill<sup>®</sup>

(about 100€ versus 2000\$ per 1 mL vial) and more available worldwide, Trufill<sup>®</sup> being used only in the US.

In conclusion, our experience and recent literature suggest that TAE using cyanoacrylate glue in well-trained hands could be more effective in controlling bleeding from visceral artery pseudo-aneurysms than other embolic agents if used with great caution. NBCA may be specifically useful in the setting of hemodynamic instability, coagulopathy, and narrowed vessels that are not amenable to distal embolization by microcoils. However, only the use of authorized glues should be the rule. Furthermore, NBCA embolization should absolutely not be attempted for PAs located at the proximal level of major visceral arteries because of the risk of ischemic complications and end-organ damage.

#### Disclosure of interest

The author declares that he has no conflicts of interest concerning this article.

#### References

- [1] Won Y, Lee SL, Kim Y, Ku YM. Clinical efficacy of transcatheter embolization of visceral artery pseudoaneurysms using N-butyl cyanoacrylate (NBCA). *Diagn Interv Imaging* 2015 [Epub ahead of print].
- [2] Loffroy R, Guiu B, Cercueil JP, et al. Transcatheter arterial embolization of splenic artery aneurysms and pseudoaneurysms: short- and long-term results. *Ann Vasc Surg* 2008;22:618–26.
- [3] Song HH, Won YD, Kim YJ. Transcatheter N-butyl cyanoacrylate embolization of pseudoaneurysms. *J Vasc Interv Radiol* 2010;21:1508–11.
- [4] Tokuda T, Tanigawa N, Shomura Y, et al. Transcatheter embolization for peripheral pseudoaneurysms with N-butyl cyanoacrylate. *Minim Invasive Ther Allied Technol* 2009;18:361–5.
- [5] Loffroy R, Guiu B, Cercueil JP, Krausé D. Endovascular therapeutic embolisation: an overview of occluding agents and their effects on embolised tissues. *Curr Vasc Pharmacol* 2009;7:250–63.

R. Loffroy, Q1

Department of Vascular, Oncologic and  
Interventional Radiology, Le2i, UMR CNRS 6306,  
University of Dijon School of Medicine, Bodge  
Teaching Hospital, 14, rue Paul-Gaffarel, BP  
77908, 21079 Dijon cedex, France

E-mail address: romaric.loffroy@chu-dijon.fr

<http://dx.doi.org/10.1016/j.diii.2015.04.011>

2211-5684/© 2015 Publié par Elsevier Masson SAS pour les Éditions françaises de radiologie.