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Influence of WEB oversizing on aneurysm occlusion and device compaction

Adrien Guenego (MD)[1], Anne Christine Januel (MD)[1], Jean Darcourt (MD)[1], Ivan Vukasinovic (MD)[2], Caterina Michelozzi (MD)[1], Philippe Tall (MD)[1], Jean Albert Lotterie (MD)[3], Fabrice Bonneville (MD, PhD)[1], Christophe Cognard (MD)[1,*]

[1] *Interventional Neuroradiology Department, Toulouse University Hospital, Hôpital Pierre-Paul-Riquet, Place du Dr Baylac, TSA 40 031, 31059 Toulouse cedex 9, France*

[2] *Interventional Neuroradiology Department, Clinical Center of Serbia, Serbia*

[3] *Stereotaxic Neurosurgery Department, Toulouse University Hospital, France*

* *Corresponding author.*

Adresse e-mail : cognard.c@chu-toulouse.fr (C. Cognard)

Background Aneurysm recanalization concomitant to endosaccular device (WEB) compaction has been reported. Association of compaction and aneurysm remnant is still discussed in literature. Effect of WEB oversizing on compaction and recanalization rates remains unknown.

Objective To assess the association of WEB compaction and risk of aneurysmal remnant.

To assess the association of oversized WEB with complete aneurysmal occlusion, peri-procedural complication, WEB compaction.

Methods We retrospectively included all patients treated with the WEB in our center between March 2012 and August 2018 from a prospectively maintained registry. Review Board approval was obtained. From February 2015 to August 2018, we used the oversizing technique (increase of the WEB width of 1 mm compared to aneurysmal width). First we analyzed the association between compaction and occlusion rates. We then compared patients before and after this technical shift, as long as patients with and without "> 1 oversized WEB" (oversizing >1 mm) for peri-procedural complication, device compaction, complete and adequate occlusion, at 3 to 6 months, 12 to 18 months and after 24 months follow-up (FU). Statistical analyses were performed.

Results We treated 78 aneurysms in 77 patients. In case of compaction, patients had a lower rate of adequate (91% vs 52%, $P = 0.005$) and complete occlusion (36% vs. 16% $P = 0.05$). The oversizing technique led to improved rates of no-compaction (36 vs. 18%), complete occlusion (28 vs. 13%) at last follow-up despite no statistical significance. For "> 1 oversized WEB", per-procedure complication rate was 3 times higher despite being non-statistically significant ($P = 0.07$). At last follow-up, no-compaction risk was improved (48 vs. 21%, $P = 0.02$) but complete and adequate final occlusion rates were not different.

Conclusion WEB compaction is associated with increased rates of aneurysm remnants. WEB oversizing may improve the complete occlusion rate whereas decreasing WEB compaction. A too much oversizing may lead to increase the risk of per-procedure complication whereas no additional effect on aneurysmal occlusion. Rate of adequate occlusions remains acceptable.

Keywords Aneurysms; WEB; Recanalization; Compaction; Endovascular treatment; Intra-saccular device

Disclosure of interest The authors declare that they have no competing interest.

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Comparison of mono versus biplane performance and factors associated with higher radiation doses and contrast exposure during cerebrovascular mechanical thrombectomy, an international multi-centers study

Adrien Guenego (MD)[a,*], Pascal J. Mosimann (MD)[b], Vitor Mendes Pereira (MD, PhD)[c], Kevin Zuber (MSC)[d], Jean Albert Lotterie (MD)[e], Dobrocky Tomas (MD)[b], Patrick Nicholson (MD)[c], David Marcellus (MD)[f], Jean-Marc Olivot (MD, PhD)[g], N. Nestor Gonzalez (MD, PhD)[h], Michel Piotin (MD, PhD)[i], Fabrice Bonneville (MD, PhD)[a], Jan Gralla (MD, PhD)[b], Max Wintermark (MD, PhD)[f], Jeremy Heit (MD, PhD)[f], Christophe Cognard (MD)[a]

[a] *Interventional and Diagnostic Neuroradiology Department, Toulouse University Hospital, France*

[b] *Interventional and diagnostic Neuroradiology, Bern, Switzerland*

[c] *Interventional and Diagnostic Neuroradiology, Toronto Hospital, Toronto, Canada*

[d] *Statistics department, Fondation Ophtalmologique Adolphe de Rothschild, Paris, France*

[e] *Stereotaxic Neurosurgery Department, Toulouse University Hospital, France*

[f] *Interventional and Diagnostic Neuroradiology, Stanford Medical Center, CA, USA*