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Authors: Magdalena Łanocha, Adrian Włodarczak, Marek Szudrowicz, Artur Jastrzębski, Maciej Pęcherzewski, Maciej Lesiak

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Multimodality imaging results of neointimal healing after magnesium scaffold implantation in an acute coronary syndrome setting

Magdalena Łanocha¹, Adrian Włodarczak², Marek Szudrowicz², Artur Jastrzębski², Maciej Pęcherzewski², Maciej Lesiak³

1. St. Adalbert’s Hospital, Poznan, Poland
2. Department of Cardiology, MCZ Hospital, Lubin, Poland
3. Department of Cardiology, Poznan University of Medical Sciences, Poznań, Poland

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Corresponding author:
Magdalena Łanocha, MD, PhD

St. Adalbert’s Hospital
B. Krzywoustego 114, 61-144 Poznań, Poland
Tel +48 616233111, e-mail: drlanocha@gmail.com

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Treatment with bioresorbable magnesium scaffolds (Magmaris, Biotronik AG, Bülach, Switzerland) is recommended only for stable angina pectoris [1]. Confirmation of promising results using Magmaris in acute coronary syndrome (ACS) can be found in recently published registries [2].

A 57-year-old woman with typical risk factors (hypertension, hyperlipidaemia) was admitted to the CathLab because of non-ST-segment elevation ACS. Coronary angiography showed a severe lesion at the proximal part of the left anterior descending artery (LADp) (Fig. A). The lesion characteristics (focal, concentric, smooth contour without calcification and thrombus) were encouraging for bioresorbable magnesium scaffolding. The lesion was predilated with a 3.5 mm at 16 atm non-compliant balloon, followed by implantation of a 3.5 x 20.0 mm bioresorbable magnesium scaffold (BRS) at 16 atm; post-dilation was performed with a 3.5 mm at 16 atm non-compliant balloon. Optimal results (device expansion, struts apposition, no edge dissection) were confirmed on the final angiography (Fig. B) and optical coherence tomography (OCT) assessment (Fig 1D). Three days later, the patient was discharged on aspirin and ticagrelor.

Control coronary angiography performed 12 months later showed perfect angiographic results (Fig. C). Neointimal healing was evaluated by OCT and intravascular ultrasound (IVUS), confirming almost completed the scaffold bioresorption process. The magnesium scaffold or its footprint was no longer discernible by OCT (Fig 1E). Only IVUS images contain the visible healing bright spots (amorphous calcium phosphate) within the neointima (Fig 1F). At that time, DAPT was discontinued. A later performed four-year clinical follow-up confirmed a further uneventful course of coronary artery disease.
Multimodality intracoronary imaging confirmed the 95% magnesium alloy resorption at 12 months. Presented magnesium scaffold images confirmed superiority over the polymeric scaffold regarding neointimal healing during the first year after scaffold implantation.

The second generation of bioresorbable scaffolds with their unique properties that 'do their job and disappear' may also be a promising therapeutic option for ACS patients.
References:


Figure 1.

Coronary angiography: baseline lesion at the proximal part of the left anterior descending artery (A); Optimal results after Magmaris implantation (B); control 12-month follow-up (C). Optical coherence tomography (OCT) assessment: baseline after Magmaris implantation (D) and control 12-month follow-up (E); Control 12-month follow-up intravascular ultrasound (F)