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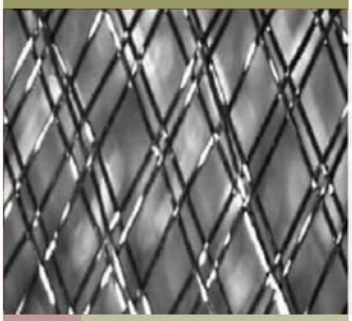


CARDIATIS—TEHMED

Review of the recent clinical papers on the Cardiatis Flow Modulators

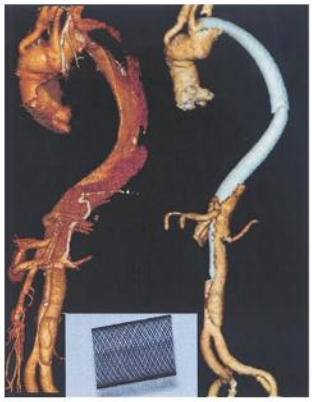
Cardiatis/TehMed

Cardiatis Flow Modulators Review of the Recent Clinical Articles

* **Visceral Artery Aneurysms, an Experience on 32 cases in a Single Center: Treatment From Surgery to Multilayer Stent - E.Ferrero et al, Turin, Italy** - 32 patients with visceral artery aneurysms were treated with the Cardiatis flow modulators. The sites of the aneurysmal disease were: splenic artery, hepatic artery, superior mesenteric artery, pancreaticoduodenal artery, celiac axis and gastroduodenal artery. The total survival rate was 90,6% (75% in urgency; 95.8% in election). Average follow up was 34.7 months. The authors advocate utilization of the Cardiatis Flow Modulators in the vascular aneurysms, particularly in high-risk patients.

* **Endovascular Treatment of Multiple HIV-related Aneurysms Using Multilayer Stents - W. Euringer et al., Freiburg, Germany; Cardiovascular Interventional Radiology Journal** - A case report presenting a 45-years old HIV patient with multiple complex bilateral subclavian artery aneurysms and perivisceral aortic aneurysms. All 4 stents were successfully deployed with major reduction of the intra-aneurismal flow in all the aneurysms as well as patent flow in the side branches covered by the flow modulators.

* **Multilayer Stents in the treatment of thoraco-abdominal residual type B dissection - S.Cochron at al, Besancon, France; Interactive cardiovascular and thoracic surgery** - Case report presenting a patient with thoraco-abdominal residual type B dissection with aneurysm evolution treated with a Cardiatis multilayer flow modulator to close the false lumen. The thoracic false lumen disappeared at 3 months FU.



* **Endovascular treatment of hepatic artery aneurysm by multilayer stents: two cases and one-year follow-up - E.Ferrero at al, Turin - Italy; Interactive cardiovascular and thoracic surgery** - two patients with a hepatic artery aneurysms were treated with the Cardiatis multilayer stents. At 12 months FU, both the aneurysms were thrombosed and the hepatic branches completely remained patent.

* **Endovascular Treatment of a Tuberculous Thoracoabdominal Aneurysm With a Multilayer Stent - A. Benjulloun at al, Nancy, France; Journal of Endovascular Therapy** - A case report presents the endovascular treatment of a young patient with tuberculosis and thoraco-abdominal aneurysm. The treatment stabilized the disease process without exposing the patient to the high morbidity and mortality of open surgery.

* **Treatment of Juxtarenal Aortic Aneurysm With the Multilayer Stent - M. Natrella at al, Aosta - Italy; Journal of Endovascular Therapy** - A case report presenting the endovascular therapy in 81-year old patient, having multiple comorbidities and an expanding 63mm juxtarenal AAA. The stent reduced the inflow in the aneurysm sack immediately, providing all the side branches to remain open.

Inside this issue:

Special points of interest:

- *A significant level of clinical evidence, being published in various medical journals, presents successful utilization of the Cardiatis Flow Modulators in the peripheral, visceral and thoraco-abdominal aneurysm disease*
- *Cardiatis Flow Modulators slow down the intra-aneurismal blood flow by ca. 90%, diminish the blood flow vorticity and help in creation of organized thrombus.*

TEHMED

Neubergerjeva 7
Ljubljana
Slovenija

Phone: +386 (0)31 659 040
Fax: +386 (0)59 974 522
E-mail: info@tehmed.si

TehMed, certified distributor of Cardiatis products for Slovenia

We are on the web:

www.tehmed.si

TehMED— Who Are We?

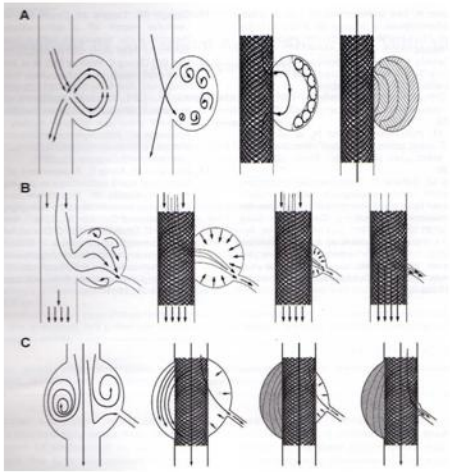
TehMED is a young and dynamic company based in Ljubljana - Slovenia. TehMED is the certified distributor of the Cardiatis (Isnes, Belgium) products for the Slovenian market. The company is primarily focused at the distribution of the medical products, used in the interventional radiology and minimally invasive surgery.

Presentation of the Cardiatis product range can be done upon request to the Commercial and Marketing Department of the TehMED company (see the contact data to the left).

Basics of the thrombosis formation in the saccular and fusiform aneurysms and flow patency into the side branches after placement of the Cardiatis Multilayer Flow Modulator

Intra-aneurysmal blood flow in the saccular aneurysms (A) is characterized by a large blood volume inflow, formation of small flow vortices and a high wall shear stress. The magnitude of the blood flow influences on the aneurysmal wall depends upon the aneurysm location, characteristics of the parent vessel geometry and the local blood hemodynamics. Once a Cardiatis Multilayer flow modulators is deployed, the blood inflow is reduced to approximatelly 90% of the initial value, the flow vorticity is minimized to a minimum and the remaining blood inflow is laminated. The newly formed thrombus is organized into stable layers that progressively, over several upcoming weeks, reduce the aneurysm size and finally close the aneurysm. The neointimal layer is finally formed along the stent strut.

In the case of a saccular aneurysm with branches arising from the aneurysm sack (B), the flow is directed towards the branch due to the existing pressure gradient. The blood flow in the remaining part of the aneurysm is turbulent, creating vortices that are of the same nature as in the case A. Placement of a Cardiatis flow modulator does not change the inflow into the side branch, due to the mentioned pressure gradient (natural proximal—distal blood pressure drop). The flow modulator however does laminate the flow, making the blood inflow in the side branch more regular and smooth. On the contrary of the side branch, the influence of the flow modulator on the remaining part of the aneurysm is significant. The inflow in that part of the aneurysm is strongly reduced (no pressure drop phenomenon), as well as the blood flow vorticity. The aneurysm sack will have a tendency of shrinkage in the upcoming several weeks and months and will finally completely collapse towards the walls of the side branch.



Case C shows a fusiform aneurysm with a large extend of irregular intra-aneurysmal blood flow around the central vessel line, which is the only part of the aneurysm with a relatively uniform flow towards the distal end of the aneurysm. The drawing presents a complex case where a side branch arises from a left lobe of the aneurysm, whereas on the right lobe there are no side branches. The blood flow jet stream in the right aneurysm lobe makes a turbulent motion that eventually partially aligns with the main stream. On the left side there is a tendency to vorticity in the part of the aneurysm where no branches are present. The branch itself attracts a significant portion of the blood stream, due to the existing pressure gradient. Once a Cardiatis flow modulator is placed, the flow in the right lobe will be slowed down ca 90% with significant reduction of the flow vorticity and subsequent formation of organized thrombus. At the left side of the aneurysm the flow will be directed towards the side branch that remain being patent due to the existing pressure gradient. The inflow in the remaining part of the left aneurysm lobe will be strongly diminished, following by shrinkage of the total aneurysm volume towards the side branch.