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Editorial / Уводник

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New developments, treatment options and possible complication in complex coronary artery disease, structural and congenital heart disease and heart failure

Новости, опције лечења и могуће компликације коронарних болести, структурних и урођених срчаних обољења и срчане слабости

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New developments, treatment options and possible complication in complex coronary artery disease, structural and congenital heart disease and heart failure

Новости, опције лечења и могуће компликације коронарних болести, структурних и урођених срчаних обољења и срчане слабости

Developments of interventional techniques and devices for the treatment of coronary artery disease, structural heart diseases, including valvular and congenital heart disease, as well as heart failure have changed the practice of modern cardiology. In this issue of Srpski Arhiv za celokupno lekarstvo, we present 5 articles on different novel techniques, devices, as well as complications of device implantation for the treatment of chronic total occlusion [1], aortic valve disease [2], patent ductus arteriosus [3], pacemaker systems upgrade [4], and finally critical analysis of the most common complications during cardiac rhythm management devices implantation [5].

Recanalization of chronic total occlusion remains one of the most demanding and complex interventions for the treatment of coronary artery disease. However, continuous technological developments including new dedicated guidewires enabling safer and easier recanalization, have made this challenging procedure available not only for elite centers of excellence, but also other high volume interventional laboratories with huge experience in interventional treatment of coronary artery disease. Recanalization of chronic total occlusions has been introduced in Serbia during Belgrade BASICS interventional meeting more than 10 years ago by Japanese and other distinguished operators. Now, with this proctoring approach and large gained experience in implementation of this procedure, several our centers are successfully performing this procedure [6]. Ivanović et al. [1] presents 2 cases of specific retrograde approach for the treatment of chronic total occlusion where after failed antegrade crossing of the occlusion, the occluded coronary artery was crossed from contralateral coronary artery through collaterals. The rationale of this approach is based on the fact that the distal cup of coronary artery occlusion is thinner and more suitable for guidewire penetration in comparison to the proximal cup of the occlusion. By introduction of retrograde approach during last 10 years, the success of the technique improved from little bit above of 50% to more than 90% when performed by experience operators [7].

Most of the innovations in modern cardiology practice in the last decade come from the developments in the treatment of valvular heart disease, in particular aortic valve stenosis. In fact, transcatheter aortic valve implantation (TAVI) has swiftly moved from promising option in inoperable patients, to standard of care in high-risk patients, and at least alternative treatment option in intermediate risk patients with symptomatic aortic stenosis [8,9]. Although proved to be safe procedure, unusual and life-threatening complications can occur as shown in the article by Lazerević A, et al. [2]. This case report still supports the application of on-site echocardiography imaging during the procedure to search for possible causes of sudden hypotension that may lead to severe hemodynamic compromise in these fragile patients. Simultaneous echocardiography imaging might

be particularly important for the centers with limited experience in this procedure and technique, as are the centers and experience with TAVI in our country.

On the other hand, treatment of congenital heart disease in children and adults by interventional techniques have respectable tradition, experience and success in our country. Here, Đukić et al. [3] present experience from the Children's hospital in Belgrade, on the management of patent ductus arteriosus by transcatheter closure of the defect which is considered as a standard procedure in most of the young patients after early infancy. The authors have compared two devices and concluded superiority and safety of Amplatzer duct occluders over spiral shape coils, both early after intervention as well as in the follow-up (100% closure after 1 and 2 years).

In the last decade we are also witnessing tremendous evolution and efficiency of devices that are used in patients with heart failure, including primarily cardiac resynchronization therapy (CRT) together with implantable cardioverter defibrillators. Moreover, CRT devices have been used to upgrade the older pacemaker systems in cases of adverse effects of chronic right ventricular pacing that may lead to heart failure. Here, Radovanović et al. [4] present a case of the patient in whom upgrade of pacemaker was needed due to a new developed heart failure. The case was further complicated by subclavian vein thrombosis on the side of previously implanted pacemaker. Therefore, the authors decided to use more complex and less use intervention in clinical practice (but with a potential long-term benefit to reduce new venous thrombosis) to implant one new left ventricular lead on the right side and then to transfer it subcutaneously by pre-sternal tunneling to previous left prepectoral pocket.

Finally, the same group of authors from Pacemaker center, Clinical center of Serbia, reported the rate of pneumothorax, one of the most common complications of cardiac rhythm management devices including antibradycardia pacemakers, implantable cardioverter defibrillators and CRTs, during one year [5]. Among 999 patients, the rate of pneumothorax was 1.8% (incidence from literature data 0.66–5% [10]), and more often found in women, older patients, subclavian vein puncture, and the use of intravenous contrast during procedure. According to their experience and data, the authors suggested that cephalic vein cut-down is preferred and safer technique to subclavian or axillary vein puncture with careful use of contrast venography.

REFERENCES:

1. Ivanović V, Čanković M, Ivanov I, Dejanović J, Stojšić-Milosavljević A, Petrović M. Recanalization of coronary artery chronic total occlusion by retrograde approach. *Srp Arh Celok Lek* 2017; OnLine-First: March 10, 2017; (00): 65–65. [DOI: <https://doi.org/10.2298/SARH160808065I>]
2. Đukić M, Parezanović V, Đorđević S, Stefanović I, Miranović V, Ilić S, et al. Transcatheter closure of patent ductus arteriosus using Flipper coil and Amplatzer duct occluder: a ten-year experience from a single center. *Srp Arh Celok Lek* 2017 OnLine-First: March 7, 2017; (00): 59–59. [DOI: <https://doi.org/10.2298/SARH160706059D>]
3. Lazarević A, Naganuma T, Mitomo S, Kawamoto H, Nakao T, Ishiguro H, et al. Transapical transcatheter aortic valve implantation in a patient with small body weight complicated by severe hypotension: an enigma successfully solved by echocardiography. *Srp Arh Celok Lek* 2017; OnLine-First: March 10, 2017; (00): 64–64. [DOI: <https://doi.org/10.2298/SARH160802064L>]

4. Radovanović NN, Pavlović SU, Kirčanski B, Raspopović S, Jovanović V, Novaković A, et al. Transvenous lead placement and its pre-structural tunneling to the contralateral side as a solution for pacemakers system upgrade in case of the subclavian vein thrombosis. *Srp Arh Celok Lek* 2017; OnLine-First: March 7, 2017; (00): 60–60. [DOI: <https://doi.org/10.2298/SARH160712060R>]
5. Radovanović NN, Kirčanski B, Pavlović SU, Raspopović S, Jovanović V, Nikčević G, et al. Pneumothorax as complication of cardiac rhythm management devices implantation. *Srp Arh Celok Lek* 2017; OnLine-First: March 10, 2017; (00): 62–62. [DOI: <https://doi.org/10.2298/SARH160712062R>]
6. Stojkovic S, Sianos G, Katoh O, Galassi A, Beleslin B, Vukcevic V, et al. Efficacy, safety and long term follow-up of retrograde approach for CTO recanalization: Initial (Belgrade) experience with international proctorship. *J Interven Cardiol* 2012; 25: 540–8.
7. Galassi AR, Sianos G, Werner GS, Escaned J, Tomasello SD, Boukhris M, et al. Retrograde recanalization of chronic total occlusions in Europe: procedural, in-hospital and long-term outcomes from the multicenter ERCTO registry. *J Am Coll Cardiol* 2015; 65: 2388–400.
8. Smith CR, Leon MB, Mack MJ, Miller DC, Moses JW, Swenson LG, et al. Transcatheter versus surgical aortic valve replacement in high risk patients. *N Engl J Med* 2011; 364: 2187–98.
9. Leon MB, Smith CR, Mack MJ, Makkar MR, Svensson LG, Kodali SK, et al. Transcatheter or surgical aortic-valve replacement in intermediate-risk patients. *N Engl J Med* 2016; 374: 1609–20.
10. Res JC, de Priester JA, van Lier AA, van Engelen CL, Bonzwaer PLN, Tan PH, et al. Pneumothorax resulting from subclavian puncture: a complication of permanent pacemaker lead implantation. *Neth Heart* 2004; 12: 101–5.