

First of all, I must correct an error made by Küçükarslan et al. in their conclusion for the benefit of all readers and that is, removal of the radial artery may change the forearm blood supply. However, several studies have shown that there were no significant reductions in forearm blood flow 3 months after surgery at harvested arm. The authors' conception is some arbitrary. In fact, there is no a comparison between preoperative and postoperative forearm blood flows in this study. Manabe et al. (2) has reported that the blood flow to the forearm territory was decreased by 20% after removal of the radial artery in spite of compensatory dilatation of the ulnar artery.

Following radial artery harvesting, it has not been fully known changes in hand circulation. Severe hand ischemia is a rare complication resulting in gangrene or resting pain. The etiology of this devastating complication is unclear. It may be due to abnormal continuity of the peripheral arterial system of the digits with the palmar arch or occlusive artery disease in the forearm. However, mild hand ischemia such as hand claudication or hand fatigue encounters approximately in 10% of the patients undergoing radial artery removal. Hand claudication after radial artery harvesting frequently dominates in patients with special occupations such as accordionist or dentist. Some symptomatic patients do not use affected hand after removal of radial artery. Therefore, a lot of symptoms may have been overlooked or supposed of non-ischemic origin in most patients.

There are various preoperative screening methods to assess the adequacy of ulnar collateral circulation to avoid ischemic complications of the hand in patients scheduled for radial artery harvesting for coronary artery bypass grafting. The Allen test is the most common used tool, but this test is far from ideal because it is associated with false-positive and false-negative results. Therefore, many studies have been performed to investigate more reliable and sensible methods to reveal the risk of ischemia. Possible other methods are modified Allen test, Doppler ultrasonography, digital plethysmography, pulse oximetry, thumb systolic arterial pressure measurement, and magnetic resonance imaging or a combination with those methods.

In addition, "Squirt test" is a simple technique that allows intraoperative assessment of ulnar artery blood supply to the hand before removing the radial artery from the forearm (3).

Lastly, in discussion section of the paper, statements as Gregory et al., William et al. and Zile et al. written mistakenly by the authors should be corrected to Dumanian et al., Chong et al. and Meharwal et al. In the first paragraph of the authors' discussion, some data in their reference 8 (Chong et al.) also is not consistent to explanations in their text. The rate of 11% is objective paraesthesia in the thenar eminence related to injury to the lateral cutaneous antebrachial nerve in the above-mentioned reference.

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#### Author's reply

Dear Editor,

I would like to thank author for the interest in my article.  
Sincerely yours.

#### Nezihi Küçükarslan

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## Response to the case report of pulmonary artery coil migration after management of patent ductus arteriosus in a 65-year-old female patient

*Altmış beş yaşındaki kadın hastada patent duktus arteriozus tedavisini takiben pulmoner arter tıkaçının yer değiştirmesi ile ilgili olgu sunumuna yanıt*

We read the case report presented by Senturk et al with great interest (1). They presented a 65-year-old female patient with patent ductus arteriosus (PDA). Unfortunately, their trial for closing the ductus had failed due to the displacement of the coil to the left pulmonary artery.

A clinical trial conducted over 1291 patients in 30 centers showed that long and tubular PDA might result in undesired consequences whereas short and thick PDA (ductal diameter > 4mm) was addressed as the reason of unsuccessful results (2). It was reported that the success of the procedure was determined when the ideal coil/ductal diameter ratio is equal to two (3).

An unpublished study of ours investigated a total of 49 children who were diagnosed with PDA and had their PDA closed via transcatheter route in our department. In that study, PDA was diagnosed by the auscultation of a continuous murmur beneath left clavicle in physical examination and the visualization of ductus by transthoracic two-dimensional and color Doppler echocardiography. Ductal diameter and length were measured by aortography at left lateral position. The reviewed patients were grouped according to the size of the narrowest point of the ductus. The narrowest diameter of the ductus was detected to be < 3mm in group I and ≥ 3mm in group II patients. The plugs were chosen according to the ductal morphology and size. The ductal closure was successfully performed by NitOcclud-pfm and Flipper coils introduced via transcatheter route in 91.8% of the patients in whom the narrowest ductal diameter was less than 5.5 mm (except two patients who had short-thick and long-tubular ducts). The success of the closure procedure was unaffected when the narrowest diameter of the ductus was either < 3mm or ≥ 3mm. Flipper coils (ductal diameter: ≤ 3 mm) were preferred for the closure of small ducts while NitOcclud-pfm coils were chosen for the closure of large ducts (ductal diameter: ≥ 4mm). No case of distal embolization occurred in the patients who were treated with large coils.

As claimed by the authors, the detailed evaluation of the patient for PDA occlusion and appropriate coil selection is important (1). The present article demonstrates that Flipper coils are insufficient for the treatment of ducts with their narrowest diameters ≥ 4mm. Therefore,

Amplatzer ductal occluder should be preferred as a better and up-to-date choice of treatment in such cases.

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### Author reply

Dear Editor,

We thank authors for their comments and concerns of our case report entitled "Pulmonary artery coil migration after management of patent ductus arteriosus in a 65-year-old female patient". It was published in June 2009 issue of Anatolian Journal of Cardiology.

There are several factors that determine a successful coil closure for PDA. The PDA size, PDA shape, and the degree of left-to right shunt and younger age may influence the results of coil occlusion of PDA (1). The complication occurred in this particular patient for two reasons. Firstly, the coil used for PDA closure was too small for the patient. Secondly, the aortic ampulla was large which made the coil unstable. 8 mm was the largest Cook coil. A second attempt of the coil of 8 mm in diameter was tried again. But unfortunately the coil seemed to move towards the pulmonary artery. The procedure of closure was stopped because of coil position was unstable. In conclusion, any interventionist who undertakes coil occlusion of the PDA should be familiar with the problem of migration, thoroughly equipped for foreign body removal, and skilled in the use of all types of equipment necessary to withdraw a foreign body from a pulmonary artery branch. As claimed by the authors, Amplatzer duct occluder may be considered for moderate to large PDAs (2).

Sincerely,

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## Do bone morphogenic protein-4 antagonists have any role in the treatment of human hypertension?

*Kemik morfojenik protein-4 antagonistleri insanlarda hipertansiyonun tedavisinde kullanılabilir mi?*

To the Editor,

Bone morphogenic protein-4 (BMP-4) is originally identified as a regulator of cartilage and bone formation (1). However, BMP-4 transcripts are detected in the mesoderm around the developing gut and the myocardium (2). BMP-4 is found in calcified atherosclerotic plaques and it plays a role in calcification involving medial smooth muscle cells (3). BMP-4 might have a novel role in vascular inflammation in an endothelium-dependent manner.

Chronic BMP-4 infusion was showed to impair endothelium dependent vasodilatation in mice. It stimulated vascular NADPH oxidase activity and superoxide production which decreased endothelial nitric oxide (NO) bioavailability and led to hypertension in mice (4). 'Noggin' is the recombinant human BMP-4 antagonist that prevented the BMP-4 induced hypertension with mice. BMP4's role on the activation of NADPH oxidases and impairment of vasorelaxation has also been demonstrated along with the prevention of hypertension by apocynin treatment (Apocynin is the inhibition of the NADPH oxidases) (4).

The actual increase in arterial blood pressure is caused by an increase in systemic vascular resistance (SVR). Systemic vascular resistance refers to the resistance blood flow offered by all of the systemic vasculature in vascular beds. Mechanisms that cause vasoconstriction increase SVR and those mechanisms that cause vasodilatation decrease SVR.

Endothelial dysfunction with decreased NO production is known to be related to hypertension. The vascular NADPH oxidase contributes to endothelial dysfunction and high blood pressure in the spontaneously hypertensive rat by enhancing superoxide production (5).

Briefly, chronic BMP-4 infusion activates arterial NADPH oxidases and that this in turn leads to endothelial dysfunction and hypertension. As BMP-4 is a novel mediator of endothelial dysfunction and hypertension, Noggin, could prevent its effect in mice. To the best of our knowledge, there is no study whether BMP-4 antagonists could be an effective treatment in cases of human hypertension. Knowing the fact of required sophisticated studies to evaluate the role on blood pressure, on the current background, we would like to speculate that BMP-4 antagonists might propose a critical role as an effective antihypertensive medication by potential mechanisms of the suppression of the raised the systemic vascular resistance in human hypertension.

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