Femoral artery approach

The femoral artery is the most common access route for cerebral angiography and neurointerventional procedures. Complications of the transfemoral approach include groin hemorrhages and hematomas, retroperitoneal hematomas, pseudoaneurysms, arteriovenous fistulas, peripheral artery occlusions, femoral nerve injury, and access-site infections. Incidence rates vary among different randomized and nonrandomized trials, and the literature lacks a comprehensive review of this subject.

Oneissi et al. gather data from 16 randomized clinical trials (RCT) and 17 nonrandomized cohort studies regarding femoral access-site complications for a review paper. They also briefly discussed management strategies for these complications based on the most recent literature.

A PubMed indexed search for all neuroendovascular clinical trials, retrospective studies, and prospective studies that reported femoral artery access-site complications in neurointerventional procedures.

The overall access-site complication rate in RCTs is 5.13%, while in non-RCTs, the rate is 2.78%. The most common complication in both groups is groin hematoma followed by access-site hemorrhage and femoral artery pseudoaneurysm. On the other hand, wound infection was the least common complication.

The transfemoral approach in neuroendovascular procedures holds risk for several complications. This review will allow further studies to compare access-site complications between the transfemoral approach and other alternative access sites, mainly the trans-radial artery approach, which is gaining a lot of interest nowadays [1].

Femoral artery approach is the main access in stenting of carotid artery, mainly due to rapid training in how to perform the procedure and a possibility of using large-diameter catheters.

However, this approach is not always feasible in atherosclerosis, tortuosity of lower-limb arteries and in certain anatomical peculiarities of the aortic arch. Using a trans-radial artery approach is based on the desire to diminish the incidence rate of haemorrhagic complications in the zone of the puncture and to avoid the necessity of a long-term bed rest. The findings obtained in numerous studies of coronary stenting and in a series of works on stenting of carotid arteries have demonstrated that the transradial approach reduces the risk of haemorrhage and local vascular complications.

A study from Shchanitsyn et al., was aimed at comparative analysis of the transradial versus transfemoral approach used in carotid stenting. They retrospectively analysed the results of transradial and transfemoral stenting of carotid artery in a total of 168 patients. The operations had been performed in two centres over the period from 2012 to 2017. They evaluated the clinical and angiographic data, technical aspects of the operations, as well as the outcomes and complications. In particular, they compared such complications as stroke, transient ischemic attack, myocardial infarction and local complications of the approach. They carried out a univariate analysis of the risk for the development of complications depending on the method of the approach. Stenting of carotid arteries had been performed in 75 patients through the radial artery approach and in 93 patients via the femoral one. Comparing the two groups, the main clinical and angiographic data appeared to have no statistically significant differences. Various techniques of catheterization had been used

depending upon anatomical peculiarities. The success of the procedure was achieved in 100% of cases, with the frequency of conversion amounting to 4% for the radial approach and to 1% for the femoral one (p=0.087). Amongst complications encountered, disabling stroke was revealed in two (1.2%) patients and minor stroke in four (2.4%). The groups did not differ by the incidence of neurological complications. Within 30 postoperative days neither lethal outcomes nor myocardial infarction were registered. Neither were there haemorrhagic events or other approach-related complications, however in the transradial-approach group, seven (9.3%) patients were found to have developed asymptomatic occlusions of the radial artery. The duration of the operation, the radiation load, and the length of hospital stay had no statistically significant differences depending on the approach used. Hence, the transradial approach is an effective and safe method in stenting of carotid arteries. In patients with high risk of haemorrhagic complications from the side of the vascular approach and with difficult anatomy of the aortic arch and its branches, hampering catheterization of the carotid artery via the femoral approach, the radial artery may be considered as an advantageous site of access [2].

References

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