Coil migration

Distal coil or stent migration is a rare, but potentially morbid complication of intracranial aneurysm embolization.

It is one of the most feared complications and might be related to poor functional outcomes [1) 2) 3) 4)] and contributes significantly to thromboembolic events [5)].

Treatment

Coil embolectomy, vessel repair, and aneurysmal neck clipping are necessary for surgical treatment after such distal coil migration. However, removal of intravascular coils is not always possible due to adhesion to the arterial wall. In such a case, revascularization procedures such as superficial temporal artery-MCA bypass may even be necessary; therefore, it is important to preserve the superficial temporal artery when performing surgery [6)].

At present, there is no established standard of surgical evacuation of displaced material-in particular, there is no consensus on the optimum time for such intervention.

Case reports

Haley et al. reported a case of coil migration into the oropharynx five years after treatment of a left internal carotid pseudoaneurysm following abandoned transsphenoidal resection of a pituitary macroadenoma. Eight other cases were found on literature review, with coil migration occurring between 2 and 120 months often after a history of transsphenoidal surgery. The majority of these were treated with trimming in a day case setting. This report highlights the need for careful extended follow up when a pseudoaneurysm forms with a concurrent skull base deficit [7)].

2017

Delayed coil migration after endovascular treatment with detachable coils, particularly several months after treatment, is extremely rare. In this report, the authors describe a 77-year-old female in whom delayed coil migration to the anterior cerebral artery and posterior communicating artery (PCoA) developed 3 months after an uncomplicated aneurysm embolization. The patient was successfully retreated with a closed-cell stent. Computational fluid dynamics (CFD) revealed high wall shear stress (WSS) and multiple vortices in the residual cavity of the initially treated aneurysm. CFD could be useful to detect and predict this complication, and a stent-assisted technique could be an important treatment option [8)].

Turek et al. report their positive experiences with an ultra-early surgical evacuation of 2 migrated coils and a flow-diverter stent.

Uncontrolled coil or stent migration occurred in 3 (0.75%) of approximately 400 patients treated between 1999 and 2012 in the authors' institution.

In all 3 cases, the materials moved from their intended position to the middle cerebral artery (MCA). Surgical evacuation was started immediately (within half an hour) after a futile attempt of removing them via intraarterial route, under the same anesthesia and with no active reversal of heparinization.

No excessive bleeding was observed. Displaced coils were extracted through an incision of a branch of MCA-the anterior temporal artery, the stent was removed through a direct incision of MCA. Recombinant tissue plasminogen activator (rtPA) was injected to the stem of the internal carotid artery toward the end of the procedure, with no discernible adverse effects. Two patients were discharged with no deficit (Glasgow Outcome Scale [GOS] Score 5); the other patient was conscious with mild hemiparesis (GOS Score 4) at discharge.

The experiences of these 3 cases suggest that immediate removal of a migrated stent/coil is feasible and may be effective. Indirect access to the MCA through its branch helps to shorten the time of temporary clipping of the artery to a minimum. Maintaining active heparinization and direct intraarterial injection of rtPA are helpful in promoting blood flow in the MCA [9].

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