

Case Reports & Case Series

Recurrent coil migration after treatment of traumatic pseudoaneurysm: A case report



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ABSTRACT

Introduction: Coil migration (CM) is an extraordinary delayed complication associated with coil embolization as the definitive treatment for pseudoaneurysm (PA). Our case is a recurrent one with episodes occurring in approximately 2-year intervals.

Case presentation: A teenager presented with a PA after a car accident in 2014. He was admitted and treated with stent-assisted coils at our institution. The patient experienced delayed coil migration into the nostril in 2017 which we resolved by cutting off the migrated coils under nasal-endoscopy. The remaining coils migrated into the oral cavity in 2019 and were completely pulled out under nasal-endoscopy.

Conclusion: When a patient experienced CM in vitro, it is advocated that, the extruding coils be cut off while the remaining coils are left in-situ. As much as possible, coil should not be forcefully pulled out.

1. Introduction

Coil migration (CM) is an extraordinary delayed complication associated with coil embolization as the definitive treatment for pseudoaneurysm (PA). This phenomenon has been present in the bronchus, nasopharynx, oropharynx, external auditory meatus [1–4]. Cutting off the coils in vitro is often the most common salvage modality [5]. It is advocated after coils embolization, patients should be monitored closely during the first month than every 3 months with contrast enhanced CT, CT angiography, or conventional angiography to detect this phenomenon early [1,6]. Our case is a recurrent one with episodes occurring in approximately 2-year intervals.

2. Case report

An 18-year old male had craniotomy to evacuate subdural hematoma after a road traffic accident in 2014. He subsequently developed pseudoaneurysm (PA) of the right internal carotid artery (ICA) at the C4 segment (Bouthillier) (Fig. 1A&B) [5]. In 2017 he experienced delayed coil migration following treatment of (PA) with stent-assisted coils into the nasal cavity (Fig. 1C) [5]. The coils were used as a definitive management of his PA. With the aid of a nasal-endoscopy, we successfully retrieved the coils in 2017. He was discharged home with some on the coils in-situ (Fig. 1D) [5]. In February 2019, the patient

presented again with coils in the oral cavity (Fig. 2A). This time, all the remaining coils migrated into the oral cavity. A cerebral digital subtraction angiography (DSA) performed confirmed that all the remaining coils migrated into the oral cavity with no fistula or a PA at the ICA (Fig. 2B). The coils were again successfully retrieved via cutting them off from the oral cavity under nasal-endoscopy (Fig. 2C). We utilized nasal endoscopy to detect any epistaxis in case it occurs and to make sure all the coils were retrieved this time. We however did not experience epistaxis. Nevertheless, we observed soft tissue granulation around the coils in the oral cavity (Fig. 2D). DSA done after the retrieval of coils revealed no coils in the ICA as well as the oral cavity (Fig. 2E). The patient is currently well with no further neurological deficits.

3. Discussion

The incidence of internal carotid artery (ICA) PA following head injury is very rare. The juxtaposition of the carotid artery to the sphenoid bone exposes the vessel to injury during traumatic head injury. PA may arise at this point and most often easy to rupture [3,7]. Angiography is usually obligatory to exclude PA, dissection or fistulas if traumatic injury of the ICA is anticipated [3]. Nevertheless, computed tomography (CT) and magnetic resonance imaging (MRI) are still the initial radiological modalities used in the assessment of the patient. Coil embolization is a very fast and safe treatment modality for PAs because,

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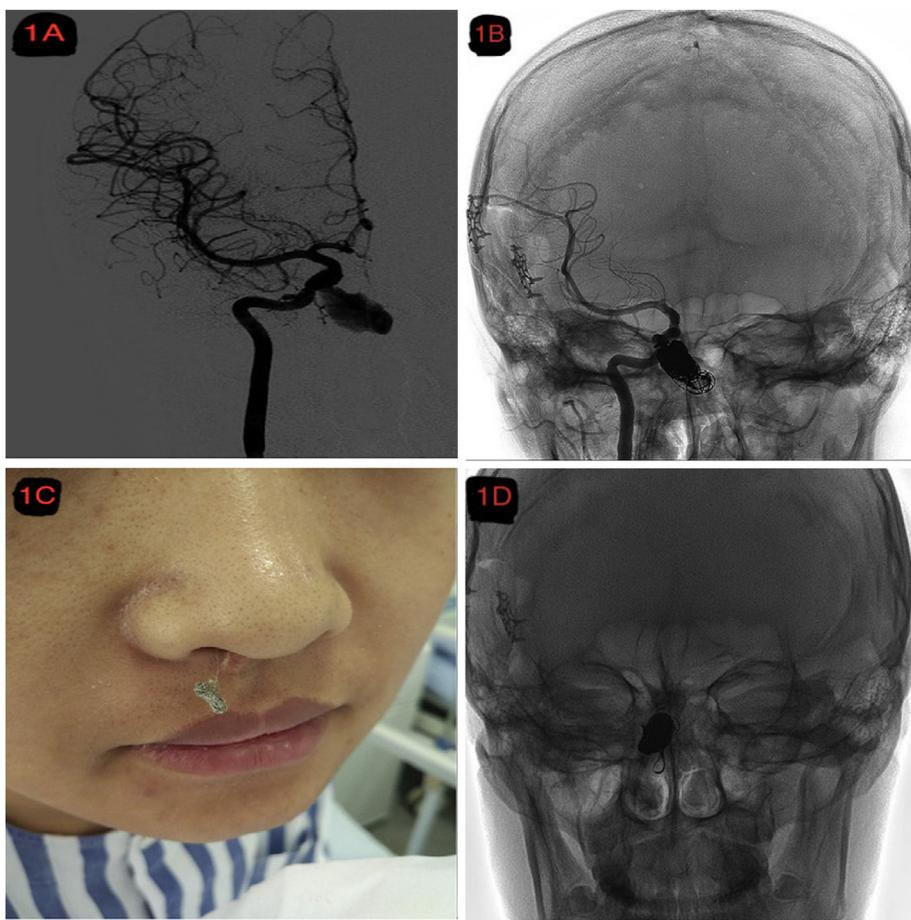


Fig. 1. A&B are DSA images showing embolization coils in the pseudoaneurysm (PA) of the right internal carotid artery (ICA) at the C4 segment (Bouthillier).

C is an initial image of the boy when he was 16 years old with coils at the nasal cavity.

D is a DSA showing the remaining coils in-situ after cutting off the migrating coils under nasal endoscopy.

Note: A–D are modified with permission from Wang T, Zhang C, Xie X. Delayed Coil Migration After Treatment of Traumatic Pseudoaneurysm. *World Neurosurg.* 2018;113:206-7.

PAs at the C4/5 segment are easily accessible with a microcatheter [3]. The PA in our patient was cured with the coil embolization.

One of the rare but interesting complication associated with coil embolization as a definitive management of PA of the ICA is CM. These coils have been retrieved in the bronchus, nasopharynx, oropharynx, external auditory meatus, stomach as well as transcutaneous [1–5,8]. CM into the airway can result to hypoxia leading to respiratory arrest if early detection and retrieval is not done [1].

Struffert et al. detected CM 9 months after treating their patient with coil embolization and a stent [3]. In their second case, they were afraid of another incidence of CM so they sealed the coils with glue and fat before implantation. The time frame for the recurrence of CM in our patient was approximately 2 years interval after the coil embolization therapy. Struffert et al. observed granulation lesions at CM sites. These lesions were made up of only fibrous tissue and not typical vessel wall rudiments [3]. We also observed granulations tissue around the coils during retrieval.

It has been affirmed that; platinum coils often wield an uninterrupted external radial force against the PA wall. This radical force has potentials of expanding and pushing the coils into ectopic sites. It advocates that follow-ups should be done within the first month than every 2–3 months with contrast enhanced CT, CT angiography, or conventional angiography like DSA [1,6].

4. Conclusion

CM is one of the rare complications associated with coil embolization of the PA. When a patient experienced CM in vitro, it is advocated that, the extruding coils be cut off while the remaining coils are left in-situ. This treatment modality is adapted to prevent bleeding from sites where the coils are located. Nasal-endoscopy was very useful in

visualizing eminent bleeding sites or bleeding.

Abbreviations

CM	Coil migration
CT	Computed tomography
PA	Pseudoaneurysm
ICA	Internal carotid artery
DSA	Digital subtraction angiography
MRI	Magnetic resonance imaging

Declaration

Availability of data and materials: Data sharing is not applicable to this article because no datasets were generated or analyzed during the current study.

Ethics approval and consent to participate: The ethical committee of West China hospital fully approved our case. The patient and relatives were informed about our intension to involve him in this case and they agreed.

Consent for publication: The patient and relatives were dually informed about our intention to publish his case and they fully concerted to the use of these documents. A written informed consent was obtained. A written concern for publication was signed. The hospital also concerted to the use of this information for publication.

Author contributions: All authors contributed to data analysis, drafting and critically revising the paper and agree to be accountable for all aspects of the work.

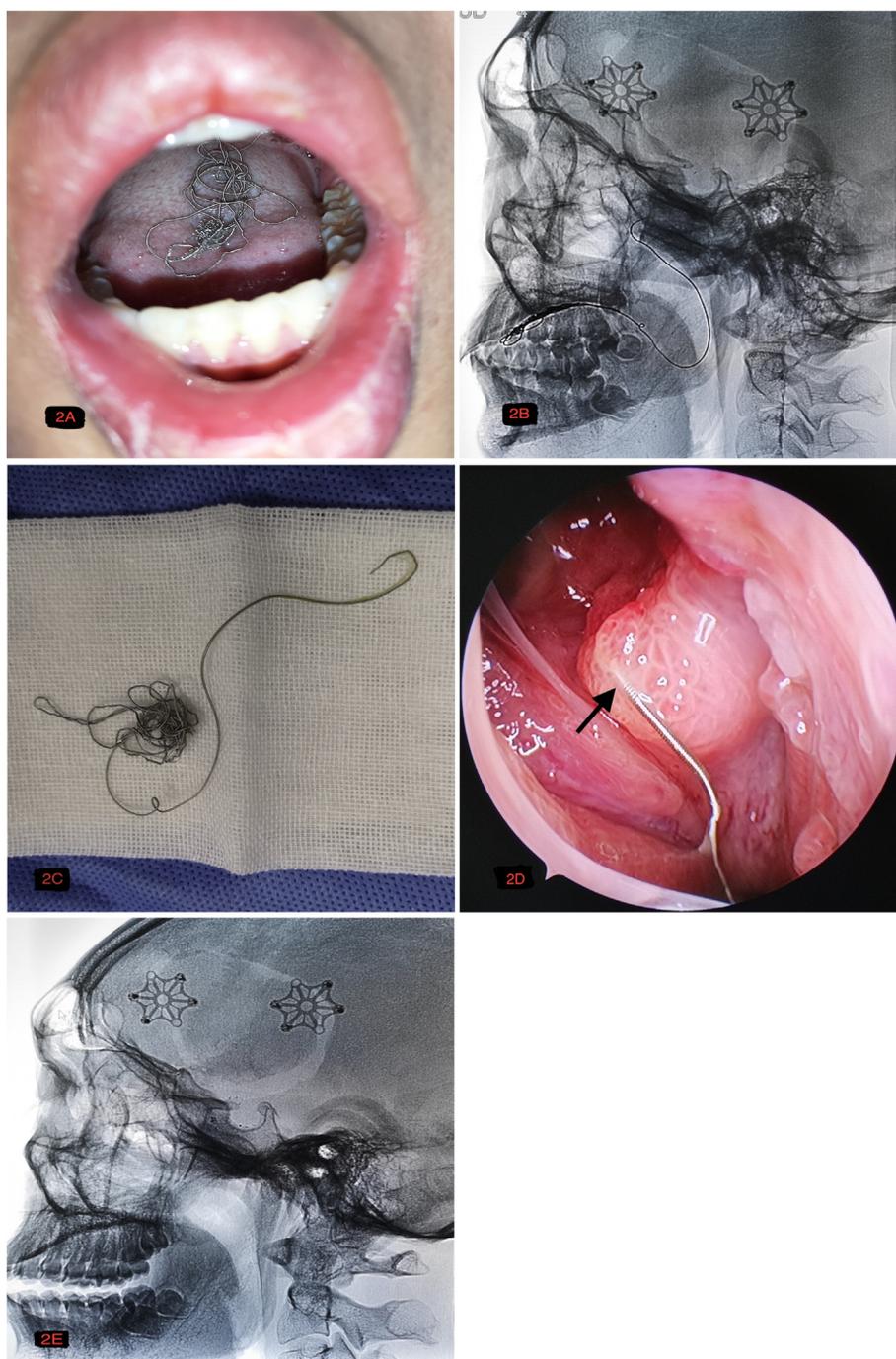


Fig. 2. A is a current image of the boy showing the remaining coils migrating into the oral cavity. B is a DSA showing the remaining coils migrating into the oral cavity. C is an image of the coils retrieved from the oral cavity. D is an image showing granulation tissues around the coils under nasal-endoscopy (black arrow). E is a DSA done after removal of coils. No coils were visible in ICA as well as the oral cavity.

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Declaration of Competing Interest

All the authors have no competing interest to disclose.

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