LETTER TO THE EDITOR

To The Editor

Delayed Aneurysm Clip Migration from the Posterior Fossa to the Thoracic Spinal Canal

Keywords: Aneurysm, Clip

We present the case of an 84-year-old female who presented with a World Federation of Neurosurgical Societies Grade 1 subarachnoid haemorrhage in 2012 when she was 76 years old. CT scan demonstrated a modified Fisher grade 4 subarachnoid haemorrhage with blood centred around the medulla and in the 4th and 3rd ventricles without hydrocephalus. Digital subtraction angiography revealed an irregular, 4 × 2.5 × 2 mm saccular aneurysm on an arterial branch arising from the distal left posterior inferior cerebellar artery (PICA) tonsillar segment (Figure 1C). The left vertebral artery has normal anatomical branching pattern and does not end in PICA.

Via a far lateral craniotomy, the aneurysm was clipped with a bayonetted mini-clip (Sugita Elgiloy Non-ferromagnetic) (Figure 1A and B). Post-operative CT scan demonstrated complete exclusion of the aneurysm with the clip in the expected location (Figure 1D and E). The patient was discharged well 10-d post-clipping. One-year post-clipping, the patient underwent a CT head after presenting with a right-sided transient ischaemic attack. The clip at this time was in the same location. Six years after clipping, the patient presented with confusion and a CT head demonstrated the clip now adjacent to the C2 vertebra intradurally (Figure 2A). CTA demonstrated no aneurysm recurrence. Three months after this, a chest X-ray for productive cough demonstrated that the clip had migrated further to the level of the thoracic spine (Figure 2B and C). The patient remained asymptomatic from the clip migration with no signs of radiculopathy or myelopathy clinically. The aneurysm has not been demonstrated to have recurred on CT angiography. A number of case reports have been published describing the

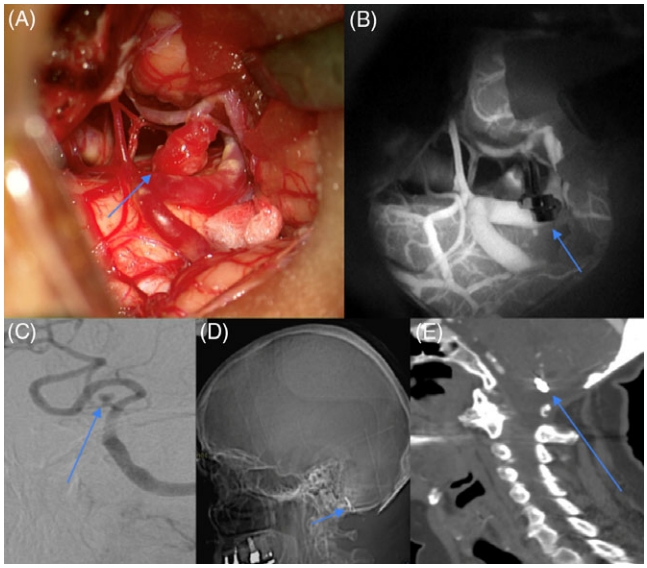

Figure 1: *(A) Intraoperative photography showing the aneurysm and parent artery (arrow); (B) Indocyanine green intraoperative angiography showing clipped aneurysm with no flow in the sac (arrow); (C) pre-operative cerebral angiogram, left vertebral injection A/P projection with aneurysm (arrow); (D) & (E) Post-operative CT scout and sagittal CT showing clip in situ (arrows).*

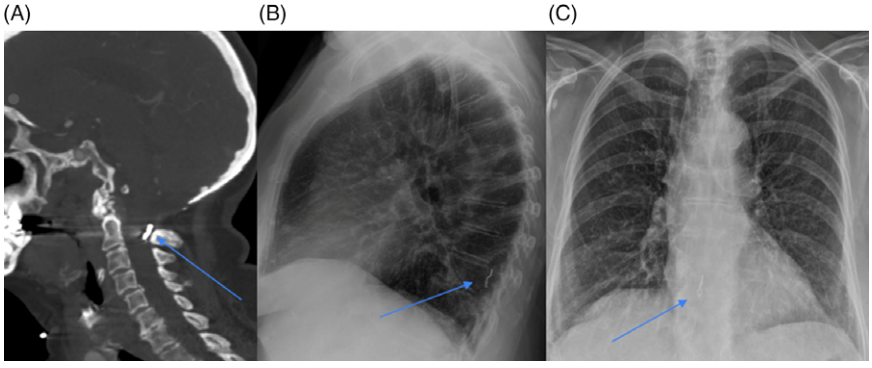

Figure 2: *(A) CTA Sagittal reconstruction shows the Clip posterior to cord at C2 (arrow); (B) Chest X-ray lateral view & (C) frontal view shows the Clip anterior to cord at lower thoracic spine (lateral and AP views – arrows).*

https://doi.org/10.1017/cjn.2021.72 Published online by Cambridge University Press

phenomenon of late clip migration in both aneurysm and arteriovenous malformation cases.[1–4] Presumably, the necrosis and involution of the aneurysm could destabilise the dome and cause the clip to detach, while formation of a neo-endothelial layer allows the parent vessel patency to be maintained and re-rupture to be avoided. This must be distinguished from early clip slippage as described by Drake and Allcock in 1973[5] and expanded upon in a meta-analysis by Szmuda et al where the majority of collected cases described clip slippage in terms of days to weeks post-clipping with multiple instances of re-bleed (although they did describe a single instance of slippage at 8 years post-operatively with haemorrhage).[6] Our patient remains well with no abnormality on imaging, no recurrence at the site of previous aneurysm and the clip is asymptomatic in its current location. We continue to manage the patient conservatively.

Disclosures

The authors have no conflicts of interest to declare.

Statement of Authorship

RK and AJ wrote the manuscript, TM and SL provide the intraoperative images and details, DP provide radiology images and details, and MS and SL made revisions and approved the final version.

Ruba Kiwan
Department of Medical Imaging, Western University, London, ON, Canada

Department of Clinical Neurological Sciences, Western University, London, ON, Canada

Alistair Jukes
Department of Clinical Neurological Sciences, Western University, London, ON, Canada

David Peck
Department of Medical Imaging, Western University, London, ON, Canada

Manas Sharma
Department of Medical Imaging, Western University, London, ON, Canada

Department of Clinical Neurological Sciences, Western University, London, ON, Canada

Thomas Mattingly
Department of Neurosurgery, Rochester University, NY, USA.

Stephen P. Lownie
Department of Medical Imaging, Western University, London, ON, Canada

Department of Clinical Neurological Sciences, Western University, London, ON, Canada

Correspondence to: Stephen P. Lownie, Department of Medical Imaging & Clinical Neurological Sciences, Western University, London, ON, Canada. Email: steve.lownie@lhsc.on.ca

References

1. Kim YH et al. Migration of an aneurysm clip to the sacral subarachnoid space. Acta Neurochirurgica. 2009;151: 699–700.
2. Oyesiku NM, Jones RK. Migration of a heifetz aneurysm clip to the cauda equina causing lumbar radiculopathy. J Neurosurg. 1986;65:256–57.
3. Hu D, Yang X, Wang J. Migration of intracranial hemostatic clip into the spinal canal: a case report and literature review. Br J Neurosurg 2015;29:859–61.
4. Chen CC et al. Cranio-spinal migration of a metallic clip placed during arteriovenous malformation resection a case report, review of the literature, and management strategies. BMC Neurol. 2010;10:109.
5. Drake CG, Allcock JM. Postoperative angiography and the 'slipped' clip. J Neurosurg. 1973;39:683–89.
6. Szmuda T, Słoniewski P. Late postoperative slippage of the cerebral aneurysm clip. A systematic review and meta-analysis. Eur J Translat Clin Med. 2019;2:56–69.

https://doi.org/10.1017/cjn.2021.72 Published online by Cambridge University Press