

Strayed guidewire into the epidural space during internal jugular vein puncture in a paediatric patient

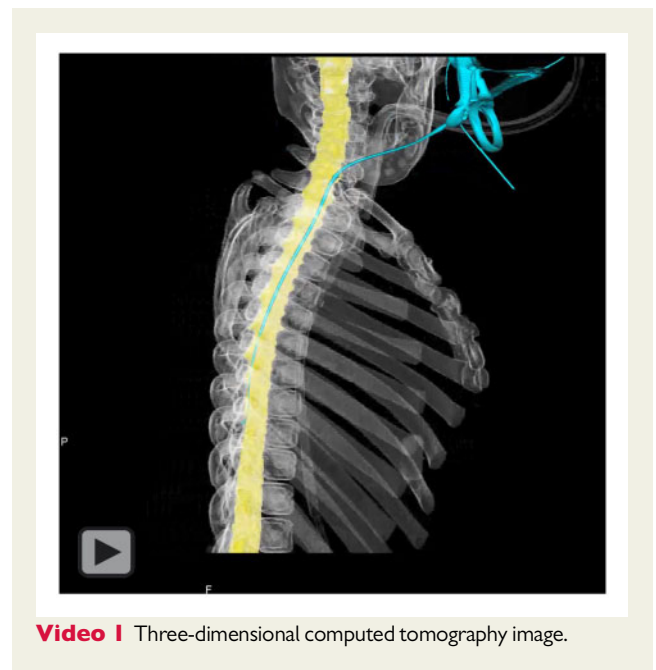
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A 2-year-old boy with congenital heart disease after bidirectional Glenn procedure for double outlet right ventricle and hypoplastic right ventricle had a heart catheterization under general anaesthesia. An ultrasound-guided internal jugular vein (IJV) puncture was performed with the head rotated to the left. After confirmation of blood return, a guidewire could be inserted; however, the operator felt some resistance to its advancement. The fluoroscopic frontal view showed that the guidewire was inserted in a different position than the IJV (Figure 1A, red arrowheads). Moreover, the lateral view revealed that it was running downwards along the spinal column (Figure 1B, red arrowheads). Considering possible nerve and spinal vessel injury, we carried out investigation using a contrast-enhanced computed tomography (CT) before pulling out the guidewire. Three-dimensional CT confirmed guidewire malposition into the epidural space indicating no damage to the nerve system and spinal vessels (Figure 1C and Video 1). After the confirmation, the guidewire was carefully removed. The next day's CT demonstrated that there was no haematoma in the spinal cavity. He was discharged without neurological deficit.

Internal jugular vein puncture has become a common practice in a heart catheterization, but complications are not uncommon.¹ Particularly in paediatric patients, attention should be paid to guidewire aberration because the distance between the IJV and vertebral vein is closer than that in adults.² In the present case, the guidewire penetrated the vertebral vein due to deep puncture and aberrated into the epidural space (Figure 1D). The nerve injury was recognized in a previous case report of a stray Swan-Ganz catheter into the subarachnoid space.³ This case presents following two lessons for a daily clinical practice: (i) when inserting a guidewire it should not be advanced against resistance and (ii) if a guidewire malposition into



Video 1 Three-dimensional computed tomography image.

adjacent structures of the spinal cord is suspected, CT evaluation should be considered before the removal to avoid the subsequent nerve and spinal vessel damage.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

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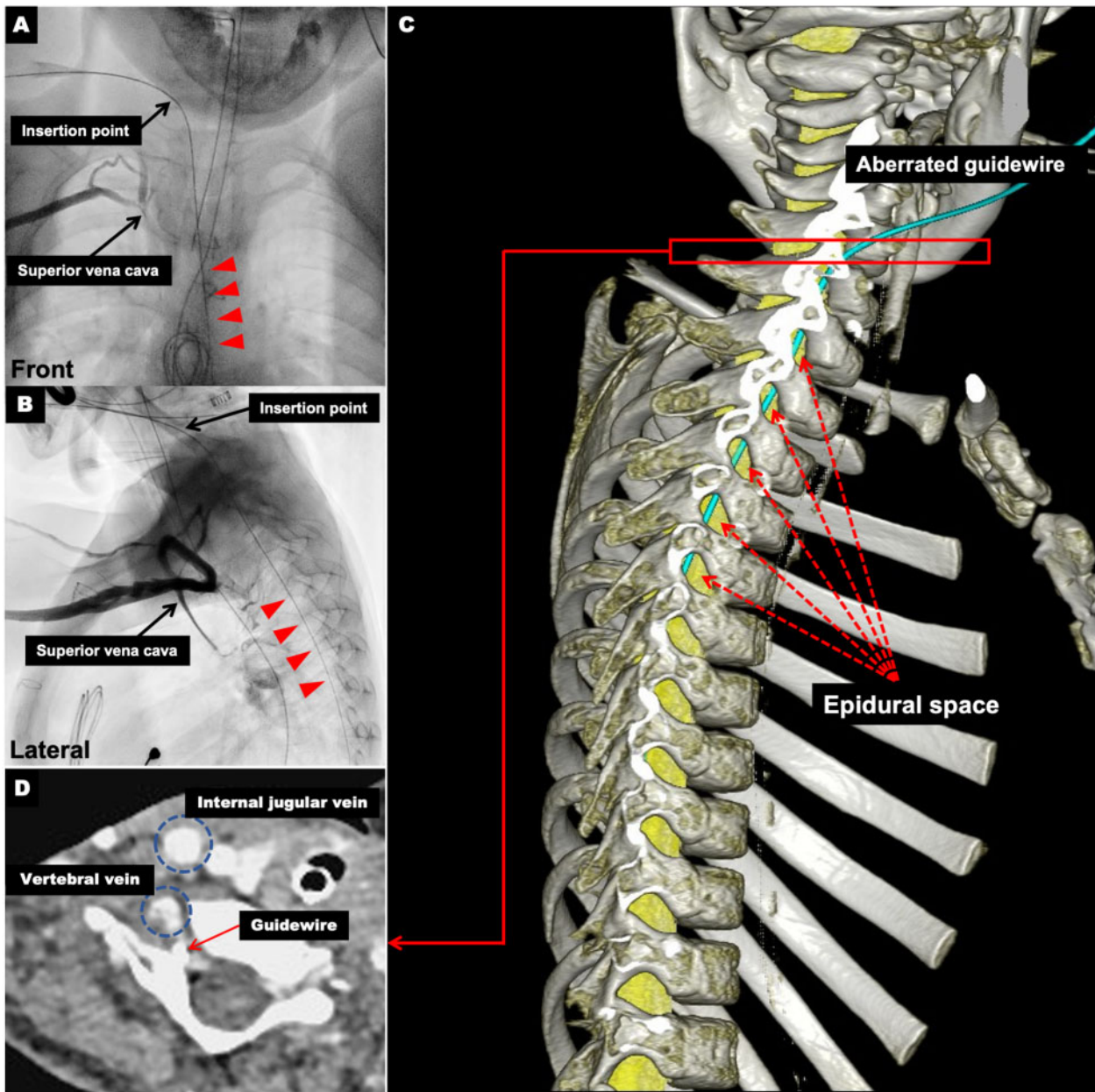


Figure 1 (A) The fluoroscopic frontal view showing the guidewire insertion in a different position (red arrowheads). (B) The fluoroscopic lateral view suggesting the guidewire running downwards along the spinal column (red arrowheads). (C and D) Three-dimensional computed tomography image confirming the guidewire malposition into the epidural space (C) and the guidewire penetrating the vertebral vein (D).

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