A case of cervical pneumorrhachis induced by the combination of pneumomediastinum and root avulsion injuries

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I read with interest the online publication from July 2006 of the *European Spine Journal*, the study by Dr. Oertel and colleagues [3]. We present a first case of cervical pneumorrhachis induced by a combination of both pneumomediastinum and cervical root avulsion injuries to add a new pathogenesis of the pneumorrhachis.

A 47-year-old man was admitted to our hospital after an automobile accident that he had while driving under the influence of alcohol. He demonstrated unconsciousness, right flail chest and hemorrhagic shock state. A plain X-ray study exhibited right multiple rib fractures with pneumo-hemothorax, right humerus, right radio-ulnar, right femur and pelvic fractures. He was intubated and underwent fluid resuscitation. After recovering from hemorrhagic shock, weak pulsation of the right radial artery comparison with the left one was recognized. His body CT disclosed cervical pneumorrhachis, pneumomediastinum (Fig. 1). An angiographic study indicated right subclavian intimal arterial injury and an emergency insertion of a stent was thus performed. He underwent artificial ventilation until his respiratory function improved. After the extubation, he showed no motor or sensory responses in the right upper extremity, which ranged from C5 to the Th1 root area, thus indicating the existence of cervical root avulsion injuries. Internal

fixations for the fractures were performed on the 35th hospital day. Because his neurological deficit on the right upper extremity did not show any improvement, an intercostal nerve transfer was performed on 188th hospital day. He was discharged on the 198th day after obtaining a slight degree of abductor movement in his right shoulder.

The vast majority of root avulsions are associated with traumatic meningoceles, which are bulges of the arachnoid membrane through a dural tear [1]. A dural tear of root can result in cerebro-spinal fluid leakage [2] so that an air of pneumomediastinum can intrude into a spinal canal through it. The finding of air in the spinal canal by radiological studies in a traumatized patient, means that further investigations and follow-up is needed to rule out such complications as spinal

Fig. 1 Cervical CT at C7 level The CT demonstrated pneumomediastinum and pneumorrhachis (black arrow)

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canal and cord injury, skull base fracture and root injuries.

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