Respiratory Complications after Laryngotracheal Separation

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We performed laryngotracheal separation (LTS) surgery in 27 patients with severe motor and intellectual disabilities (SMID) over a period of 8 years. Of these, seven developed serious respiratory complications after the operation. Herein, we present four of the cases with severe respiratory complications.

Case 1: A 9-year-old boy who developed severe breathing difficulty with tracheomalacia immediately after LTS: The condition was attributed to narrowing of the lumen of the trachea by the adjacent brachiocephalic artery. Brachiocephalic artery ligation was performed, which resulted in expansion of the lumen of the trachea.

Case 2: A 9-year-old boy who developed severe breathing difficulty with airway obstruction and difficulty in expectoration three years after the LTS operation: His level of consciousness decreased, which persists until date.

Case 3: A 9-year-old boy who developed severe airway obstruction with difficulty in expectoration four months after the LTS operation: He was in deep coma on arrival, and died of heart failure six months later.

Case 4: A 5-year-old girl who developed pneumonia due to respiratory syncytial virus infection: she died sixteen 16 days later.

We need to modify the operating technique of LTS in cases with a distance of less than 20 mm between the back of the sternum and the anterior aspect of the vertebral body. In such cases, it is desirable to avoid lifting the trachea that may cause narrowing of the tracheal lumen by the adjacent brachiocephalic artery.

Thus, LTS surgery may result in serious respiratory complications, e.g., airway obstruction with difficulty in expectoration and severe pneumonia.

Sufficient explanation about the risk of respiratory complications must be provided to the family and caregiver prior to undertaking LTS surgery. Furthermore, after LTS surgery, multiple approaches to respiratory care, including chest physiotherapy and breathing exercises are necessary.

Keywords : respiratory complications, laryngotracheal separation, severe motor and intellectual disabilities, narrowing lumen of trachea, airway obstruction

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a **b** **c**

The CT findings of case 1 (a : sagittal findings, b : axial findings, c : 3-D CT findings)

Tracheomalacia was attributed to narrowing of the lumen of the trachea by the adjacent brachiocephalic artery.

The CT findings of case 1 ; sagittal findings, postoperation.

The distance between the back of the sternum and the anterior aspect of the vertebral body is less than 20 mm.