

Robotic Assisted Thoracoscopic Repair of Iatrogenic Tracheal Rupture

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Abstract

Introduction: Tracheal rupture is a rare condition, and its most common cause is head and neck trauma. Iatrogenic rupture is extremely rare and has multiple causes of which orotracheal intubation is the most common (1). Its importance derives from the associated high morbidity and mortality. The specific therapy is either conservatory or surgical, either through a postero-lateral thoracotomy or minimally invasive (VATS). Robotic assisted surgery to repair the post-intubation iatrogenic tracheal rupture after elective surgery has not been described so far in the literature.

Case presentation: We present a 54-year-old female patient with no significant underlying conditions, who presented subcutaneous emphysema of the supraclavicular fossa less than 24 hours after surgery for an L5-S1 disc herniation. The CT and bronchoscopy confirmed the suspicion of tracheal rupture in the membranous area, revealing a lesion of more than 5 cm, with minimal chances of healing through a conservative attitude. Surgery was decided and a robotically assisted approach was offered by a team with experience in applying this technology for thoracic/mediastino-pulmonary pathology. Using the DaVinci Xi platform, the mediastinal dissection was performed, the 5 cm tracheal breach was revealed at the lateral border of the membranous, azygos vein and vagus nerve, followed by closing the defect with resorbable PDO 4-0 monofilament thread and the application of co-polymer adhesive (Coseal) on the suture line. The operative time was 220 minutes and the intraoperative bleeding was minimal, (50 ml), without intraoperative complications. The robotic approach demonstrated the advantages of a generous exposure of the operative field, with a clear visibility of the meticulously dissected structures and facilitated the efficient suturing of the tracheal defect. Favorable post-operative outcome with both bronchoscopy and follow-up radiographs showed no signs of recurrence.

Conclusion: The presented case demonstrates the advantages of an efficient use of robotic assisted thoracoscopic surgery to treat a very rare complication, the iatrogenic rupture of the trachea. Although the good results are obvious, the large-scale application of robotic technology for tracheal surgery requires prospectively analyzed comparative studies.

Key words: iatrogenic tracheal rupture, robotic assisted thoracoscopy