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Use of Botulinum Toxin in Recurrent Diaphragmatic Hernia with Loss of Domain: Robotic-Assisted Hybrid Repair

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Background

Recurrent diaphragmatic hernias with loss of domain are rare and high-risk. Optimizing abdominal compliance can be crucial to prevent complications like abdominal compartment syndrome.

Aim

To report a complex case of Bochdalek hernia recurrence treated with botulinum toxin preconditioning and a hybrid robotic-open approach.

Material and Methods

17-year-old male with Down syndrome presented with respiratory failure. CT revealed a large left diaphragmatic hernia with 23% of abdominal content herniated. Botulinum toxin was administered bilaterally in the lateral abdominal wall. Robotic approach used for reduction and assessment of 10 x 11 cm defect. Conversion to open subcostal approach for mesh placement (Sepramesh). Pneumothorax treated post-op with VATS.

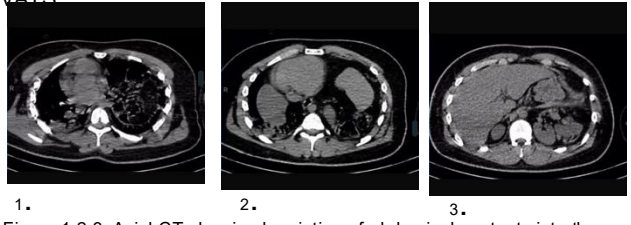

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Figure 1,2,3. Axial CT showing herniation of abdominal contents into the thoracic cavity.

Figure 4. Chest X-ray (pre-op): elevation of diaphragm and mediastinal shift.

Figure 5. Chest X-ray (post-op): re-expansion of the lung and mesh position.

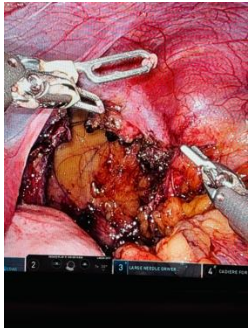

Figure 6. Robotic dissection of diaphragmatic defect.

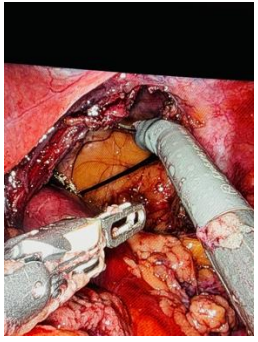

Figure 7. Robotic dissection of diaphragmatic defect.

Results

The patient exhibited prolonged difficulty weaning from mechanical ventilation due to agitation and neurobehavioral symptoms associated with Down syndrome and autism. Extended sedation was required during the initial postoperative period. He was successfully decannulated and transitioned to oral feeding. The patient was discharged one month after surgery. Total hospitalization time was four months, including treatment of pneumonia, administration of botulinum toxin, and surgical recovery. At 10-month follow-up, he remained asymptomatic with no evidence of hernia recurrence.

Conclusion

Botulinum toxin enabled safer content reduction. Robotic approach allowed precision; open conversion ensured secure mesh repair.Hybrid strategies are valuable in complex diaphragmatic hernia cases, especially in syndromic patients.

References

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