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11th International Meeting on General Thoracic Surgery
Clínic Barcelona | Universitat de Barcelona | Hospital Universitari Sagrat Cor

5th Meeting of the Thoracic Oncology, Thoracic Surgery, Techniques & Transplant, Respiratory Nursing and Respiratory Physiotherapy Areas of the Spanish Society of Pneumology and Thoracic Surgery (SEPAR)
Sociedad Española de Neumología y Cirugía Torácica (SEPAR)

10th International Workshop on Surgical Exploration of the Mediastinum and Systematic Nodal Dissection
Hospital Universitari Mútua Terrassa | Universitat de Barcelona

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3rd Joint Meeting of the Spanish Society of Thoracic Surgery (SECT)
SECT Sociedad Española de Cirugía Torácica

30th Congress of the "Asociación Iberoamericana de Cirugía Torácica" AIACT

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UNIPORTAL ROBOTIC-ASSISTED FIRST RIB RESECTION FOR THORACIC OUTLET SYNDROME: A NOVEL MINIMALLY INVASIVE APPROACH

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Introduction:
Thoracic outlet syndrome (TOS) is a condition that can result in significant vascular and neurogenic complications. When conservative treatments fail, surgical decompression is often indicated. The robotic-assisted thoracoscopic surgery (RATS) technique has been utilized since 2011 for first rib resection, offering advantages such as enhanced maneuverability and improved visualization compared to traditional video-assisted thoracoscopic surgery (VATS). However, this case presents a novel surgical approach utilizing uniportal robot-assisted thoracic surgery (uRATS), marking the first known application of this technique for TOS treatment.

Case Presentation:
A 33-year-old female with a history of venous and neurogenic TOS presented with recurrent deep vein thrombosis (DVT) in the right upper extremity. Diagnostic imaging, revealed stenosis of the right subclavian vein, exacerbated by arm abduction and relieved at rest. Given her recurrent DVT and failure of conservative therapies, surgical decompression was indicated.

Surgical Technique:
Under general anesthesia, with the patient in left lateral decubitus, a 4-cm incision was made at the 4th intercostal space. Three 8-mm robotic trocars were inserted through this single incision. Using robotic instruments, including monopolar cautery and a bone cutting forceps, the first rib was carefully dissected and removed. The robotic system allowed precise dissection and resection. The patient recovered well and was discharged on postoperative day 3.

Discussion:
Uniportal RATS (uRATS) offers significant benefits over conventional multi-port RATS and VATS, including reduced tissue trauma and enhanced postoperative recovery. Despite challenges in maneuvering through a single port, uRATS allows surgeons to leverage the ergonomic advantages of robotic systems while minimizing surgical morbidity. This case

demonstrates the feasibility and safety of uRATS for first rib resection, setting a precedent for future minimally invasive surgical approaches in TOS treatment.

Conclusion:
This video presentation showcases the technique of uniportal robotic-assisted first rib resection, offering insights and practical tips for surgeons. By advancing minimally invasive techniques, we aim to improve outcomes for patients with thoracic outlet syndrome, ensuring effective treatment with fewer resources and better recovery.

Keywords: Thoracic Outlet Syndrome, Uniportal Robotic Surgery, First Rib Resection, Minimally Invasive Surgery, RATS