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3rd Joint Meeting of the Spanish Society of Thoracic Surgery (SECT)



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10th International Workshop on Surgical Exploration of the Mediastinum and Systematic Nodal Dissection



INNOVATIVE 3D PROSTHETIC RECONSTRUCTION OF THE THORACIC WALL: INITIAL SURGICAL EXPERIENCE AFTER TUMOR RESECTION

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Objective: To present the initial results of chest wall reconstruction surgery using customized 3D prosthetics.

Methods: Retrospective, descriptive study (March 2023 - June 2024) of patients (p) who underwent chest wall resection with customized 3D-printed prosthetics and flap coverage reconstruction. Demographic data, comorbidities and preoperative information were analyzed.

Results: Total of 16p, (56%) females. Mean age 57.18 years (SD±16.3). 9p (56.2%) with comorbidity, previous neoplastic 7p (43.75%). Spirometry tests on 11 patients (68.7%), mean FEV1 93.18%, mean FVC 99.18%. Mean BMI 25.75. 15p with costal, 8p (53.3%) sternal and 6p (40%) clavicular resection. 2p (12.5%) with lung resection, 2p (12.5%) with pericardium resection. Customized 3D prosthetics, planned with Computed Tomography (CT) scan, were used. The mean number of costal arches fixed was 2.8, with sternum fixation in 10 patients (62.5%) and sternoclavicular fixation in 6 (37.5%). The mean number of screws per surgery was 8, with surgical wires used in 81.25%. 10p (62.5%) with mesh and additional bovine mesh in pericardium resection. Muscle flaps were used in 15 patients. The mean surgical time was 446 minutes, and the mean hospital stay was 15.56 days. Complications occurred in 7 patients (43.75%), with no postoperative deaths.

Conclusions: Low incidence of malignant chest wall tumors, emphasizes the need for dedicated multidisciplinary teams Use of customized 3D-printed prosthetics enables effective reconstruction of the thoracic wall, providing adequate stiffness while maintaining the flexibility required to restore respiratory function.