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Preoperative predictive criteria for sternotomy necessity in the surgical treatment of intrathoracic goiters

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Category: Thoracic Surgery

DOI: 10.31744/einstein_journal/2024ABS_BTS_ST0014

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Introduction: The intrathoracic goiter is a mediastinal condition from the thyroid. It can be primary, independent from the cervical thyroid, or secondary, a result of the gland enlargement from the neck to the thorax. The diagnosis is made through physical examinations and imaging tests, such as CT scans and scintigraphy. Total thyroidectomy is the main treatment for substernal goiters, rarely requiring sternotomy. Pre-operative factors such as time of evolution, density and tissue location can predict the need for sternotomy. The development of robotic surgery also offers a viable alternative for complex cases of intrathoracic goiters.

Objective: This study aims to evaluate the predictive preoperative criteria used in different hospitals for the need of sternotomy in the surgical treatment of intrathoracic goiters.

Methods: An integrative bibliographic review was conducted using the descriptors “intrathoracic goiter” OR “intrathoracic goitre” AND “sternotomy” OR “sternotomy criteria” on the following search engines: PubMed and BVS (*Biblioteca Virtual de Saúde*). We limited the results to articles published from 2020 to 2024 that were available in english, portuguese and spanish. Review articles, case reports and articles that didn't discuss the review subject were excluded from the final selection.

Results: Goiters older than 9 years and the substernal portion of the goiter having a mediastinal extension ≥ 5 cm beyond the sternal notch showed high sensitivity and specificity for predicting the need for sternotomy.⁽¹⁾ The thyroiditis process proved to be a significant predictor of the sternotomy need.⁽²⁾ The fact that the goiter extends below the aortic arch,^(2,3) more than 50% of the goiter being located in the thorax, having malignancy characteristics, being in the posterior mediastinum, being a primary substernal goiter and wider than the thoracic inlet were also considered relevant predictive factors for sternotomy.⁽³⁾

Conclusion: The results obtained do not show a consensus on which factors should be considered during surgical planning for this type of disease. The only point of agreement between the studies was the location of the goiter below the aortic arch. Thyroidectomy with an isolated cervical approach is usually adequate for the majority of cases, since the mediastinal portion can be mobilized using appropriate surgical techniques, to be removed by cervicotomy access, and in around 5% of surgical approaches, sternotomy is necessary due to the location below the aortic arch. Pre-operative planning is of the utmost importance in order to avoid intra-operative complications, exposing the patient to a longer hospital stay and greater risk factors for morbidities associated with sternotomy. It can therefore be concluded that the lack of an effective guideline means that the approach is left to the discretion of the surgical team, which can result in complications that

lead to functional impairment of the patient when not handled by experienced professionals.

Keywords: Intrathoracic goiter; Surgical procedure; Sternotomy

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SGPP number: Not applicable.

CAAE: Not applicable.

Research funding: Not applicable.