

# EDITORIAL COMMENT

**Ana Luís Garcia<sup>1</sup>**

<sup>1</sup> IPO Francisco Gentil de Coimbra

## Chest wall reconstruction – a challenge for the imagination

The first chest wall reconstruction was described by Tensini in 1906 when a pedicled latissimus dorsi flap was used to cover an anterior chest wall defect. Since then, much has evolved, but this is still a very individualized process for each patient.<sup>1,2</sup>

As a thoracic surgeon, one of the most demanding situations related to chest wall reconstruction is chest wall tumour removal which often requires large resections to achieve R0 margins and therefore implies major chest wall defects.<sup>3</sup>

The main question before surgery is: How are we managing to close the chest wall defect caused by the tumour resection?

The goals of a successful chest wall reconstruction include restoring the chest wall rigidity, preserving pulmonary mechanics and protecting the intrathoracic organs minimizing the thoracic deformity.

Chest wall reconstruction can be challenging, as the perfect reconstruction materials do not exist and those that get closer to be ideal are quite expensive.<sup>1</sup>

Universal criteria for material selection include noncarcinogenicity, chemical inertness, resistance, sterility, unresponsiveness to body and tissue fluids, minimal foreign-

body reaction, nonallergenic nature and also the surgeon's experience with each one.<sup>4</sup>

Actually, several synthetic, biologic and metallic materials are available for reconstruction of the chest wall defects.<sup>1,5</sup>

With recent evolving technology, material solutions for chest wall reconstruction have increased.<sup>6</sup> Some of those are designed and individually tailored for each patient. Obviously, these solutions are quite expensive, which leads us to consider individually their cost-benefit, namely the aesthetics, patients' function and quality of life improvement.

When the skeletal stability is established with prosthetic or bioprosthetic materials, or a combination of both, it is imperative that soft tissue coverage is achieved, using one of multiple available rotational advancement or free flaps. This procedure requires a precise understanding of neurovascular anatomy of muscle group to ensure a successful soft tissue transfer.

For all that is mentioned above, extensive chest wall resection and reconstruction are challenging procedures that require a multidisciplinary approach, including input from thoracic surgeon, plastic surgeon and oncologist.

REFERENCES

1. Daniel L. Miller, Frederick L. Durden. Chest Wall Reconstruction Utilizing Ovine-derived Reinforced Tissue Matrix, *Annals of Thoracic Surgery* Jan 2022. Doi:10.1016/j.athorac-sur.2021.12.062
2. Sanna S., Brandolini J., Pardolesi A., Argnani D., Mengozzi M., Dell'Amore A., Solli P., Materials and techniques in chest Wall reconstruction: a review, *Journal of Visualized Surgery*, 2017, Doi: 10.21037/jovs.2017.06.10
3. Wang, Ming-Jin; Gultawatvichai, Patan. Primary Chest Wall Tumors, Elsevier, Jan 2022.
4. Gaetano Roccco. Anterior Chest Wall Ressection and Reconstruction, *General Thoracic Surgery*, Mar 2013. Doi:10.1053/j.optechstcvs.2013.02.002
5. Isaac, Kathryn V., M.P.H., Elzinga, Kate, Buchel, Edward.W., The Best of Chest Wall Reconstruction: Principles and Clinical Application for Complex Oncologic and Sternal Defects, *Journal of the American Society of Plastic Surgeons*, Mar 2022, Doi: 10.1097/PRS.0000000000008882
6. Novoa N. M., Alcaide J. L.A., Hernandez M.T.G., Fuentes M.G., Goni E., Lopez M. F. J., Chest wall- reconstruction: yesterday, today and the future, *Shanghai Chest*, Feb. 2019, Doi: 10.21037/shc.2019.02.02