



Is chest ultrasonography an essential tool for the modern thoracic surgeon?

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We read with interest the paper of Dr. Scannagatta regarding the post-operative management in patients underwent thoracic surgery, analysing the different X-ray strategies (daily or on demand) and their possible implications. Indeed, often the chest X-ray (CXR) was used as an aid to verify what happened inside the pleural cavity but there are no guidelines on how many radiographs to perform and when for each type of intervention, therefore each center was based on its own experience. As demonstrated by Cerfolio *et al.* (1), daily radiographs do not guarantee a significant advantage in diagnostics and in avoiding post-operative complications. A strategy on demand is much more useful, as evidenced by Reeb *et al.* (2), where the CXR is performed only where there is clinical doubt.

Considering the points reported above, the author indicated the possible use of chest ultrasonography (CU) in these patients, that presents advantages but may also expose new interesting considerations.

Indeed, CU has gained popularity in recent years as a tool for the investigation of pleural and lung diseases and in the assessment of pleural procedures (3,4), but its role and its effectiveness after thoracic surgery is still under validation, also if some investigators tested its role in this setting. In particular, we conducted a pilot study stating that CU is a feasible and effective way in post-operative period especially in minimally-invasive surgery (5).

Thoracic ultrasound was born in this sense as assistance

for the surgeon in post-operative management. It is a natural continuation of the clinical examination, the auscultation of the patient through the help of a machine. “Clinical ultrasound is therefore a tool to see where one cannot see and to listen, with a certain refinement, to the response of organs and systems that are acoustically scanned.” (6)

In recent studies (7-9) the ultrasound was then evaluated in post-operative management in thoracic surgery. In fact, based on the findings of the ultrasound examination it is possible to make decisions regarding the removal of the drainage, the need for aspiration, antibiotic therapy or bronchoscopy.

Through the routine use of CU, in addition to the clinical examination, which remains essential, it has been possible to reduce the number of unnecessary CXR. Interestingly, in the work of Smargiassi and colleagues (9), they analyzed the concordance rate between CXR and CU in finding pneumothorax (PNX) and pleural effusion (PE) in particular (79% and 70%). Both methods have some limitations, however knowing the limits of CU is important to know when to justifiably request a CXR.

The two methods are not seen in contrast or in competition, but are complement to each other. It is up to the physician to know how to make the most of them, depending on the various cases. In the same direction we conducted another study (5) in which patients [undergoing open and video-assisted thoracoscopic surgery (VATS)

surgery] were evaluated with CU and as needed with CXR. Ultrasound enabled us to highlight the presence of non-drained PE, hematoma, atelectasis and post-operative PNX.

The use of ultrasound is therefore a fundamental aid for the modern thoracic surgeon, who must know how to perform and analyze it in order to make the best decisions for his patients, both from a diagnostic and post-operative point of view. There is the possibility of a problem with legal concerns and forensic medicine, as highlighted by Scanagatta *et al.* (10). However, we believe that the CU is just even enough without a pre-discharge CXR, if there are no clinical or ultrasound signals that could motivate the request. Furthermore, considering that it is a dynamic examination, it is possible to record every moment and it is also essential to write the report each time it is performed, as is the case of any radiological examinations. We also believe it is important that it is performed by experienced and trained medical staff who can recognize and explain any signs of anomalies. This does not mean that we consider ultrasound as the only valid method for the postoperative period. As said before, it is up to the physician to be able to perfectly integrate the tools at his disposal, starting from the ultrasound scan and using all the necessary additional radiological examinations as needed.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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