



Use of Oxidized Regenerated Cellulose in Patients with Lung Cancer: A Biomaterial to Handle with Caution!

Akciğer Kanserli Hastalarda Okside Rejenere Selülozun Kullanımı: Dikkatle Kullanılması Gereken Bir Biyomateryal!

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Dear Editor,

I read with interest the article of Sayan et al. (1) and would like to make some appraisals about using oxidized regenerated cellulose (ORC).

ORC is a bioabsorbable, sterile material prepared by the controlled oxidation of regenerated cellulose. It is used in surgery for its hemostatic properties; once the ORC has been left in the surgical bed and saturated with blood, it forms a black or brownish lump with a gel-like consistency that allows the clot formation, so acting as an adjuvant in the process of local hemostasis (2,3); in addition to its hemostatic properties, ORC has bactericidal activity thanks to its ability to reduce pH levels below 4.0, blocking bacterial survival (2).

However, as ORC is increasingly used in thoracic surgery, it is imperative to underline not only the benefits but also the possible problems.

I agree with Sayan et al. (1) that ORC used as a hemostatic agent in lung cancer surgery, can cause false tumor

recurrence in imaging modalities in postsurgical follow-up (1).

ORC-induced fibrogenetic reaction can determine a granulomatous reaction that may simulate an abscess, hematoma, fat necrosis, or cancer recurrence, creating a difficult challenge in differential diagnosis and sometimes diagnostic mistakes during follow-up (2,3).

A study on rats showed that ORC absorption is not always complete, resulting in biomaterial retention (4); when the ORC is used, the tissues present chronic inflammation, central liponecrosis and diffuse fibrosis; an excessive and improper fibrogenesis due to ORC can culminate in the creation of a three-dimensional fibrotic structure with a peculiar imaging and enhance the risk of diagnostic mistake during follow-up (2,3,5).

In addition, ORC can cause allergic reactions, seromas, and foreign-body reactions with a risk of extrusion due to its inadequate and suboptimal absorption (2,3); high rates of red syndrome, postoperative seromas, and cases

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of foreign-body reaction, requiring surgical removal, were reported in literature (2,3); these complications can compromise clinical outcomes and lead to delayed oncological treatments with a negative impact on patient survival, quality of life and overall hospital costs.

Compliance with standardized recommendations is essential to prevent the aforementioned problems and minimize surgical issues: appropriate selection of candidates to surgery with ORC (patients with specific medical comorbidities, immune diseases or non-controlled diabetes mellitus should not be considered for the use of ORC due to higher risk of postoperative infections); calibrated use of ORC to prevent overdose and avoid excessive fibrosis and foreign-body reaction (ORC pieces must properly fill the surgical bed but should not bulge excessively); prophylactic administration of antibiotic therapy in the postoperative time to prevent infections; detailed description in the surgical report about use of ORC to ensure a correct interpretation of the imaging by radiologists.

In conclusion, ORC is an optimal hemostatic agent that may be left in the surgical site to control bleeding thanks to ease-of-use and favorable biocompatibility; however, a trained and aware thoracic surgeon should use this biomaterial with due caution and correctly report its application to avoid unnecessary re-surgical interventions.

Ethics

Peer-review: Internally peer-reviewed.

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