the boost clinical target volume (CTV) in a patient with a tumor bed that shrinks dramatically during the course of RT, the surrounding normal tissues receive unnecessary additional radiation that could yield poorer cosmetic outcomes and more late undesirable effects. Conversely, if a single planning scan is performed long after surgery, the reduced tumor bed volume could actually result in underestimating the true tumor bed or the area of surgical tumor contamination.

WO 2011/084465 relates to stabilizing and visualizing tissues gaps left by surgical removal of cancerous tissues. According to the inventors, a conformal filling approach is a considerable improvement over the use of clips, which provide poor resolutions of the site's margin. The described implants may be formulated to be stable until no longer needed, and then biodegrade. According to WO 2011/084465, the implantation of the hydrogel, leads to an increase of the mean cavity volume. Therefore, when using standard margins, the hydrogel tends to increase normal tissue radiation doses. A reduced margin expansion is thus required in order to decrease normal tissue radiation doses.

As easily understandable from the above, there remains a clear need to improve the post surgery tumor bed delineation.

Hence, in one aspect of the present disclosure, there is provided a biocompatible gel comprising nanoparticles and/or nanoparticles aggregates for use for delineating and visualizing at least 40% of a target biological tissue when the target biological tissue is observed using an X-ray imaging equipment, wherein i) the nanoparticle and/or nanoparticles aggregate comprises an inorganic material comprising at least one metal element having an atomic number Z of at least 25, each of said nanoparticle and of said nanoparticles aggregate being covered with a biocompatible coating; ii) the nanoparticles and/or nanoparticles aggregates concentration is of about or less than 0.5% (w/w); and iii) the apparent viscosity at $2s^{-1}$ of the gel comprising nanoparticles and/or nanoparticles aggregates, is between about 0.1 Pa.s and about 1000 Pa.s when measured between 20°C and 37°C.

In another aspect, there is provided a kit comprising a biocompatible gel comprising nanoparticles and/or nanoparticles aggregates as disclosed herein, wherein the biocompatible gel and the nanoparticles and/or nanoparticles aggregates are in distinct containers.

DETAILED DESCRIPTION

Inventors now provide an advantageous composition which considerably improves targeted tissue delineation, in particular tumor bed delineation, without impacting on targeted tissue volume changes, typically when considering a tumor bed, on tumor bed volumes changes or on post lumpectomy tissue remodeling. In the context of the invention, the tumor bed is the tissue covering the cavity obtained following tumor resection.

A first object relates to a biocompatible gel comprising nanoparticles and/or nanoparticles aggregates, typically for use for delineating, and preferably also visualizing, at least 40% of a target biological tissue when the target biological tissue is observed using an X-ray imaging equipment, wherein i) the nanoparticle and/or nanoparticles aggregate comprise an inorganic material comprising at least one metal element having an atomic number Z of