Titanium Clips in Neurosurgery for Elimination of Artefacts in Computer Tomography (CT)

A Technical Note

By


With 5 Figures

Summary

To eliminate the occurrence of artefacts produced by clips on the CT images, the use of titanium clips is suggested. Tests in vitro and in vivo indicate that clips manufactured from 0.2 mm thick 99.9 per cent titanium do not cause artefacts. They are resistant to corrosion, nontoxic, effective, easy to handle, relatively cheap, and are visible on plain X-ray films.

Key words: Computer tomography, titanium clips, artefacts.

In recent years computer tomography (CT) has proved to be a valuable method in the radiological diagnosis of intracranial processes. However, disturbing artefacts in the images obtained by CT usually occur if materials with attenuation coefficients differing very much from that of the brain (e.g., silver or tantalum clips) are present (Fig. 1 a). Even a slight motion (0.5 mm) of the object increases the artefacts (Fig. 1 b).

We tried to decrease the occurrence of these artefacts by using clips made out of materials with an attenuation coefficient closer to that of the brain.

The present note concerns the results of replacing the silver (atomic number 47) or the tantalum (atomic number 73) clips usually used in neurosurgery by 99.9 per cent titanium (atomic number 22) or aluminium (atomic number 13) clips.
Fig. 1. a) Artefacts caused by silver clips. b) Motion increases the artefacts from the silver clips