surfaces: cortical bone has a lower electrical conductivity than spongious bone which in turn has a lower electrical conductivity than fluids, such as blood, or soft tissue.

This surgical instrument, which is simple and intuitive to use, is entirely satisfactory and offers spectacular success rates for the placement of pedicle screws.

However, in certain specific situations, particularly when the tissues encountered have numerous local inhomogeneities, the sensitivity of the surgical instrument to localized changes in the capacity to conduct electric current can lead to difficulties in interpreting the warning signal. In particular, these localized changes can result in unwanted variations in the warning signal which interrupt the succession of warning sections and time intervals expected by the practitioner. The occurrence of numerous variations in the capacity to conduct electric current, within a short period of time, can also lead to artifacts in the warning signal, providing the practitioner with information that is unfamiliar or difficult to interpret.

In these particular circumstances, proper use of the surgical instrument may rely on the experience of the practitioner in distinguishing the information to be taken into account.

The invention aims to overcome this problem by improving the reliability of the medical system, regardless of its use. In an aspect, there is provided that a medical system (10) intended for penetrating an anatomical structure (2, 3) of a patient, the anatomical structure (2, 3) having tissues presenting different capacities for conducting an electric current, said medical system (10) comprising: a body (11) suitable for penetrating the anatomical structure (2, 3), the body (11) having an outer surface (12), at least one first electrode (16) having a first contact surface (16a) arranged on the outer surface (12) of the body (11) so as to come into contact with the tissues of the anatomical structure (2, 3), at least one second electrode (17) having a second contact surface (17a) arranged on the outer surface (12) of the body (11) so as to come into contact with the tissues of the anatomical structure (2, 3) at a distance from the first contact surface (18a), an electric generator (22) suitable for applying an electric current (M) between the first (16a) and second (17a) contact surfaces, a processing device (23) suitable for determining an electrical characteristic representative of the capacity of the tissue of the anatomical structure (2, 3) between the first (16a) and second (17a) contact surfaces to conduct the electric current (M), and for emitting a warning signal corresponding to the determined electrical characteristic, the warning signal having at least one parameter that varies as a function of the determined electrical characteristic, wherein the warning signal is intermittent and has a warning cadence in which user-perceptible warning sections (Sa) are successively emitted with a time interval (Si)

between two successive warning sections (Sa), the medical device (10) being characterized in that the processing device (23) is suitable for detecting a variation of the electrical characteristic and for varying the at least one variable parameter of the warning signal after a time delay (T) following the variation of the electrical characteristic has elapsed.

To this end, the invention provides a medical system of the aforementioned type wherein the processing device is suitable for detecting a variation of the electrical characteristic and for varying said at least one variable parameter of the warning signal after a time delay following the variation of the electrical characteristic has elapsed.

Thus, the invention provides that a period defined by the time delay precedes the emitting of the warning signal with the parameter(s) corresponding to the determined electrical characteristic. The emitting of the warning signal with the parameter(s) corresponding to the determined electrical characteristic is therefore delayed relative to the detection of the variation in the electrical characteristic. The time delay thus enables limiting or adjusting the sensitivity of the medical system to localized changes in the capacity to conduct electric current of the tissues encountered. This reduces unwanted variations in the warning signal and the risk of artifacts, thereby improving the reliability of the medical system.

The time delay may be equal to at least a portion of a warning period corresponding to the warning cadence, in particular equal to at least a portion of the time interval, preferably between 30% and 100% of the time interval, particularly between 50% and 100%, for example between 60% and 90%.