Background

During surgeries, the orthopedic drill chucks revolve at high speed and generate differential pressure between inside and outside and heat. As a result, blood, bone marrow, and bone tissues can be easily stuck in the narrow crevices and become dried. The sleeves of chucks and bearings can’t be dismantled and it’s difficult for complete cleaning. In order to solve these problems, we started to use different revulsion methods during the cleaning of chucks to improve the cleaning efficacy from Feb. to Jun. 2014. It has proved effective and the following are the details.

Experimental Methods

4.1 Challenges in cleaning the orthopedic drill chucks

- There are two challenges in cleaning the orthopedic drill chucks. One is that the drill runs and stops constantly and instant differential pressure is generated in the process. A large amount of blood and bone tissues are drawn inside the chucks and bearing. The heat makes the contaminations easily dried and difficult to clean. The other is that the drill chucks can be dismantled to the minimum due to the complex structure. The narrow crevices and bearing can be scrapped with brushes. Therefore, it’s very difficult to thoroughly clean them with normal cleaning methods.

4.2 Impacts of different cleanliness inspection methods on the results

- For the complex instruments, such as drill chucks, visual inspection alone often leads to false negatives. It will be more accurate by combining occult blood tests and ATP bioluminescence methods.

Conclusion

4.3 Impacts of different sampling methods on results

- To swab the surfaces can hardly reach the crevices and bearing of chucks. So these parts can’t be effectively sampled. The underwater sampling can flush out the residuals inside the bearing. Therefore, the latter is objective and accurate in sampling.

4.4 Improve the cleaning quality by turn on the drill under water

- By turning on and off the drill under water, strong negative differential pressure can be formed in crevices and bearing so that water can contact these parts during flushing and washing. By doing so, the cleaning quality can be improved.