

Announcer: "Time for the Special Report hour. The endoscope is an indispensable piece of medical equipment for internal examination of the stomach and duodenum. Since these invisible bacteria attach to the internal parts of human bodies, great care has to be taken to clean and disinfect the endoscopes. Conventionally, disinfectant chemicals are used to sterilize the endoscopes, but recent attention has focused on water - hyperoxidized water created by electrolysis. We have been following stories that reveal how effective this water is as a disinfectant."

Dr. Hamahata, Hamahata Clinic: "I'm looking at the ulcer, it looks much better than before."

Reporter: "Endoscopes are indispensable for discovering the infected area in the digestive system as well as for examining the ailment."

Reporter: "There has always been a risk that any bacteria that live inside the patient's body, including *Helicobacter pylori*, which has recently been in the news for causing stomach and duodenal ulcers, can attach themselves to the endoscope during use. Therefore, extreme care must be taken in disinfecting the equipment after each use."

[on screen] 2% solution of glutaraldehyde

Dr. Sakurai: "Generally, endoscopes are disinfected in this yellow green liquid, a 2% solution of glutaraldehyde. It is the most powerful disinfectant, killing a wide range of bacteria and viruses including *Helicobacter pylori*, hepatitis B virus and AIDS virus."

Dr. Sakurai, Endoscope Center at Kanto Teishin Hospital: "Glutaraldehyde is recommended by the Endoscope Society for disinfecting endoscopes. They have to be soaked in this solution more than twenty minutes at a time."

Reporter: "There are two problems with this chemical. The first is that, in a larger hospital where many patients are examined daily, it is too time consuming. Secondly, it is highly toxic and

classified as a strong poison."

Dr. Sakurai: "Residue of this chemical on endoscopes is cause for some worry. It is also expensive. Another worry is that the use of this chemical can cause skin inflammation or allergic reactions in our staff."

[on screen] Electrolysis unit

Reporter: "At the center of attention is water created by adding a small amount of salt to tap water and applying an electric current. It has the same disinfectant power as glutaraldehyde, except that it is faster and non-toxic. Increasingly, hospitals are using this water to disinfect endoscopes."

[on screen] Endoscope soaked in hyperoxidized water

Nurse: "After we use the endoscope, air is forced out in a container of hyperoxidized water, pushing out materials attached inside the tube, then hyperoxidized water is drawn back through."

Reporter: "Having developed a good understanding of the properties of both alkaline and hyperoxidized water, Doctor of Hamahata Clinic in Kagoshima Prefecture utilizes them well, taking advantage of the benefits of each."

Dr. Hamahata: "hyperoxidized water is put through the tip and the extractor of the endoscope."

Reporter: "Bacteria are often seen on this tip and extractor area."

Dr. Hamahata: "Then we wash it with high alkaline water that dissolves protein, blood and stomach fluids. Then we soak it in hyperoxidized water. There is ample data to support the fact that hyperoxidized water kills almost any kind of bacteria or virus. It has immediate disinfectant capabilities."

Reporter: "Finally, they wash the unit with tap water. The entire cleaning time takes only about five minutes. The disinfectant property of this water was reported at the Functional Water Symposium held last year."

Doctor: "We took a bacteria culture from the tip of the endoscope and the extractor. No bacteria were seen."

[on screen] Patient being examined with endoscope

Dr. Sakurai: "You feel something large is coming inside of you. Now it is bumping into you a bit."

Reporter: "At Kanto Teishin Hospital, eight minutes walk from Gotanda Station, Tokyo, they started using this hyperoxidized water for cleaning endoscopes three years ago."

Dr. Sakurai: "We examine as many as 40 patients a day, so the more time we use to clean endoscopes, the less efficient we are. We conducted research with other doctors to find the most time-efficient and safe way to clean them."

Reporter: "When word got out about this disinfectant water, the first person in medical field to put together a research team to test it was Dr. Okada, Director of Clinical Examinations."

Dr. Okada: "The director of the Endoscope Department suggested that we look into using this water to clean endoscopes. We experimented with 10 ml., 30 ml. and 50 ml. of hyperoxidized water to be drawn through the endoscopes. We found that with 50 ml, of this water, the bacterial disinfectant rate is the highest. It is wonderful to be able to use this water to disinfect completely."

Reporter: "They showed me the current disinfecting process. After its use, the endoscope is covered with filth and bacteria. First, it is washed with tap water and the extractor is removed from the endoscope and soaked in strong hyperoxidized water."

[on screen] Brushing inside the extractor channel

Dr. Sakurai: "The extractor is set aside to soak. It is also important to clean inside the extractor channel with a brush. Blood, stomach fluids, and so forth are scraped off from inside it in this

way as far as possible."

Reporter: "The whole thing is soaked in hyperoxidized water for ten seconds, then this water is injected into the channel and 50 cc of this hyperoxidized water is drawn back through."

Dr. Sakurai: "Hyperoxidized water is being drawn into the extractor channel for disinfecting. A culture shows zero bacteria are present."

Reporter: "Oh, zero."

[on screen] *Helicobacter pylori*

Dr. Okada: "We also took a bacterial culture to search for the presence *Helicobacter pylori* and the result was that this bacteria was completely eradicated by this water. As for the side effects of hyperoxidized water, we think that it is completely harmless."

[on screen] Electrolysis unit specially made for Endoscope Center

Reporter: "Dr. Sakurai and his staff at the Endoscope Center wrote a report for a medical journal that declared that using hyperoxidized water for cleaning endoscopes is an easy-to-handle, effective, and fast method for disinfecting. They also noted that the wear and tear on the equipment is less than with conventional sterilization and that it is the most appropriate method for clinical examinations that are conducted on a daily basis."

Reporter: "During these times when the number of powerful enemies such as *Helicobacter pylori*, hepatitis B and AIDS virus has increased, it was necessary to find the perfect way to disinfect endoscope"

Announcer A: "From the point of view of the patient, we would like a safe and sure method to be available, especially since bacteria and viruses are invisible to the naked eye."