

CARE OF MICROSURGERY INSTRUMENTS





Step-by-Step Guide to Cleaning and Maintenance of Microsurgery Instruments

“Ensuring Precision, Safety, and Longevity in Every Procedure”

“WARNING”: Improper care, cleaning, and maintenance of surgical instruments can compromise safety, leading to potential infection or surgical complications. Always adhere to established protocols for cleaning and sterilization.

Your feedback is important to us, as it helps improve the quality and effectiveness of our practices and ensures the highest standards of care. For any questions, suggestions, or additional information, please feel free to contact us at info@greencross-surgical.com

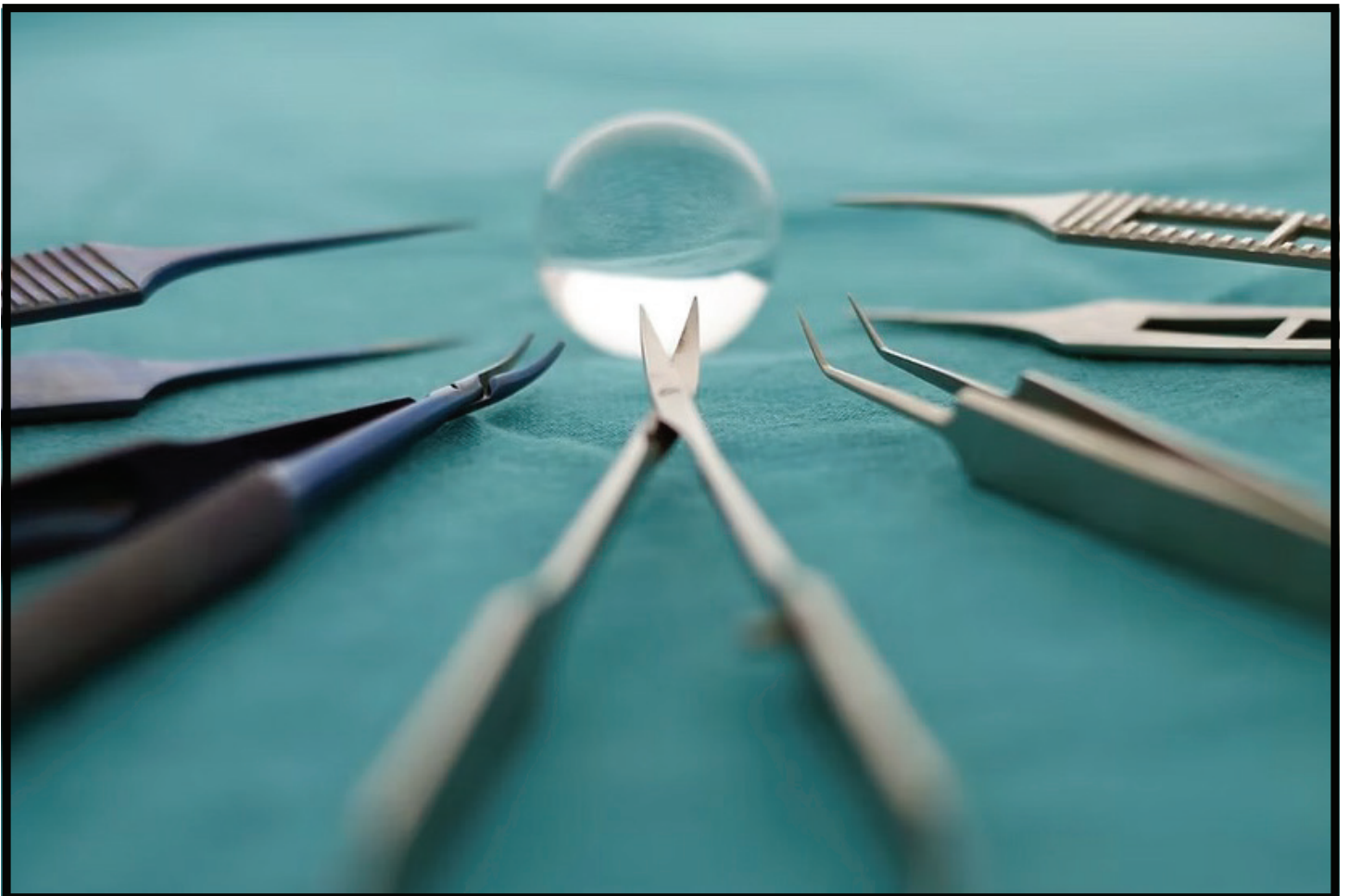
CARE & HANDLING OF YOUR INSTRUMENTS

To ensure the longevity, optimal performance, and functionality of your microsurgical instruments, meticulous care and handling are required. Microsurgical instruments, due to their delicate nature, demand a heightened level of attention and precision throughout their lifecycle—from pre-cleaning to storage and eventual use.

PROPER HANDLING AND STORAGE

The most critical phase in maintaining instrument integrity occurs during processing and cleaning. The handling of microsurgical instruments should always be done with utmost care. Instruments should be stored carefully, ideally in designated containers or trays that separate them based on size and function.

"IMPORTANT": Never store delicate micro-instruments alongside larger macro instruments. This prevents the risk of damaging their sensitive tips or components. It's best to invest in robust instrument containers designed specifically for the safe storage, sterilization, and transportation of these instruments, in accordance with ISO 17664:2020.





PRE-CLEANING

The pre-cleaning phase is crucial for the prevention of protein coagulation, which can lead to staining or corrosion over time. Pre-cleaning should ideally begin immediately after the surgical procedure to prevent residue from hardening.

- **Manual Pre-Cleaning:** Gently remove excess tissue, blood, and other contaminants. A soft-bristle brush or cloth can be used for delicate cleaning of the micro tips, avoiding abrasion or damage.
- **Ultrasonic Cleaning:** For more thorough removal of microscopic debris, ultrasonic cleaning is highly effective. It uses high-frequency sound waves to dislodge contaminants without harsh scrubbing.
- **Temperature Control:** Ensure that the cleaning solution's temperature is kept below 40°C (104°F) to avoid protein coagulation. Too high a temperature can make it difficult to remove tissue residues and may damage the instruments. This practice aligns with the cleaning protocols outlined in ISO 13485:2016.

"IMPORTANT": Move all approximators, ratchets, and sliding parts to their full range of motion during pre-cleaning to allow cleaning agents to reach all surfaces. Open clamps, scissors, and needle holders to ensure the cleaning solution can reach every area.

CLEANING

Thorough cleaning is essential to prepare instruments for disinfection and sterilization. The primary goal is to remove all visible residues and contaminants.

- **Thermal Disinfection:** A thermal disinfector is a preferred method for cleaning surgical instruments. It uses hot water (around 40-60°C) to clean and disinfect the instruments, effectively eliminating organic material while preserving the integrity of the instrument.
- **Cleaning Agents:** It's best to use pH-neutral or slightly alkaline detergents for cleaning. These prevent the formation of hard water deposits and reduce the risk of corrosion. Always follow the manufacturer's guidelines for the correct concentration, as recommended by ISO 17664:2020.
- **Water Quality:** The use of deionized or distilled water for all washing steps is essential, as water with high chloride or mineral content can lead to corrosion or staining.

"IMPORTANT": Be mindful of the potential for larger instruments, like forceps or scalpels, to obscure smaller micro-instruments in a tray, which may hinder proper cleaning. For microsurgical instruments, it's best to use separate, clearly labeled trays to keep them isolated from larger tools.





DISINFECTION

Disinfection is a vital step before sterilization, ensuring that any remaining pathogens are eliminated. It's particularly crucial for microsurgical instruments, where even a small amount of contamination can compromise a procedure.

- **High-Temperature Disinfection:** Instruments should undergo a high-temperature disinfection cycle (typically 80-95°C), often as part of the cleaning process in a thermal disinfecter. This step should be followed by a thorough rinse with distilled or deionized water.

"IMPORTANT": Proper high-temperature disinfection is essential for microsurgical instruments, as it effectively reduces microbial load, ensuring instruments are safe for use and minimizing the risk of contamination during delicate procedures. This is in line with guidelines from ISO 14971:2019 regarding risk management.

INSPECTION

After cleaning and disinfection, each instrument should be meticulously inspected to ensure proper function and to identify any potential damage.

- **Check for Integrity:** Look for any signs of corrosion, wear, or damage to joints, hinges, and tips. Pay close attention to the fine tips of microsurgical instruments like forceps or scissors—any deformation could affect precision during surgery.
- **Functionality Check:** Test moving parts such as ratchets, locks, and hinges. Instruments should open and close smoothly without resistance or abnormal movement.
- **Damaged Instruments:** Remove any instruments showing signs of damage (such as bent or corroded parts) from service. If the damage is repairable, send it for professional repair. Instruments beyond repair should be discarded to prevent further contamination or injury during use, in accordance with safety practices outlined in ISO 14971:2019.



PACKAGING

Proper packaging is essential to maintain sterility during sterilization and storage. Packaging must be performed carefully to prevent contamination and ensure proper drying and sterilization.

- **Prevent Overloading:** Do not overcrowd sterilization trays, as this can impede the steam's ability to reach all surfaces. Instruments should be placed in a manner that allows steam to circulate freely around them.
- **Packaging Materials:** Use high-quality, sterilization-grade materials, such as medical-grade paper or sterilization pouches. Ensure packaging is intact and free of tears that could compromise the sterilization process, following the guidelines set forth in ISO 17664:2020.

STERILIZATION

Sterilization is the final step before an instrument is ready for use. The goal is to eliminate any remaining microorganisms, ensuring the instrument is safe for use in a sterile field.

- **Autoclaving:** The most common method for sterilizing microsurgical instruments is steam autoclaving. Instruments should be autoclaved using saturated steam at a temperature of at least 132–134°C for 3–18 minutes, depending on the type of instrument and autoclave model.
- **Steam Quality:** Always ensure that the autoclave uses high-quality steam. Impurities or inadequate steam can compromise the sterilization process, leading to microbial survival or damage to the instruments. Regular checks are vital, as detailed in ISO 14971:2019 concerning the risk of sterilization failures.
- **Monitoring:** Regularly monitor the autoclave's effectiveness with biological indicators and ensure that temperature and pressure settings are properly calibrated.



STORAGE

Proper storage conditions are crucial for the longevity and safety of your microsurgical instruments. Instruments should be stored in a clean, dry, and dust-free environment, ideally in cabinets with controlled humidity.

- **Humidity Control:** High humidity can promote the growth of microorganisms and accelerate corrosion. A dry, well-ventilated environment is ideal for preserving instrument integrity, in line with best practices in ISO 13485:2016.
- **Safe Handling:** Instruments should be stored in trays or drawers with dividers that prevent physical damage. Keep instruments separated to avoid unnecessary contact, which can lead to wear or bent tips.
- **Regular Inspection:** Regularly inspect stored instruments for signs of corrosion or damage, especially if they are not in regular use.



USAGE

Once sterilized and stored, instruments are ready for use. During usage, care should be taken to:

- **Frequent Cleaning During Use:** Continuously clean instruments during procedures by removing blood and debris with distilled or deionized water to prevent buildup that could hinder performance.
- **Monitoring for Damage:** During procedures, watch for signs of instrument wear or malfunction. If an instrument becomes damaged, remove it immediately and replace it with a properly functioning one.
- **Transport:** Instruments should be safely transported between processing, storage, and usage areas. Simple, secure transport methods, such as in designated instrument trays or containers, are recommended to avoid any damage.



SUPPLEMENTARY GUIDELINES

- Only trained personnel should handle microsurgical instruments, using them solely for their intended purposes to minimize damage and maintain optimal performance.
- Users must know the name, function, and specifications of each instrument, as well as the correct order of use for procedures.
- Store microsurgical instruments in specially designed trays to prevent damage; avoid placing them on trolley surfaces or allowing them to touch each other.
- Keep stainless steel instruments away from magnets to prevent magnetization, which can affect their functionality.
- Carefully inspect instruments before and after use under magnification, checking for proper function, sharpness, and any defects. Remove any instrument in doubt for repair.
- Cleaning and sterilization should be performed by trained staff to prevent damage. Instruments must be used only for their designated purposes.
- Never pick up instruments by the tips or let them touch anything other than the intended tissue to avoid contamination and damage.
- Whenever possible, work directly from the instrument tray instead of the sterile trolley to maintain sterility and protect instrument tips.
- If debris adheres to an instrument during use, clean it with a fiber-free wipe dampened with sterile water, taking care not to cause damage.
- Always pass scalpel blades with the blade covered by the handle and use a blade gripper or artery forceps to avoid direct contact with fingers when fitting or removing blades.

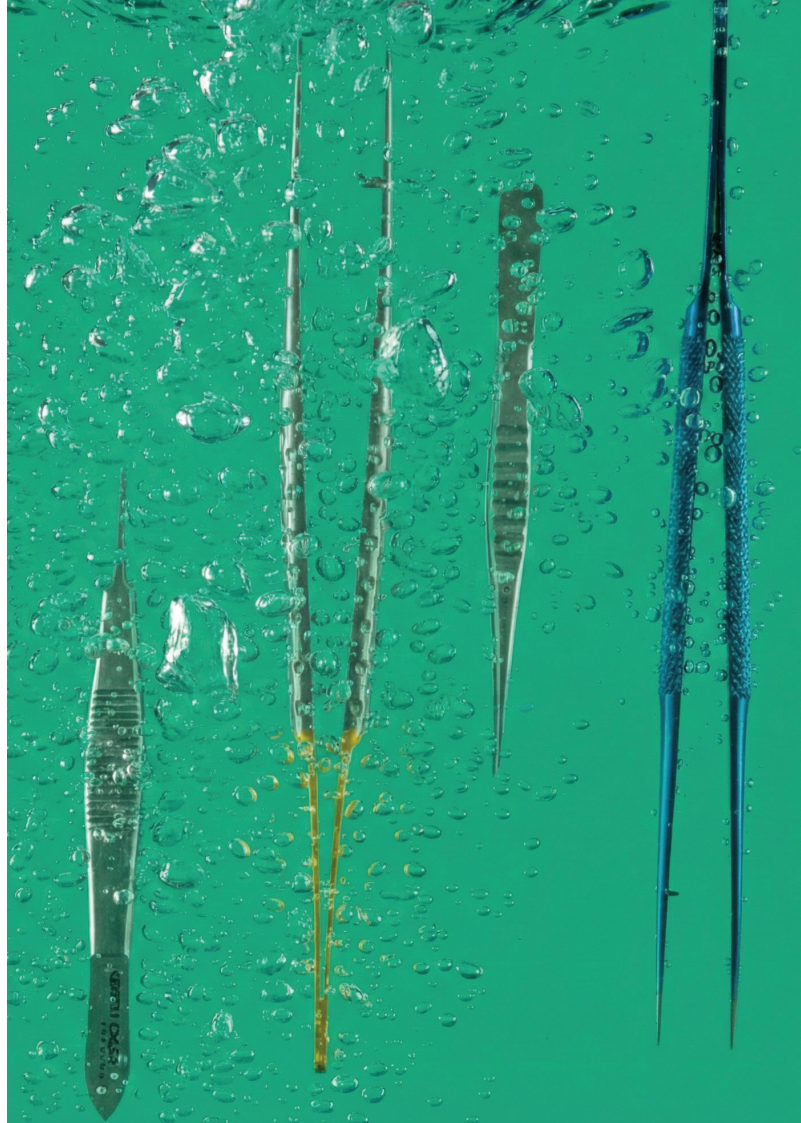
CONCLUSION

Maintaining the integrity of microsurgical instruments requires a careful, systematic approach to cleaning, sterilization, and storage. By following these guidelines and integrating best practices, you can ensure that your Green Cross Surgical instruments provide optimal performance throughout their lifecycle, ultimately contributing to better patient outcomes and enhancing the longevity of your surgical tools.

Remember, these guidelines are general recommendations. Always follow your institution's specific protocols for the care and handling of surgical instruments.

Instrument Care: Enhance the longevity of your instrument.

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