

# When TASS Strikes: a Nurse's Perspective

Four steps for addressing an outbreak.

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**T**oxic anterior segment syndrome (TASS) is a postoperative inflammation of the anterior chamber that is caused by a toxic substance's entering the eye during anterior segment surgery. The conditions in the OR are therefore suspect. For that reason, there may be no more ominous words from an ophthalmic surgeon to a surgery center's administrator or director of nursing than "My patients have TASS. What are you going to do about it?" Finding the cause of the problem can be a nerve-wracking and exhausting process.

A surgeon's report of TASS merits serious attention. Many times, the cases will be isolated, or they will occur in clusters with significant amounts of time between the groupings. There is a resultant tendency to put the investigation on a back burner as the pressures of everyday operation continue. Although an outbreak of TASS cannot be allowed to paralyze a surgery center, its source must be identified, or the problem is certain to recur. An incidence of TASS at a surgery center requires communication, education, investigation, and an initiation of change.

## COMMUNICATION

When confronted by a case of TASS, it is a natural impulse to want to keep the bad news quiet. It is important, however, for the ophthalmologist to share the information with the medical director and other surgeons who use the ORs. Doing so may yield additional information for the investigation. Surgeons have often seen mild cases of TASS without recognizing them, and those cases therefore go unreported. Knowing that another surgeon in the facility has encountered a problem with TASS may cause them to remember instances of postoperative inflammation experienced by their own patients. This information may rule out some etiologies and thus narrow the list of possible causes.

It is also wise to alert the surgery center's staff to the situation. Not only will these individuals be able to participate in problem solving, but they will also understand why the ophthalmologist may be more anxious during subsequent surgeries until a cause has been identified and eliminated.

## EDUCATION

### OR Staff

Part of communicating with the surgery center's staff involves education. Without an understanding of the etiologies and consequences of TASS, the members of the surgical team cannot be effective problem solvers.

The first step is to prepare an in-service meeting for the surgery center's staff that provides a description of TASS and an example of how it differs from endophthalmitis. The discussion should emphasize that the outbreak is an issue of toxicity, not sterility. Once they understand the nature of TASS, staff members' awareness will be heightened for potential causes.

It is important to create an environment of inquiry and investigation, not of culpability and blame. The OR staff involved in the cases already feels guilty. It is important to make staff members understand that TASS is not the fault of someone but of something.

### Surgeons

It may be necessary to educate other ophthalmic surgeons working in the facility who are not familiar with TASS to prevent them from panicking and taking their surgery elsewhere. They need reassurance that the situation is under serious investigation. Doctors familiar with TASS and its treatment can offer advice on managing patients, should that be required.

## INVESTIGATION

### A Task Force

The next step is to form a task force that includes the surgery center's administrator, director of nursing, medical director, and instrument technician as well as the surgeon and OR staff who were involved in the cases. Someone knowledgeable about the workings of the OR should lead the investigation and be given a free hand.

The first areas to investigate are those known to be common causes of TASS. They include the cleaning and sterilization of instruments, medications, and particulates.

### Instruments

Of all the potential causes of TASS, the majority of cases involve the cleaning, processing, and sterilization of instruments. Policies and procedures should be established for each of these areas. The policy will state the chief standards, and the procedure will enumerate the steps for achieving these standards.

Manual cleaning is required for delicate ophthalmic microsurgical instruments. A soft bristle brush should be used to remove blood, tissue, and other residues such as viscoelastic from the instruments. If a detergent is used, it should be of neutral pH, and the instruments should undergo copious irrigation with deionized, distilled, or sterile water to ensure no residue remains that can later be introduced into an eye. These precautions are most important with cannulated items such as the phaco and I/A handpieces. The staff should use a compressed-air or medical-grade nitrogen flush to remove the remaining water. The difficulty in cleaning instruments with a fine bore such as cannulas precludes their reuse.

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A procedure for cleaning instruments should address whether or not instruments should be put in a washer/sterilizer or ultrasonic cleaner; if used, the types of water, detergent, and cleaners; and the necessity of mechanical hand washing. Whoever writes the standard procedure for cleaning instruments should consult the manufacturers' guidelines for the instruments' care. A documented, standardized method for cleaning ophthalmic instruments that is adopted and used by all personnel greatly decreases the likelihood of TASS. It is important to ensure that all employees involved in the cleaning of instruments, particularly new staff, are properly oriented and that there are frequent procedural reviews.

### Medications

Another common source of TASS is perioperative medications. A large number of cataract surgeons use topical anesthesia, which may be a misnomer, because this type of anesthesia frequently includes intracameral lidocaine. Topical anesthesia often begins with the instillation of proparacaine or tetracaine drops followed by the off-label use of lidocaine gel. Multidose bottles of topical anesthetic, whether in liquid

or viscous form, contain a preservative such as benzalkonium chloride, and some lidocaine gels have preservatives as well. Irrigating these substances completely from the eye before the start of the procedure is imperative, or they may enter the anterior chamber on an instrument.

Intraocular medications (eg, anesthetics, epinephrine, or miotics) placed directly in the anterior chamber and those injected into a 500-mL bottle of balanced salt solution (eg, epinephrine 1:1000 or antibiotics) must also be free of preservatives. The medical director should work with the pharmacist and drug supplier to ensure that any substitutions due to back orders or discontinued items meet the center's preservative-free criterion.

Viscoelastics in their original form pose no threat to the eye. If these materials remain on instruments after surgery, however, they can combine with detergents and enzymatic cleaners or become denatured in the sterilization process and lead to TASS. As mentioned earlier, appropriate cleaning removes viscoelastics from the instruments.

### Particulates

Particulate matter most commonly comes from the powder on surgical gloves and fibers from items in the pack such as towels and gowns. The use of powder-free gloves by all personnel eliminates the talc, and switching to low-linting draping material and gowns minimizes airborne particulate matter.

### INITIATION OF CHANGE

Eliminating the common causes of TASS from the facility may eradicate TASS. If cases still occur, the task force should re-examine the center's procedures and look for other less familiar etiologies such as endotoxin contamination or water-supply variances. Whichever cause seems more likely should be eliminated to see if it is the culprit. It is important to avoid the shotgun approach (eg, changing multiple things simultaneously). Although the TASS outbreak may stop, its cause will remain unknown. Moreover, changes made without supporting data can increase the staff's workload and/or the facility's costs unnecessarily.

### CONCLUSION

TASS has numerous possible causes, each of which must be investigated and eliminated from the ORs. Once the surgery center is again free of TASS, the surgeons and staff should remain vigilant for new potential causes and stop the problem before it starts. ■

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