Incident Reporting in Hospital Setting

Over the course of 12 years, two thirds of the injuries occurred in restorative dentistry clinics. A fifth occurred in oral surgery clinics. Although the number of injuries did not increase, the number of incidents reported increased after a simplified reporting method was developed.

ASSESSMENT TOOL

A Risk Assessment Tool for Sharps (RATS) has been developed to proactively assess the risk of a sharps injury occurring in advance rather than reporting them after they occur. It is based on a simple evaluation of the clinical environment and identifies 6 known situations highly at risk for sharps injuries: (1) re-sheathing or re-sheathed needles, (2) leaving bur packs open, (3) leaving a bur in the handpiece in the bracket table slot, (4) leaving unprotected or unneeded sharps on worktops or bracket tables after use, (5) keeping an untidy bracket table, and (6) leaving an ultrasonic scaler tip in the handpiece in the bracket table slot.

Although the RATS method is not yet validated and the relative risk for each area has not been quantified, the RATS method is a useful clinical audit tool so that each member of the clinical team can identify a potential problem and take action to reduce the risk.

ADVICE FOR THE DENTAL TEAM

Addressing Sharps Injury Causes

A bur pack should only have the lid opened when a bur is being removed or replaced. The lid should be closed at all other times.

Handpieces containing a bur or scaler tip should be immediately detached from the coupling when its use is over and placed safely on the bracket table. Inverting the handpiece or scaler instrument in the slot only maintains the risk of sharps injury to the leg and risks contamination from contact with an unclean work surface.

Maintaining a tidy bracket table reduces sharps risks. Both the dentist and the dental nurse should maintain an orderly, safe clinical environment.

The problem of sharps injury is multifactorial. Improved equipment and technology, such as sharp safety bins and safety needle injection systems, can be effective. Any new product will require a level of understanding, so training is required. The use of these new products should be implemented as a safety precaution.

The dental team's sharps education should also be updated regularly. When improved safety systems are available, education can contribute to dramatic improvements in sharps injuries data.

Barriers to Adopting Sharps Safety Habits

Using new versions of equipment should be routine. Cost can be a barrier in some dentists' minds, but the cost of these single-use items is marginal compared to the financial implications of a sharps injury. Using a proven method to reduce risk is required by law in many jurisdictions.

Regulations don't currently *force* clinical teams to act in a sharps safe manner. This means that some dental teams will continue to use unsafe habits. Such lack of adherence to regulations should be addressed in updates.

All members of the dental team may not receive sufficient education or training in the safe use of sharps. More rigorous guidance added to sharps injury training and the use of safer sharps should be required.

Some practices are unaware of the scale of the sharps injury problem and do not learn from others' incident reports. It's important to share information and disseminate news of better methods to ensure the safety of the dental team.

Clinical Significance

The main reason for not adopting sharps safety methods is the inertia of dental teams that leads to them simply continue to follow unsafe habits and behaviors. Sharps safety is the responsibility of the entire team, led by the dentist, and requires that all members be up to date with the latest advances and methods. It's important not only for patient care but also for the health of the dental team.

Imran A, Imran H, Ashley MP: Straight to the point: Considering sharp safety in dentistry. *Br Dent J* 225:391-394, 2018

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SILVER DIAMINE FLUORIDE

Fluoride varnish added to silver diamine fluoride treatment

Check for updates

BACKGROUND

Sodium fluoride (NaF) varnish has been widely used in Europe for over 50 years, but only recently has it been approved by the Food and Drug Administration (FDA) for preventing dental caries. Clinicians also use it to arrest dental caries. Silver diamine fluoride (SDF) can arrest cavitated

dentin caries, usually in a concentration of 38% (44,800 ppm). SDF can also remineralize carious dentin and inhibit the degradation of dentin organic matrix. It's only approved by the FDA for the management of dental hypersensitivity. However, some clinicians have applied the 38% SDF solution followed by 5% NaF varnish to protect the SDF from being washed away by saliva and to provide added fluoride for a longer period of time. The antibacterial and remineralizing effects of the combination of 38% SDF solution followed by 5% NaF varnish on dentin caries were investigated.

METHODS

Four groups of demineralized dentin blocks were subjected to various treatments, with group 1 receiving SDF + NaF, group 2 receiving SDF, group 3 receiving NaF, and group 4 receiving water treatment. The samples were then exposed to a *Streptococcus mutans* biofilm challenge. Micro-computer tomography (micro-CT), x-ray diffraction (XRD), and Fourier transform infrared spectroscopy (FTIR) were used to evaluate, respectively, lesion depth, precipitates' characteristics, and matrix-to-mineral ratio. Biofilm kinetics, viability, and topography were evaluated by counting colony-forming units (CFUs), confocal laser scanning microscopy (CLSM), and scanning electron microscopy (SEM), respectively.

RESULTS

Treatment with SDF produced superior reductions in lesion depth compared to NaF and water. Lesion depths were 120, 160, 353, and 449 μm in the SDF + NaF, SDF, NaF, and water groups, respectively.

The XRD patterns seen in the 4 groups confirmed that silver chloride was formed in the SDF + NaF and SDF groups. This formation may have contributed to providing a greater caries-arresting function related to SDF. There was a loss of crystallinity of dentin because of the dissolution of the hydroxyapatite crystal structure.

FTIR spectra showed an interaction effect of the SDF and NaF treatments. When SDF was present, the addition of NaF or not produced no significant effects on amide I:HPO_4^{-2} ratios.

The Log_{10} CFU values for the groups after 7 days showed an interaction between SDF and NaF treatment (Figure 5). No significant differences were found for the groups treated by NaF and water. The *S mutans* counts of the SDF + NaF group were significantly higher than those for SDF alone. Better antibacterial effect was shown for the SDF + NaF group than for the NaF group. The findings were corroborated on the SEM images.

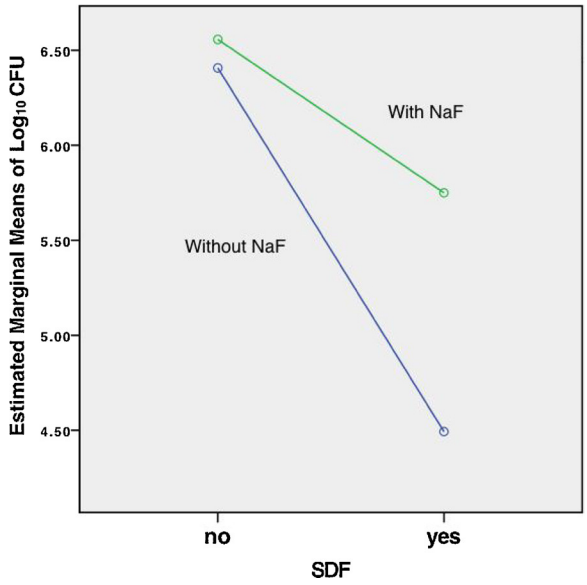

Figure 5. Effects of the SDF treatment and NaF treatment on Log_{10} CFU. (Courtesy of Yu OY, Zhao IS, Mei ML, et al: Caries-arresting effects of silver diamine fluoride and sodium fluoride on dentine caries lesions. *J Dent* 78:65-71, 2018.)

DISCUSSION

Adding NaF varnish to SDF did not improve remineralization of the demineralized dentin samples. It's possible that NaF could diminish the antibacterial properties of SDF, so the adjunctive use of the SDF solution and NaF varnish cannot be recommended as a way to arrest dentin caries.

Clinical Significance

Applying NaF varnish after SDF treatment doesn't add any value in terms of arresting dentin caries. It may, however, reduce the antibacterial abilities of SDF, which undermines some of the value of SDF. Clinical care should limit itself to SDF application for the purpose of arresting dentin caries.

Yu OY, Zhao IS, Mei ML, et al: Caries-arresting effects of silver diamine fluoride and sodium fluoride on dentine caries lesions. *J Dent* 78:65-71, 2018

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