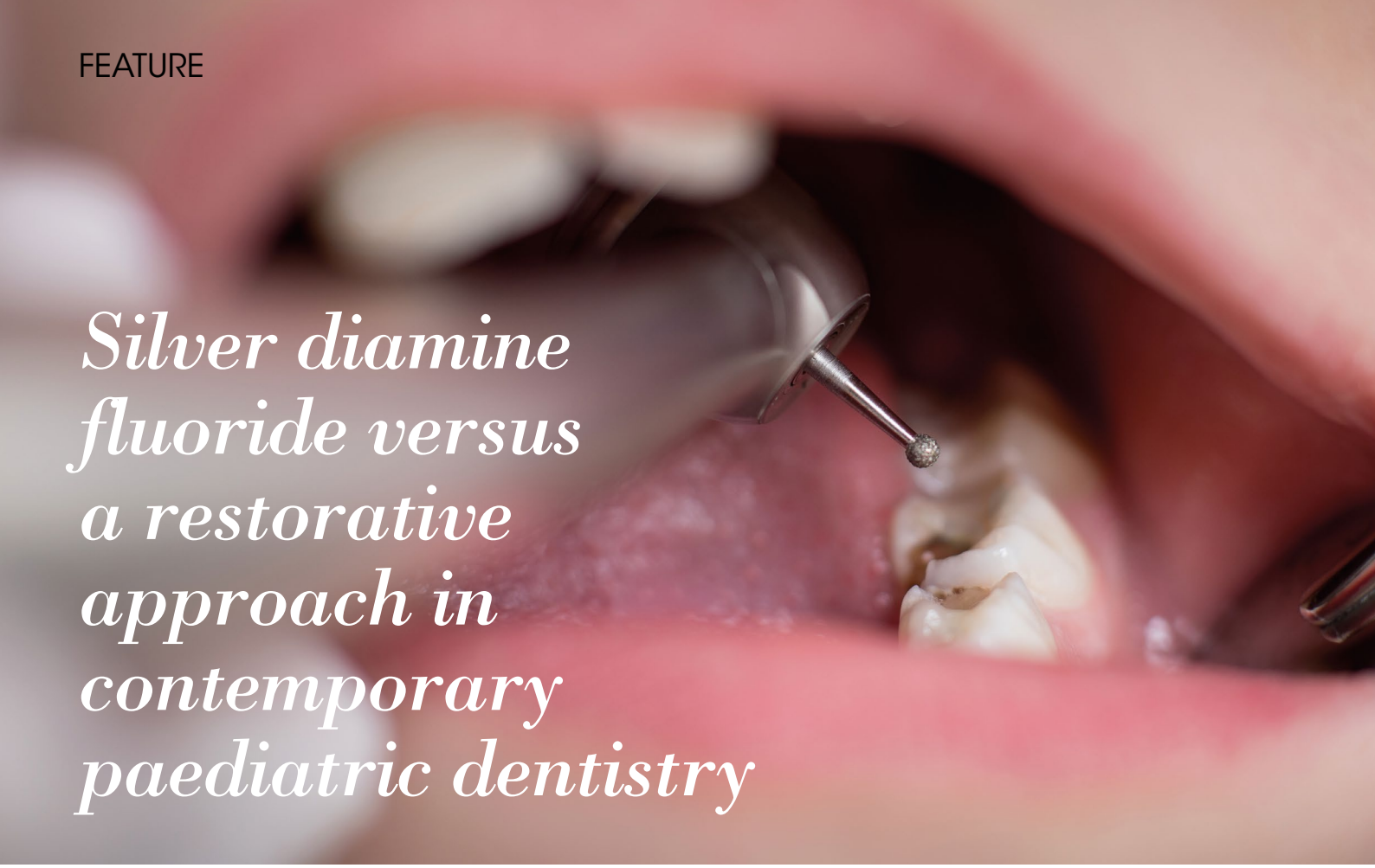
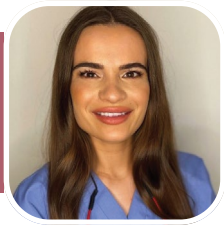


Silver diamine fluoride versus a restorative approach in contemporary paediatric dentistry



Hayley Massie presents the findings from the literature review poster she created while in the third year of her course training to become a dental therapist at the University of the Highlands and Islands.

Aim of the review

To review the literature on silver diamine fluoride (SDF) and determine whether it leads to more favourable outcomes when compared with restorative approaches outlined by the SDCEP[1] and if patients would benefit from this treatment.

What is SDF and how does it work?

SDF is a colourless, odourless solution of silver, fluoride and ammonium ions. It was first cited as being used as a cariostatic agent in Japan in 1969 and there has been a recent resurgence in its use.[2]

When SDF is placed on carious tooth tissue a series of chemical reactions take place that promote tooth carious lesion arrest and desensitisation by dentinal tubule blockage.[2]

SDF reacts with calcium and phosphate ions to produce fluorhydroxyapatite, thereby inhibiting demineralisation.[3]

Why is SDF relevant?

SDF has invoked interest more recently due to its remineralisation capacity and non-invasive application procedure.[4]

There is an increasing body of evidence that the use of SDF can help to arrest caries without the need for more invasive dental treatment.

SDF may be useful in assisting the development of non-aerosol generating procedures (AGPs) in the current COVID-19 pandemic and its recovery phase.

SDF is not presently licensed in the UK for caries arrest and so the product remains off-label. This has been raised as a potential barrier to its use. However, support for its use by societies, like the British Society of Paediatric Dentistry (BSPD), means the practitioner can use SDF with confidence.[5]

Method

A systematic search using numerous online databases was carried out. Specific terms, Boolean operators and truncators were applied.

The inclusion and exclusion criteria were applied to exclude any papers which did not meet the criteria.

- **359** records identified through database searching
- Records after duplicates removed and free full text (n = **118**)
- Records excluded (Did not meet criteria) (n = **110**)
- Records included (Met criteria) (n = **8**)
- Randomised Controlled Trial (n = **7**)
- Clinical Study (n = **1**).

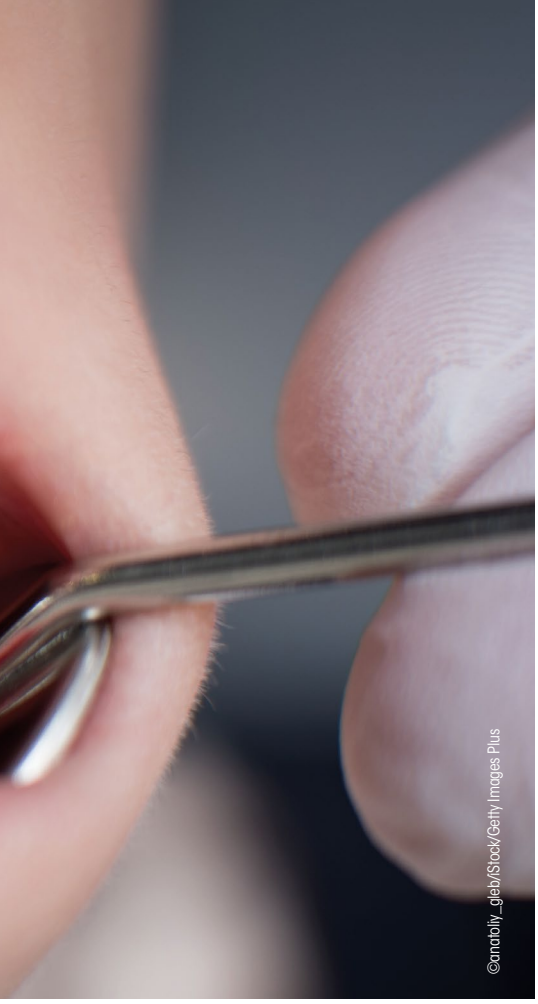
Results

Several papers compared SDF to atraumatic restorative technique (ART) or glass ionomer. One paper compared SDF to fluoride varnish and the another compared with a placebo. One paper compared SDF concentrations, and another paper looked at the effectiveness of SDF alone.

All papers, regardless of the methodology, continuously supported the effectiveness of SDF in arresting caries in primary teeth and this effect was very consistent in the literature.

Conclusion

Traditional approaches currently used to



arrest caries in primary teeth have high levels of failure[6] which suggests new strategies are needed. The evidence on SDF is still emerging and suggests SDF can prevent lesion progression.

Although research is limited, there is enough evidence to suggest SDF would benefit patients. It can be concluded there are gaps in the literature. However, this makes SDF an exciting avenue to explore for future research.

Recommendations

- I would urge researchers to conduct well-designed RCTs which compare the outcomes of SDF to other treatments (ie conventional fillings and preformed metal crowns) for the arrest of carious lesions in primary teeth
- I would make a cautious recommendation that SDF is adopted in the UK, especially during the current COVID-19 pandemic and its recovery phase.

The SDCEP[1] says 'By adopting a minimally invasive approach to caries management, the risk of upsetting the child and causing treatment-induced anxiety will be minimised. Non-invasive management of early carious lesions avoids the child entering the restorative cycle'.

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'SDF was first cited as being a cariostatic agent in Japan in 1969 and there has been a recent resurgence in its use.'

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