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REVIEW ARTICLE

CENTION N: A REVIEW

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ABSTRACT

The aim of a dental restorative material is to simulate the biological, functional and esthetic properties of healthy tooth structure. Silver amalgam which has a long record of clinical success is gradually phasing out because of its disadvantages including its metallic grey colour, lack of adhesion and mainly the controversial debate on its safety. Resin based composite have also become a popular alternative to amalgam in posterior teeth however they are also perceived as expensive, time consuming, technique sensitive and exhibit failure related to excessive wear, polymerization shrinkage and microleakage. Cention N is a recently introduced, tooth coloured, direct filling material for posterior load bearing restoration. It is analkasiterestorative which utilizes alkaline filler which is capable of releasing acid-neutralizing ions and an isofiller which reduces polymerization shrinkage. It is a self-curing filling material with optional light curing. Cention N is a cost efficient substitute of amalgam for posterior load bearing restoration.

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INTRODUCTION

Numerous direct filling materials are available for the modern dental practitioner for posterior load bearing restorations – from silver amalgam through to modern day bulk fill composites. Currently, the main concerns regarding the performance of these materials refers to their ability to bear stress, durability, integrity of marginal sealing and aesthetics (Velagapudi, 2016). Silver amalgam has been used as dental restorative material for more than 100 years for the restoration of posterior teeth (Pradeep, 2016). This is because of its good mechanical properties. However the amalgam debate surrounding the safety of mercury and any causal link with a variety of diseases is one of the oldest ongoing controversies in medicine. Even though its safety in patients has been proven in countless studies and international reports (Dental amalgam, 1999; Patki, 2013; Ucar, 2011), the use of amalgam has been decreasing over the years, partly because of public perception on mercury toxicity or regulatory issues and partly due to the increased demand for aesthetic restorations (Patki, 2013).

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Clinically, microleakage is not a significant problem with silver amalgam because the corrosion products from such alloys may eventually seal the interfacial gap between the tooth surface and the restoration (Patki, 2013). Also microcrack formation has been reported with silver amalgam under fatigue loading hence it may not provide good fracture resistance of the remaining tooth (Sangwan, 2016). A quantum leap in the direct restorative was made with the introduction of light cure composites. Composites were introduced in 1960s and have been available for nearly fifty years (Bavaria, 2014). Despite having good physical properties, the main shortcomings of composite resin materials are - polymerization shrinkage resulting in marginal microleakage, postoperative sensitivity and secondary caries (Swapna, 2015). Somenewer developed resin composites like bulk fill composites are superior to the earlier versions, with regard to wear resistance, low polymerization shrinkage and improved depth of cure (Al-Harbi, 2016 and Gupta, 2016). Additionally the possibility of filling a cavity in bulk provide benefits such as reduced restorative procedure time, minimized air void entrapment and improved quality of the final restoration (Al-Harbi, 2016). Cention N (Ivoclar Vivadent; Schaan, Liechtenstein) is a recently introduced tooth-coloured, basic filling material for bulk placement in retentive preparations with or without the

application of anadhesive (Ende, 2017). It is an "alkasite" restorative which is a new category of filling material, like compomer or ormocer and is essentially a subgroup of the composite resin (Samanta, 2017). Cention N is a UDMA-based, [11]self curing powder/liquid restorative with optional additional light-curing. The liquid comprises of dimethacrylates and initiators, whilst the powder contains various glass fillers, initiators and pigments. It is radio opaque and contains alkaline glass fillers capable of releasing fluoride, calcium and hydroxide ions. Due to the sole use of cross-linking methacrylate monomers in combination with a stable, efficient self cure initiator, Cention N exhibits a high polymer network density and degree of polymerization over the complete depth of the restoration (Samanta, 2017).

It also includes special patented filler (Isofiller) which acts as a shrinkage stress reliever and due to its low elastic modulus this shrinkage stress reliever within Cention N reduces polymerization shrinkage and microleakage (Samanta, 2017). Cention N offers a cost-effective substitute for amalgam and also fulfills the need for an esthetic bulk fill material in the posterior region. Soumita S et aldesigned a study in 2017 to compare and evaluate the microleakage in class V cavity filled with flowable composite resin, glass ionomer cement and Cention N. Dye leakage study was performed and the samples were evaluated under stereomicroscope. According to the results, flowable composite exhibited the highest micro leakage followed by glass ionomer and least microleakage was shown by Cention N (Samanta, 2017). An another study conducted to compare proximal contact tightness between two different restorative materials that arechrisma composite and cention N. Test results showed that Cention N used as restorative material shows proximal contact tightness same as that of a composite material used (Deepak, 2017). According to an another study conducted in march 2018 it has been seen thatcention n when compared with silver amalgam ,type 2 gic and nano hybrid composite, shows better microhardness properties and it is becoming a more clinically suitable option for minimal invasive treatments (Mazumdar, 2018). Another study which was conducted in april2018, comparatively evaluated the fracture resistance of two advanced restorative materials, Z350 nanofill composite resin and Cention-N in a class II cavity with routinely used silver amalgam material. It was concluded that the use of Cention-N and Z350 restorative materials significantly strengthen teeth after Class II cavity preparation and restoration (Chowdhury, 2018).

Conclusion

The Cention N resin-based filling material is easy to do clinically and does not require any special products or learning additional skills. As there is demand in tooth colored restorations, this material of choice can be a cost-effective way to deliver a high-quality, predictable restoration, and consume less time. It can be considered as a suitable material for posterior restoration.

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