SPIDENT
Clinical Report
EsCem® RMGI

Introduction

Founded in 1997, SPIDENT CO LTD has been at the forefront of dental innovation, culminating in the establishment of our R&D center in November 2004.
With certifications including CE, FDA, and ISO 13485, we manage all aspects of our operations —from R&D and quality control to product design, marketing, and customer service —with a singular focus on ensuring your complete satisfaction.

Spanning over 100 countries, we are committed to delivering excellence in dental biomaterials.
Our vision is to become a global top 10 company in the dental biomaterial market, prioritizing societal and humanistic values.
Our mission is to enhance oral care accessibility and create a world where healthy, happy smiles abound by delivering optimal value.

History of SPIDENT

1997 Establishment
· Spident Co., Ltd. establishment

2006 · Established R&D Center

2010 The growth process
· Certified CE, ISO 13485, FDA
· Launched chemical products to overseas market
· Awarded in recognition of $1M in exports

2014 Development
· Awarded in recognition of $5m in exports
· Launched NOP Needle

2016 Glass Ionomor
· Research & Development of GIC (First manufacturer in Korea)

2017 20th Foundation Anniversary
· Selected as Global Strong Company

2018 Overseas Factory
· Established a factory in China

2019 Development
· Awarded in recognition of $10M in exports

2023 Development
· Awarded in recognition of $20M in exports

SPIDENT Apple Story
Clinical Report
EsCem® RMGI

Resin Modified Glass Ionomer Cement

Clinical Application of Various Prostheses Using EsCem RMGI

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RMGI cement is a product that combines the two favorable chemical properties of Glass Ionomer and Resin matrix. Since its release, it has become one of the most widely used types of cement not only in Korea but also worldwide.

Indication

- Metal-based inlays, onlays, crowns and bridges
- Resin inlays, onlays, crowns and bridges
- All ceramic inlays
- All high-strength(zirconia-based) all-ceramic crowns & bridges
- Metal, ceramic, and fiber posts

PFM / Gold	Implant (Metal / Zirconia)	Zirconia	Resin	Fiber post	Glass Ceramic
◎	◎	○	○	○	✕
Recommended Use		Available			Not recommended

Advantage

- Dual dispensing type (Auto-mix and hand-mix)
- Excellent physical strength with Zirconium Silicate ($ZrSiO_4$)
- Easy clean up with tack curing 5 seconds
- Exceptional bond strength to tooth structure and indirect restorations
- Reliable bond strength over time
- Ideal film thickness
- Cream-like texture and easy handling
- Outstanding esthetic shades and high translucency of light (49%)
- Continuous fluoride release

The advantages of RMGI include its relatively lower cost compared to conventional resin cement or self-adhesive resin cement, minimal postoperative sensitivity in clinical application, and ease of use. In addition, its continuous fluoride release reduces the concerns about secondary caries, and reliable bond strength can be obtained although its adhesive strength is not as high as that of resin cement. These features make RMGI a preferred choice among many dentists for final cementation.

So far, the majority of RMGI cements sold domestically were foreign-made.
Spident, however, has recently introduced EsCem RMGI, the first domestically developed and produced RMGI cement. Here are clinical cases of EsCem RMGI.

EsCem® RMGI

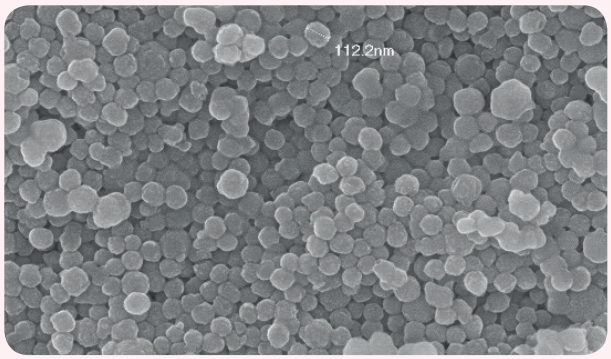
EsCem RMGI is a resin-modified glass ionomer cement. Its light-curing feature allows for easy removal of excess cement, reducing chair time. EsCem RMGI is dispensed through a dual syringe composed of a base and catalyst, making it ideal for seating indirect restorations.

Use of Cement in the Restoration of Gold Inlays and Gold Crowns

The cements used in tooth restoration with gold inlays and gold crowns are RMGI (Resin-Modified Glass Ionomer) cement, ZPC (Zinc Phosphate Cement), Polycarboxylate Cement, GIC (Glass Ionomer Cement), SARC (Self-Adhesive Resin Cement), and Conventional Resin Cement.

In the early days, ZPC and Polycarboxylate Cement were widely used. However, to address high heat generation and low physical strength, Glass Ionomer Cement (GIC) with biocompatibility and continuous fluoride release was developed. GIC is characterized by a thin film thickness, adequate compressive strength, and good retention. Yet it also had the drawback of being soluble in saliva, which led to a demand for cement with stronger retention and better physical properties while being easier to use. To meet this demand, RMGI (Resin-Modified Glass Ionomer) cement was developed and introduced in the market.

*Zirconium silicate filler



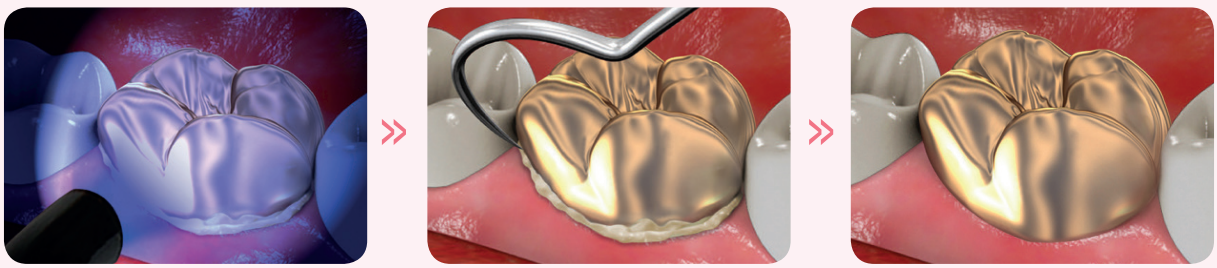
Addition of Zirconium Silicate (ZrSiO4) enhances compressive strength and flexural strength, which provide best support for indirect restorations. It also makes better radiopacity.

Resin cement is necessary when the crown length is short, with less retention, or when the patient exhibits strong occlusal forces, bruxism, or abnormal occlusal interference. However, except in such cases, RMGI Cement can fully cover most clinical applications.

One particular reason many clinicians prefer RMGI cement is that resin cement can cause severe gingivitis when there is remaining cement in the subgingival area. If a dentist fails to remove the excess cement at the right time, , removal of resin cement can be extremely difficult.

Traditional foreign products typically require 1 minute 30 seconds to 2 minutes for intraoral excess cement to set to remove. However, SPIDENT's EsCem RMGI offers a significant advantage by allowing excess cement removal with just a 5-second tack cure, making it much more convenient to use.

*Easy clean up



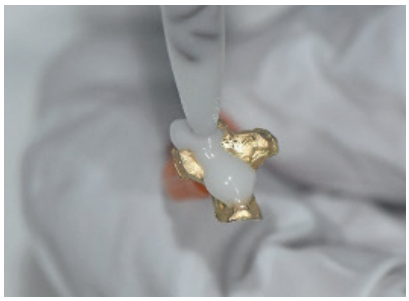
With 5 seconds of tack-cure, excess materials can be removed easily.
Tack-cure and self-cure options allow for more control over single or multiple crowns.

Gold inlay

[Figure. 1] X-Ray Image

[Figure. 2] Removal of the existing restoration and preparation of the second molar

[Figure. 3] Fabrication of a gold inlay

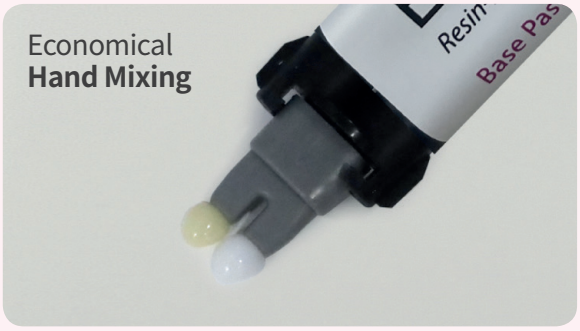


[Figure. 4] Apply an appropriate amount of RMGI cement to the internal surface of the gold inlay

[Figure. 5] Tack-cure the excess cement for 5 seconds after seating the gold inlay.

[Figure. 6] Remove the excess cement after tack curing.

*Dual dispensing type

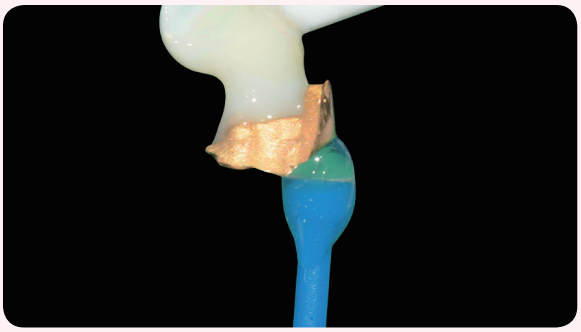


EsCem RMGI can be used both in convenient way and economic way.
You can use cement mixing tip for auto-mix, which is more convenient
and easier to apply. Or you can use eco tip for hand-mix, which is more economic.

The patient presented with sensitivity in the mandibular second molar (Fig. 1). Upon examination, perforation of the old restoration was found, likely due to strong occlusal forces. It was determined that the existing restoration had to be removed and replaced with a gold inlay. After removing the old restoration and preparing the tooth (Fig. 2), I decided to use an RMGI cement, considering the retention of the restoration and potential postoperative sensitivity.

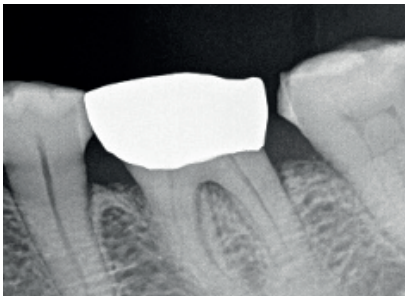
After trying in the fabricated restoration intraorally, the marginal fit is checked (Fig. 3). EsCem RMGI is easily applied as it extrudes with light pressure, making it user-friendly. An appropriate amount is applied to the inner surface of the gold inlay (Fig. 4). Using a metal inlay setter, the gold inlay is firmly pressed into place, followed by tack curing for approximately 5 seconds (Fig. 5). The excess cement is lightly hardened and then removed with an explorer. After allowing sufficient time for full curing, the remaining excess cement is completely removed (Fig. 6).

*Easy handling



Cream-like texture provides easy handling.

Gold crown

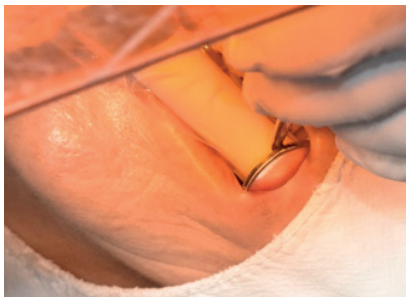


[Figure. 1] X-Ray Image

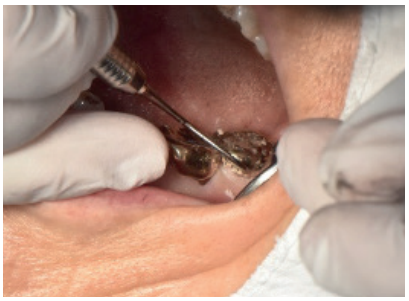
[Figure. 2] Preparation of the second molar

[Figure. 3] Fabrication of a gold crown

[Figure. 4] Apply an appropriate amount of RMGI cement to the internal surface of the gold crown



[Figure. 5] Tack-cure the excess cement for 5 seconds after seating the gold crown.

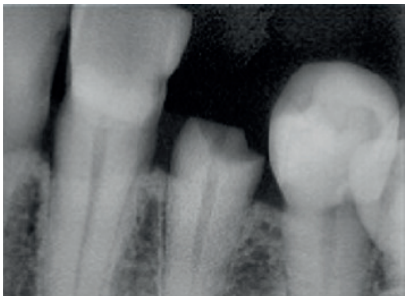


[Figure. 6] Remove the excess cement after tack curing

[Figure. 7] After treatment

The patient presented with a gold crown restoration for the mandibular second molar (Fig. 1). After tooth preparation (Fig. 2), retention and other factors were checked on the fabricated prosthesis, and I decided to cement the crown using RMGI cement to minimize postoperative sensitivity (Fig. 3). An appropriate amount of cement is applied to the inner surface of the gold crown (Fig. 4). The crown is placed for trial fitting in its proper position, and I tack cured for approximately 5 seconds (Fig. 5). After removing the excess cement (Fig. 6), a curette or dental floss is used to check for residual cement, and a radiograph can be taken to ensure that there is no remaining cement if necessary (Fig. 7).

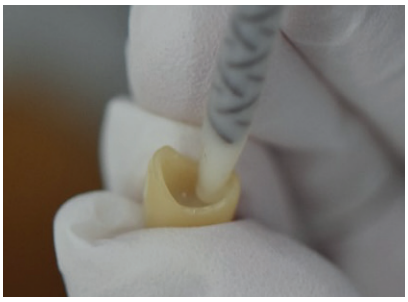
Zirconia crown(Single or bridge)



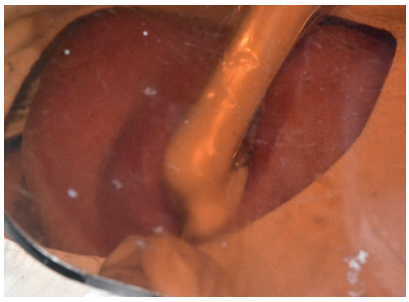
[Figure. 1] X-Ray Image

[Figure. 2] Preparation of the first premolar

[Figure. 3] Trial fitting of the zirconia crown in the oral cavity



[Figure. 4] Apply an appropriate amount of RMGI cement to the internal surface of the zirconia crown



[Figure. 5] Tack-cure the excess cement for 5 seconds after seating the zirconia crown

[Figure. 6] Remove the excess cement after tack curing

[Figure. 7] After treatment

This case involves a patient presenting with a mandibular first premolar that had previously treated with root canal therapy due to caries. The abutment tooth was restored using a fiber post and resin core.
To achieve optimal esthetics, a full zirconia crown was selected as final restoration. As the patient exhibited a tendency for caries, RMGI cement with fluoride release was used.

Following tooth preparation, the retention and fit of the fabricated prosthesis were evaluated (Fig. 1, 2). During the trial fitting, marginal adaptation and occlusion were assessed intraorally (Fig. 3). The assistant applied an appropriate amount of cement to the internal surface of the zirconia crown (Fig. 4). The crown was seated in the correct position, and tack curing was performed for 1–2 seconds (Fig. 5). After removing the excess cement, the operator meticulously inspected the area using a curette or dental floss. Radiographs were taken as needed to confirm the complete removal of any residual cement (Fig. 6).

Setting Procedure for SCRP (Screw & Cement Retained Prosthesis) Implant Restoration

There are mainly three types of implant prosthesis commonly used by dentists in Korea: Screw-retained type, Cement-retained type, and a hybrid type known as SCRP (Screw & Cement Retained Prosthesis). Nowadays, dentists prefer the SCRP type as it combines the advantages of both screw-retained and cement-retained prostheses.

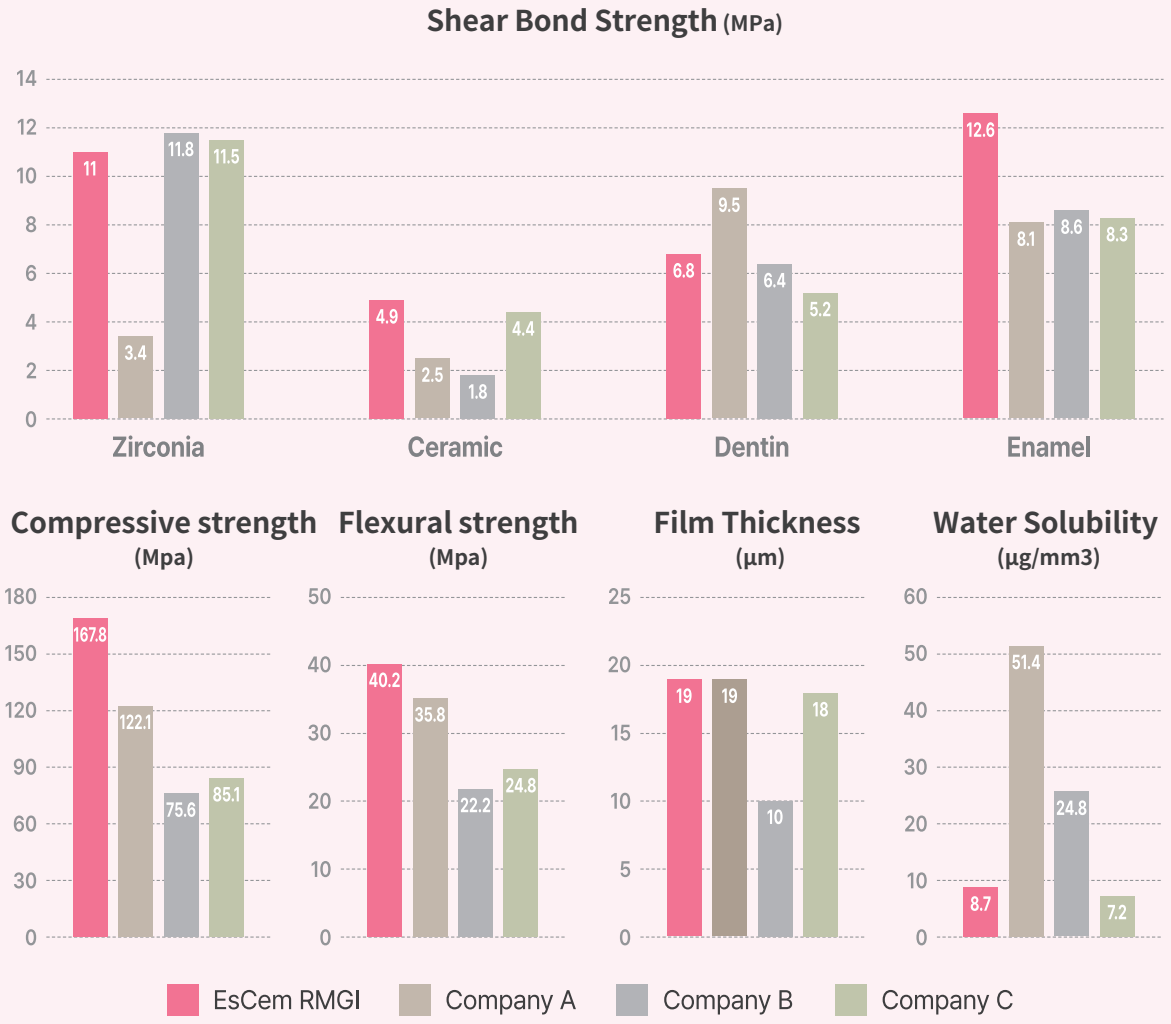
The Screw-retained and Cement-retained types each have distinct advantages and disadvantages. The Screw-retained type allows for easy placement and removal, and it can be used even in cases with limited interocclusal space. Screws, however, can come loose frequently as achieving passive fit can be challenging, and it requires precise and time-consuming laboratory work and clinical procedures.
On the other hand, the Cement-retained type achieves passive fit more easily, has a simpler laboratory process that saves time and cost, and offers superior aesthetics. However, it has limitations in retention control, is not easily removable, and presents difficulties in removing residual cement, especially in subgingival areas. The SCRP system addresses these shortcomings by facilitating passive fit to reduce screw loosening, enabling easy removal even after final cementation, allowing for subgingival margin formation, and making the removal of residual cement easier.

The requirements for cement needed when setting implant prostheses are as follows:

1. Excellent bonding strength
2. Great flowability not to interfere with the fit of the prosthesis
3. No effect on the shade in esthetic prostheses.

I used Spident's EsCem RMGI for implant prostheses, and this product offers ideal flowability and convenience of Tack Cure as its advantages.

*Mechanical Properties



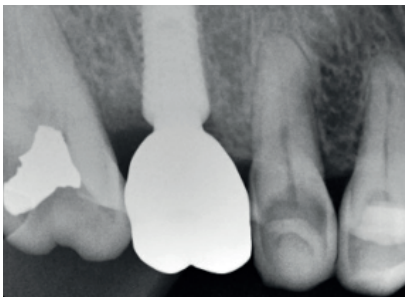
※ Source : Spident R&D Center internal data

SCRP (Screw & Cement Retained Prosthesis) implant

[Figure. 1] X-Ray Image

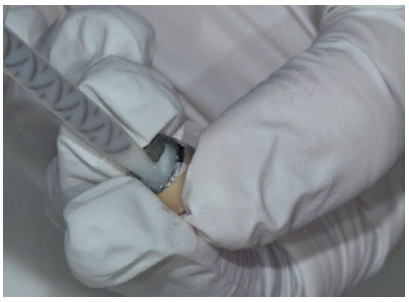
[Figure. 2] Healing abutment status after second surgery

[Figure. 3] Seating the custom abutment



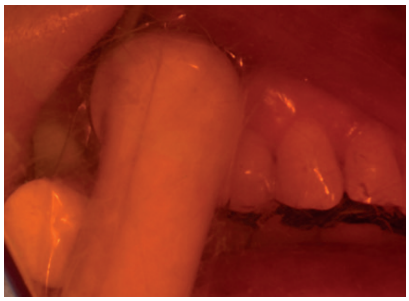
[Figure. 4] After seating the custom abutment, confirm with a radiograph

[Figure. 5] Seal the screw hole with a cotton pellet.



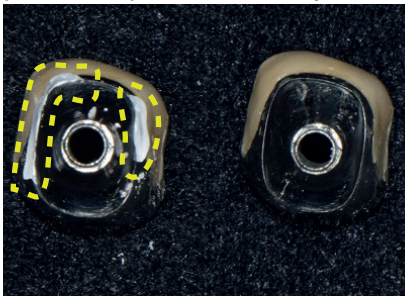
[Figure. 6] Apply an appropriate amount of RMGI cement to the internal surface of crown

[Figure. 7] Bite on the cotton roll with appropriate occlusal force to ensure the prosthesis is positioned correctly



[Figure. 8] Tack-cure the excess cement for 5 seconds

[Figure. 9] Remove the cotton pellet that was placed inside the screw hole



[Figure. 10] The custom abutment and crown came out as one piece due to the RMGI cement. Left: Excess cement observed at the abutment margin. Right: Excess cement removed

[Figure. 11] After trial fitting it in the proper position, retighten the screw and ensure that the previous occlusal condition is reproduced

The patient visited the clinic for prosthetic restoration following the second implant surgery (Fig. 1, 2). A custom abutment was tightened using a conventional method, and its position was confirmed with radiographs (Fig. 3, 4). A cotton pellet was placed in the screw access hole (Fig. 5) to prevent RMGI cement from entering the hole. RMGI cement was then appropriately applied to the inner surface of the prosthesis (Fig. 6), and the prosthesis was trial fitted in the mouth. After verifying the correct positioning, the patient bite on a cotton roll with adequate occlusal force to ensure that the prosthesis is precisely placed in its position (Fig. 7). The excess cement was set by 5 seconds of tack cure (Fig. 8). While maintaining pressure on the prosthesis, the cotton pellet in the screw hole was removed (Fig. 9). Upon removal, it was observed that the cement on the upper part of the pellet was also removed.

Working time	2 min 30 sec
Setting time	5 min (Self-cure) **5 sec (Tack-cure)**

In the case of Escem RMGI, since the setting time is 5 minutes, the patient is instructed to bite on a cotton roll with appropriate occlusal force to prevent any displacement of the prosthesis. After the setting time, the prosthesis is removed using a driver, and the abutment and crown are removed as a single unit. After removal, excess cement around the margin of the abutment is checked and thoroughly removed (Fig. 10). Following the removal of excess cement, the prosthesis is trial fitted intraorally again, and the screw is tightened using a driver. Then I checked the occlusion to ensure it replicates the initial occlusal condition (Fig. 11).

*Outstanding esthetic shades

EsCem RMGI shows very esthetic shades. It provides outstanding translucency. As it is translucent, EsCem RMGI can be used in the esthetic zone with ceramics.

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