

## The different amount of composite and amalgam restoration in posterior teeth of patient

Fitri Dwi Primadisya\*, Milly Armilia Andang\*, Endang Sukartini\*

\*Department of Conservative Dentistry, Faculty Of Dentistry Universitas Padjadjaran

### ABSTRACT

**Introduction:** Dental caries is a problem that usually happens in the society. One of the treatments for dental caries is restoration. Dental restoration material which one usually used are compsite and amalgam. The aim of this research is to acknowledge the different amount between the usage of composite and amalgam restoration in posterior teeth of patient in RSKGM Bandung. **Methods:** Type of research was descriptive. Sample were taken from patients data who had dental treatment of composite and amalgam restoration in posterior teeth in RSKGM Bandung on 1<sup>st</sup> July - 31<sup>st</sup> December 2011. Differences result of two restoration in this research analyzed with test-t analysis. **Results:** Total amount of posterior teeth restored was 1485 teeth, which 1445 teeth were restored using composite and 40 teeth were restored using amalgam. It showed that the usage of composite restoration was more than amalgam restoration. **Conclusion:** there is a significant difference between the number of composite restorations and amalgam on the posterior tooth. The average number of composite restorations is greater than amalgam restoration.

**Keywords:** amalgam, caries, composite, restoration

### INTRODUCTION

Hospitals are one of the health facilities where health care is held by empowering a wide range of trained and educated personnel in the face and handling medical problems for the recovery and maintenance of good health.

Health measures are conducted with a maintenance approach, health enhancement (promotive), and prevention of diseases (preventive), treatment of disease (curative) and a comprehensive health recovery (rehabilitative), integrated and Sustainable.<sup>1</sup> Dental and oral health is essential for everyone. Maintenance

of dental and oral health by cleaning regularly with teeth brushing at least 2 times a day is highly recommended. Leftover food is belong to bacterial food that will be metabolized by the bacteria, resulting in acid as its production. Bacteria, acids, saliva and teeth will accumulate and cause perforated teeth.<sup>2</sup>

Perforated teeth are much complained of by the patient, so that the patient wants his teeth to be performed. One of the dental cavities is with restoration.

The materials are often used for tooth restoration namely amalgam, cement glass ionomer, composite, cast metal and porcelain.

These restoration materials have their own advantages and disadvantages. Anterior tooth is usually performed restoration with glass ionomer or composite, whereas for posterior tooth is often done restoration amalgam, because amalgam has strong resistance.<sup>3</sup>

In the last decade, composite materials are the choice for both anterior and posterior tooth restoration.<sup>4</sup> Composites have a color trait with teeth, abrasion resistant and resistant to chewable power. The composite was introduced by Bowen in 1960 and until now the composite is growing.<sup>3</sup>

Amalgam is the oldest restoration material with mercury composition (43-54%) and alloy consisting of silver, tin, zinc and copper. Amalgam has the advantage of having violent nature, strong durability and low price. The shortage of amalgam among them is the release of free Hg which can cause side effects and colors that do not match the color of the tooth.<sup>4</sup>

Nowadays, many contradictory opinions on the use of amalgam as restoration material, but WHO And the U.S. health agency (National Institutes of Health, the U.S. Public Health Service, the Centers for Disease Control and Prevention, the Food and Drug Administration) State that amalgam was safe to apply, except in cases of allergies.

Bandung Dental Hospital (RSKGM Kota Bandung) which is belong the government. The hospital is easily accessible to the public because it is located in the center of Bandung. Based on the information obtained, the patient comes from a diverse economic level.

Patients are given the option to choose the dental material to be used according to indications and patient's ability. Based on the explanation above, the authors feel interested in doing research on the differences in the number of composite restoration and the posterior tooth amalgam in patients in RSKGM Bandung.

## METHODS

The type of research used is descriptive. The population used in this research is the record of patients who have done dental care with the restoration in the conservative dentistry of RSKGM Bandung during the period of 1 July -31 December 2011. Differences result of two restoration in this

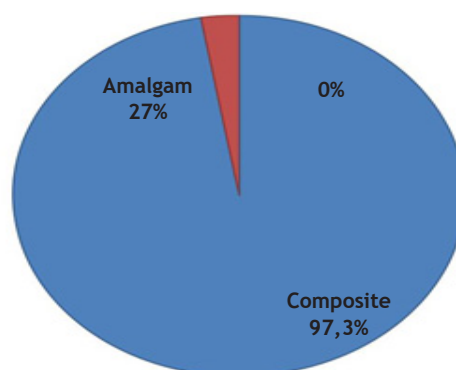
research analyzed with test-t analysis.

## RESULTS

Based on data obtained from patient data records

**Table 1** The number of teeth Posterior patients who are a restored composite and amalgam of the Dental conservation Section RSKGM Bandung On 1 July-31 December 2011.

Month	Composite	Amalgam	Total
July	207	7	214
August	186	7	193
September	225	7	232
October	312	15	327
November	280	1	281
December	235	3	238
<b>Total</b>	<b>1445</b>	<b>40</b>	<b>1485</b>
<b>Percentage</b>	<b>97.3 %</b>	<b>2.7 %</b>	



**Diagram 1.** Percentage of Posterior teeth of Patients that have restored composite and Amalgam at conservative dentistry in RSKGM Bandung during 1 July - 31 December 2011.

in the conservative dentistry of RSKGM Bandung in June 2012, the posterior tooth of the patient who had performed restoration treatment on 1 July - 31 December 2011 amounted to 1485 teeth, including the restoration of composite and amalgam. Data can be viewed in the table 1. Based on the data obtained, the posterior tooth of the patient that has been carried out restoration treatment in the Dental Conservation installation amounted to 1485 teeth, including composite restoration and amalgam restoration.

The posterior tooth of the composite patient amounted to 1445 teeth, while the posterior tooth of the amalgam-restored patient amounted to 40 teeth. The percentage gained 97.3% of the posterior tooth of a composite patient and 2.7% of the posterior tooth of the amalgam-restored

Tabel 2. Hasil Uji-t

Restorasi	N	Mean	Std.Deviation	Std.Error Mean
Komposit	6	240.83	46.976	19.179
Amalgam	6	6.67	4.803	1.961

patient on the posterior tooth. The test-t analysis is used to test the average difference in the number of composite and amalgam restorations. This test is done to determine whether there is any difference in this restoration material.

Table 2 shows the average number of composite restorations much more than the total restoration amalgam. Based on the results of the calculation, there is a difference in the number of composite restoration and amalgam on posterior teeth.

The independent test is conducted to determine the difference in the use of restoration materials. Result obtained t-count = 12,146 with value  $p = 0.000$  ( $P < 0.05$ ). This indicates there is a significant difference between the number of composite restorations and amalgam on the posterior tooth. The average number of composite restorations is greater than amalgam restoration.

## DISCUSSION

Research was conducted at the special Dental and Oral hospital (RSKGM) in Bandung in June 2012. Based on the obtained data, the posterior tooth of the patient who has done composite restoration treatment and Amalgam in dental conservation section of RSKGM Bandung on 1 July-31 December 2011 amounted to 1485 teeth, 1445 teeth are performed composite restoration and 40 Dental Done Restoration Amalgam.

From the obtained data, composite restoration is more widely used than the amalgam restoration. This suggests the community tends to choose composite restoration materials rather than the amalgam restoration for posterior teeth. Based on the results of interviews with officers in the Dental Conservation Section RSKGM Bandung, people tend to prefer composite restoration because of the color with teeth.

Amalgam Restoration began to be abandoned because the color is not aesthetic even though of some patients still use it. The community chooses the restoration material according to indications and abilities. It is certainly the provision of

composite restoration materials should be improved from the amalgam restoration material according to the needs of society. The restoration material used for dental caries has some specific requirements.

The requirements of restoration materials are stable in the oral fluid, able to withstand the chewing power, have thermal expansion that close to the tooth tissue, able to adapt to the walls of the cavities, easily manipulated, can be polished, not react with Other materials and aesthetics.

The composite was introduced by Bowen in 1960, while the amalgam was first introduced in the year 1826 by G. V Black. Amalgam is the oldest restoration material in the world. Both of these restoration materials can be used on posterior teeth. But along with the age and technology developments, composites become the main choice for tooth restoration while amalgam begins to be abandoned.

Composites are plastic restoration materials consisting of a mixture of acrylic resin, filler material, coupling agent, initiator and accelerator. These composites will harden with assisted rays. Composite restorations can be performed on both anterior and posterior teeth.

Composites have a color trait with teeth that look aesthetic. The advantages of composite restoration are the collection of minimal dental structures and low thermal conductivity.<sup>5</sup> Composite restoration deficiency is less durability when compared with amalgam, when the polymerization will occur so that there can be leakage and color change can occur.<sup>5</sup>

Amalgam is a plastic restoration material consisting of a mixture of several alloys and mercury. The amalgam restoration was carried out on the posterior tooth due to its ability to withstand large chewy power, in addition amalgam can adapt to oral fluid, persist for long periods of time and the manipulation of amalgam is easier than composite manipulation.<sup>2,4</sup> The main drawback of amalgam restoration is not aesthetic. In addition amalgam can conduct heat, corrosion and can cause side effects derived from mercury.<sup>4,6</sup>

## CONCLUSION

There is a significant difference between composite restoration and amalgam. The number

of composite restoration is much more than the number of amalgam restoration on the posterior tooth.

#### REFERENCES

1. Siregar KI. Rumah Sakit. Medan. FKG USU. 2010. Available from: <http://repository.usu.ac.id/bitstream/123456789/18308/.../Chapter%20II.pdf>
2. Studervant's. Studervant's & Science of Operative Dentistry. 4<sup>th</sup> Ed. America: Mosby, Inc. 2002. 67-68.
3. Pickard's HM. Pickard's Manual of Operative Dentistry. 8<sup>th</sup> ed. New York. Oxford University Press Inc. 2003. 56-58, 60.
4. Baum LRW, Philips, Lund MR. Text Book of Operative Dentistry. Third Edition. Philadelphia : W.B. Saunders Company. 1997;331-332.
5. Roberson TM, Heymann HO, Ritter AV. Studervant's Art & Science Operative Dentistry. Fifth Edition. St.Louis: Mosby. 2006;507-508.
6. Heasman, Peter. Master Dentistry Volume Two : Restorative Dentistry, Paediatric Dentistry and Orthodontic. 2<sup>nd</sup> Ed. USA: Elsevier Limited. 2008. 85 pp.