FDI 2015 BANGKOK
Annual World Dental Congress

"DENTISTRY IN THE 21st CENTURY"
Final Programme

22-25 September 2015
Bangkok Thailand
Welcome Message

(President, the Dental Association of Thailand
Under The Royal Patronage of H.M. The King)

Dear Colleagues,

It gives me a great pleasure to welcome you to the 103rd FDI Annual World Dental Congress in Bangkok, Thailand. The theme of the congress “Dentistry in the 21st Century”, through highly respected internationally renowned speakers, will give you a look at the future of dental sciences in all aspects. It provides a unique opportunity for dentists, dental auxiliaries, dental students from all over the world to convene and share novel ideas on crucial issues and trends in dental practice. The Dental Association of Thailand is proud to host this prestigious event for the first time in Thailand. Aside from the excellent scientific programs, we have prepared not to be missed social programs. Thailand with its four main regions with different cultures yet all blend in as charm Thaiiness is pleased to welcome you to see what they have to offer.

I’d like to express my appreciation to local organizing committee and the FDI office staff who have been working endlessly to ensure a successful congress. Thailand has arrived at a crossroads in Dentistry with younger generations forming a majority of dentists who are eager to learn and explore new concepts. This trend is happening worldwide. We are ready to welcome our guests with warm hospitality and make sure everyone leaves Thailand with a memorable experience. I wish you all a wonderful time at the 103rd FDI Annual World Dental Congress.

Best wishes and warm regards.

Phisal Thepsithar
LT. GEN. Special Professor
President, the Dental Association of Thailand
Under The Royal Patronage of H.M. The King
FDI 2015
Organizing Committee, Bangkok, Thailand

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Expression of cancer stem cell markers in salivary gland neoplasms
Salina Din

Disease Progression and Monitoring Role of Oral Cytological Smears in Systemic Lupus Erythematosus
Malik Adeel Anwar

Free Communication Session 32
Room 218 | 2015-09-23 | 12:30-13:30
Theme: Preventive Dentistry – Orthodontics

FC129 Four years stability evaluation of skeletal, dental and soft tissue changes obtained by jasper jumper appliance
Atia Abd Elwareth Yousef

FC130 Endogenous IGF-I Production by Exercised Skeletal Muscle Construct; Effects of Different Strain Regimes
Zurairah Ibrahim

FC131 Psychological impact of visible differences in patients with congenital craniofacial anomalies
Varun Pratap Singh

FC132 awareness of orthodontic treatment among medical students
Virsha Naseem Butt

Free Communication Session 33
Room 215 | 2015-09-23 | 14:00-15:00
Theme: Dental Treatment & Restorative Dentistry-Prosthetics

FC133 Changes in gene expression of matrix metalloproteinase -8 after insertion metal crown
Ike Damayanti

FC134 Changes in gene expression of matrix metalloproteinase-8 after insertion porcelain fused to metal crown
Bahruddin Thalib

FC135 Translucence and Opalescence Properties of Different CAD/CAM Ceramics
Tevfik Yavuz

FC136 Radiographic and Clinical evaluation of 500 root form implants following immediate and delayed loading - 5 years follow up
Dhruv Arora
INTRODUCTION

Crown is an extra-coronal restoration cemented on the outer clinical crown which has the same morphology and contour of the defective clinical crown. Crown is a type of prosthesis that replace missing tooth structures caused by caries, trauma, or others, and restoring the comfort, functionality and patient’s confidence.

Porcelain fused to metal restoration is a primary choice in the aesthetic crown restoration and fixed prosthesis in the last 50 years. Main advantages of this combination of materials are the strength gained from the metallic bond inside the core and the aesthetic from the porcelain that covered the outer crown. The tooth restoration material to cause or contribute in the inflammation played a pivotal role in the periodontal disease and other systemic diseases, including the inflammation response.

It was proposed that plaque adheres better to the crown restoration than on enamel. Crown materials did not cause any inflammation, but the accumulated plaque on the crown surface is the main cause of gingival inflammation. Crown material property include the surface roughness, may affecting the bacterial layer attachment and protecting the colonizing bacteria. Dental materials can cause gingival inflammation because of its placement near the gingival and other periodontal tissues. Factors like materials, cytotoxicity, and composition has potential effect on gingival inflammation.

Matrix metalloproteinase [MMP] is a group of enzyme responsible for the extracellular matrix damage during the organogenesis process, growth and normal tissues regenerations. Matrix metalloproteinase-8 is a main collagenase in the human gingival inflammation. In the chronic inflamed gingival tissue and gingival crevicular fluids, MMP are available in active and latent form. Collagenase are activate and gelatinase are found abundantly in the GCF patient with periodontitis significantly higher than controls.

Matrix metalloproteinase-8 [MMP-8] is a main collagenase in the inflamed gingival. MMP-8 or collagenase-2 is the main biomarker of connective tissue disruption in periodontitis and can be used to determine the diagnosis.
GCF mostly consist of protein serum, inflammation mediators, tissue host, and cell degradation products, such as microbial metabolites and enzymes. Which make the GCF ideal to providing diagnostic information about periodontal health or the disease status.9

Therefore, in this study we describing about the changes of matrix metalloproteinase-8 gene expressions in the gingival crevicular fluid as a gingival inflammation biomarker after porcelain fused to metal crown insertion on the labial surface.

MATERIAL AND METHOD

This is a clinical study on porcelain fused to metal crown insertion to patients with anterior teeth defect who referred to prosthodontics department of RSGM of Hasanuddin University. This clinical trial is a controlled experimental study conducted on human. This study was done on 2014 from September to December. This study was done in the prosthodontics department RSGM of Hasanuddin University and Microbiology Laboratory of Medical Faculty of Hasanuddin University.

The study populations are patients with crown treatment on their anterior teeth. The study samples are 4 patients who matched the inclusion criteria.

Patients were treated with clinical examination using plaque index followed by treatment procedures for crown fabrication. Gingival crevicular fluids was obtained with filter paper strip methods before treatment, after porcelain fused to metal crown insertion on day 7. The expressions of matrix metalloproteinase-8 gene in the GCF samples were examined in the laboratory. The sample was analyzed using Quantitative reverse transcriptase polymerase chain reaction [QRT-PCR] with glyceraldehyde-3 phosphate dehydrogenase [GAPDH] as the internal control gene.

RESULT

The sample number [unit observation] was 4 individuals with porcelain fused to metal crown on their anterior teeth. Gradual observation to MMP-8 gene expressions was done pretreatment and on day 7 after PFM crown insertion on the anterior tooth, via the gingival crevicular fluid. The result can be seen as:
Table 1 MMP-8 gene expressions of porcelain material on porcelain fused to metal crown

<table>
<thead>
<tr>
<th>Observation</th>
<th>Porcelain/labial (n=4)</th>
<th>Mean±SD MMP-8 gene expressions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-treatment</td>
<td>6,95±0,48</td>
<td></td>
</tr>
<tr>
<td>Day 7</td>
<td>9,08±0,31</td>
<td></td>
</tr>
</tbody>
</table>

In the Table 1 it was shown that MMP-8 gene expressions were elevated and affected by the porcelain material. The study showed that the MMP-8 gene expressions were increasing, related to the porcelain material; the paired t test analysis result showed a significant increase of MMP-8 gene expression (p<0.005) pretreatment before the 7th day.

Table 2 The percentage of the porcelain-related MMP-8 gene expression elevations on the porcelain fused to metal crowns

<table>
<thead>
<tr>
<th>Observation</th>
<th>Porcelain/labial (n=4)</th>
<th>Mean±SD MMP-8 gene expressions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretreatment</td>
<td>11,64±7,86</td>
<td></td>
</tr>
<tr>
<td>Day 7</td>
<td>30,94±5,57</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 showed that during the observation periods, the MMP-8 gene expressions was increased.
DISCUSSION

The study sample had a remarkable oral hygiene without gingivitis or periodontitis. The age between 18-25 years old were determine as the inclusion criteria for the study subjects, considering that the growth has stopped and the pulp was closed completely at this age group.

The inclusion of porcelain in the porcelain fused to metal crown affecting the periodontal health. The study result showed that MMP-8 gene expression was elevated due to the porcelain materials. Paired t test analysis result showed that the MMP-8 gene expressions was significantly increased between pretreatment and day-7 after PFM crown insertion, where the value in the day 7 was higher than pretreatment. This also means that the elevation of MMP-8 gene expression was affected by the porcelain materials. This result confirmed the study by Knoemschild and Campbell (2000), who showed that artificial crown play a role in the periodontal inflammations.

The existence of restoration materials on tooth surface is a factor that contributed in the periodontal disease. The plaque accumulated on the gingival adjacent to the restorations can cause gingivitis. It was believed that plaque adheres better on the restorations surface than email. This was caused by the surface characteristic of the restoration materials, such as surface roughness and free surface energy of the materials. Unlike on the email, the pellicle role in plaque formation pattern in many restoration materials are basically the same. The plaque formation and maturation on email surface or restoration materials are affecting the adjacent soft tissues and induce the host inflammatory response.

The matrix metalloproteinase 8 are mainly secreted by polymorphonuclear leukocytes, and other cells, such as oral epithelium, plasma cells, and fibroblast. MMP-8 was expressed in inactive form during the latency periods and was activated by the so-called cysteine switch. MMP-8 was expressed on the periodontal tissues and its elevation had been reported in the tissues of individuals with inflammation and periodontitis. The decreased of MMP-8 levels in the GCF showed that this enzyme can be used as a current status indicator and as a predictor of the prognosis of the disease. Neutrophil is a main cellular source of MMP-8 which also increased in periodontitis patients. Furthermore, bacterial proteinase in microbial plaque may be able to activate the MMP-8 production by neutrophil.

Overall, the smooth surface and low surface energy are favorable conditions to minimalize the supra-gingival plaque formation. A study by Kancyper and Koka (2001) showed that crown patients with good oral hygiene are not predisposed to gingival or microbial response.
REFERENCES