



Islam and technological development in Malaysia's health care: An Islamic legal basis analysis of dental materials used in periodontal therapy

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Abstract

Human life is constantly evolving and technology helps with the advancement. In many Muslim societies such as in Malaysia, *halal* and *haram* issue is a sensitive concern not only with regard to foods but also medical materials and devices. Many medical issues highlighted involve the use of drugs mixed with non-*halal* materials or impurities such as pigs, carcasses and corpses. The use of drugs is also an issue in the field of dental treatment such as Biogide®, EmdoGain® and Bio-Oss®. The absence of a *fiqh* principle model for dental treatment, especially involving these materials complicates doctors' treatment of patients in order to know whether these substances are authorized by Islamic rules or otherwise. This study analyses guidelines used in the application of drug and medical devices derived from non-*halal* materials. The approach used in this study is based on a study of the Quran, *Sunnah*, views of the *Ulama'* and the analysis of contemporary *fatwas*. The results show that the use of non-*halal* devices in dental treatment is prohibited except in emergencies. The use of non-*halal* materials is also prohibited if the recovery is medically dubious. Advice of pious Muslim doctors is also demanded before treatment.

Keywords: dental materials, *fiqh* principle, *halal* and *haram*, *medical devices*, periodontal therapy, Islamic legal basis

Introduction

Human life is constantly evolving and technology helps with the advancement. Medical and dental world too are not excluded from the current advance technologies that evolve from time to time. However, the changes must be in line and conform to Islamic principles, especially with the rapid development of modern Islamic medical world that emphasizes the principles of *maqasid shariah* in the treatment of Muslim patients. Islam accepts the development of technology in purpose of facilitating human activities and protecting people from dangerous diseases. Islam is a comprehensive religion and always in accordance with the requirements of times. One of the principles that illustrate the flexibility of Islamic jurisprudence is the *hukum* (opinion of Islamic law) changes with the changes in place and time.

Through this principle, if there is a new problem or issue, where there was no discussion among earlier jurists (*fuqaha'*), current jurists are allowed to give out opinions based on *fiqh* principle and current situation. Dentistry is one of the areas that are confronted with issues such as the *fiqh* status of cleft surgery, cosmetic surgery, the use of gold teeth, the use of materials from non-*halal* sources and others. The use of the non-*halal* material in dental treatment was less highlighted such as Biogide®, Emdogain®

and Bio-Oss®. These materials are used in the treatment of growth of new tissue to regenerate dental function.

In Malaysia, Muslims are very sensitive to matters involving the law of *halal* and *haram*, especially in terms of food and drink. Faridah Jalil and Nurhafilah Musa (2012) argue that the food and other products are one of the contributing factors to unity or disunity in the society of all races, religions and cultures. Product manufacturers need to take into account the overall sensitivity of the Malaysian people towards a product. Principle of *halal* and *haram* is one of the core principles in Islamic jurisprudence and affect the life of a Muslim whether in worship, *muamalat*, *akidah*, nutrition, health, medicine and so on (Mustafa Afifi et al., 2014: 1176-1177). Since lately, people are not only sensitive to the status of clean and unclean foods, but also medicine and pharmaceuticals. Various medical issues been highlighted by the society that encourages agencies to decide some fatwa which are related to the issues of the act.

Unfortunately, although there are many issues in dentistry, there is still no specific *fiqh* guideline for dental treatment. The lack of a *fiqh* principle model for dental treatment, especially those involving treatment ingredients mentioned above complicate doctors and patients involved to know the *hukum* of using these substances. Based on the existing problems in determining the status of non-halal materials in dental treatment, this study will discuss the concepts and types of dental treatment and the current *fatwas* based on Al-Quran and Hadith. This study will also justify selected opinion relating to the *hukum* of using non-*halal* sources, especially according to the principles of Islamic legal basis. Therefore, this study is a preliminary study for preparing *fiqh* guideline to tackle dental treatment issues.

Overview on dental materials used in periodontal therapy

A major goal of periodontal therapy is restoration of the damaged tissues to their original form and function. In order to achieve this, regeneration of the destroyed periodontal connective tissues through formation of new cementum, new bone and new attachment of new connective tissue fibers are required (Egelberg, 1987: 233-242, Pitaru et al., 1994: 81-94, Cochran & Wozney, 2000: 40-58). Several surgical techniques have been developed to regenerate periodontal tissues including guided tissue regeneration (GTR), bone grafting (BG) and the use of enamel matrix derivative (EMD) (Esposito et al., 2010: 101-104).

Enamel matrix derivative (EMD) is an extract of enamel matrix and they consist of a whole family of proteins, of which 90% are amelogenins, and the remaining 10% prolin-rich nonamelogenins, tuftelin and other serum proteins (Brookes et al., 1995: 1-4). Amelogenins are involved in the formation of enamel and periodontal attachment formation during tooth development and has a key role in periodontal wound healing (Esposito, 2010: 101-104). Moreover, clinical studies have indicated that treatment with EMD positively influences periodontal wound healing in humans (Sculean et al., 2007: 167-180).

EMD has demonstrated the potential to mediate periodontal regeneration in both human and animal model systems (Hammarström, 1997: 658-668). This material is derived from porcine tooth buds (Sculean et al. 2007, 167-180). Based on the high degree of homology between porcine and human enamel proteins, it was decided to produce the EMD from fetal pigs (Brookes, 1995: 1-4).

Periodontal regeneration refers to the restoration of supporting tissues of the teeth such as bone, cementum, and periodontal ligament to their original healthy levels (Sukumar & Dřizhal., 2008: 203-207). The application of bone grafts would potentially manipulate the biological response into a regenerative rather than a predominantly reparative pattern of periodontal healing. In addition, the use of barrier membranes in regenerative procedures may enhance clinical success by offering better protection and containment of the bone substitute inside the defect and disallowing fast-growing gum tissue to get into the regenerative site and interfere with the process (Fassmann, 2002: 13-14).

Bone replacement grafts can be broadly classified into human bone and bone substitutes. Emphasis has been placed on the use of barrier materials in the form of semipermeable membranes which are interposed between the mucoperiosteal flap and the bone and tooth surfaces during surgery. Some researchers have

reviewed the use of non-resorbable membrane materials such as expanded polytetrafluor-ethylene and ethyl cellulose, and resorbable materials such as collagen and polylactic acid (Nasr et al., 1991: 125-127).

Collagen membranes are selected frequently from the various available resorbable membranes because they have many advantageous properties including a low immune response, low toxicity, the ability to promote cellular growth and attachment, homeostasis, and the ability of collagen solutions to reconstitute into the microfibrillar structure found in natural tissues (Rao & Joseph, 1988: 63-86).

Bio-Gide® is the common product used to serve this purpose. It is a pure collagen membrane obtained by standardized controlled manufacturing processes. The collagen is extracted from veterinary certified pigs and carefully purified to avoid antigenic reactions. It is sterilized in double blisters by gamma irradiation; it is as such a bilayer structure. The porous surface facing the bone will allow the in-growth of bone-forming cells. The dense surface facing the soft tissue will prevent the in-growth of fibrous tissue into the bony defects. The membrane is made of type I and type III collagen without further cross-linking or chemical treatment. When used as a barrier membrane in bone cavities, it will resorb within 24 weeks. Adverse reaction to Bio-Gide has not been observed (Ogunsalu, 2005: 261).

Bio-Oss® is a safe and effective bone graft material. Under the election microscope, Bio-Oss looks very similar to human bone. Because of this similarity to human bone, Bio-Oss is highly successful in helping new bone to form. It is prepared from specially processed bovine sources. Since it is highly purified bone, no allergic reaction or infection has been observed following its use (Ogunsalu, 2005: 261).

Esposito et al. (2010) have done a study to test whether EMD is effective, and to compare EMD versus GTR, and various BG procedures for the treatment of intrabony defects. They have searched and reviewed data from the Cochrane Oral Health Group Trials Register, CENTRAL, MEDLINE and EMBASE. In their study the selection criteria including randomized controlled trials (RCTs) on patients affected by periodontitis having intrabony defects of at least 3 mm treated with EMD compared with open flap debridement, GTR and various BG procedures with at least 1 year follow-up.

Authors' have concluded that after one year of its application; EMD significantly improved probing attachment (PAL) levels (1.1 mm) and pocket depth (PPD) reduction (0.9 mm) when compared to a placebo or control. No differences in tooth loss or aesthetic appearance as judged by the patients were observed. However, the high degree of heterogeneity observed among trials suggests that results have to be interpreted with great caution. The actual clinical advantages of using EMD are unknown. Emdogain showed similar clinical results to guided tissue regeneration, but is simpler to use and determines less complications. Comparing EMD with GTR, GTR showed statistically significant more postoperative complications and more gingival recessions (REC). With the exception of significantly more postoperative complications in the GTR group, there was no evidence of clinically important differences between GTR and EMD (Esposito et al 2010, 101-104).

Views issued by Fatwa Council based on Quranic and Prophetic Legal Basis

Pertaining to medicine made from non-*halal* materials, Dar Al-Ifta Al-Missriyyah (2004) has even agreed that it is permissible to take medicine made from non-*halal* materials under the supervision of experts whenever pure ones are unavailable. This view is confirmed taken into consideration the opinion of Hanafi and Shafi' scholars. Citing some Hanafi scholars, Ibn Abidin stated in Al-Hashiya (4/215):

"It is permissible for an ill person to drink urine, blood or consume the meat of an unslaughtered dead animal for medication if a Muslim medical expert informs him that (the impure substance) is a cure and if a permissible substitute is unavailable. There are two opinions if the physician informs the patient that such a cure will hasten recovery."

Al-Khatib Ash-Shirbni wrote in Mughni Al-Muhatj (4/234):

"It is permissible to take anti venom and the like mixed with alcohol which has become completely indistinguishable (such that no color, taste, or odor remains) if a cure made from pure substances

is unavailable. Examples include medication with ritually impure substances such as snake meat and urine which are permissible even if for the purpose of hastening recovery. This permissibility rests upon the prescription of an upright Muslim physician or the patient's own knowledge of the [healing properties] of the impure substance."

Al-Haitami said in Al-Tuhfa (9/170):

"It is permissible to use alcohol (which has become completely indistinguishable) with medicine for medication similar to the permissibility of using ritually impure substances in their original form if the patient himself knows or is informed by an upright Muslim physician of the (healing) benefits of that particular substance and if a pure substitute is unavailable."

Dr. Hatem al-Haj (2006) has confirmed that taking medicine is not against Islam, as Islam is a religion of ease, and Allah is most merciful. The ruling of gelatin from *haram*-to-eat animals is however, controversial. Some chemist say it gets completely transformed in the process of manufacturing, thus some scholars deemed it *halal*. Dr. Hatem al-Haj claimed, other chemists maintain that it does not. Thus, gelatin derived from *haram*-to-eat animals must not be used in food, yet for the individual patient, they may use medications which contain that gelatine, if there were no alternatives.

Dr. Salah al-Sawy (2005) decided that it is permissible to eat such foods or medicines that contain these ingredients (*haram*-to-eat animals), because the general basis is the permissibility (*halal*), except if it was impossible for the chemical and physical characteristics of these prohibited ingredients to be transformed into new ingredients that are not related chemically and physically to the first substances.

However, according to Dr. Salah, the origin is to avoid the foods and drinks that contain any ingredients that Allah the Almighty and His prophet, prayers and peace of Allah upon him, have made prohibited, like the dead animals (carcasses), blood, and the pig's meat, etc. People who eat prohibited (*haram*) foods and his deeds are not accepted from him by Allah for forty nights. Imam Muslim and others reported about Abu-Huraiyah, may Allah be content with him, who narrated that the prophet, prayers and peace of Allah be upon him, said:

"That Allah is Good and He does not accept except good things", and that Allah ordered the Believers what He ordered His Messengers and He said: "O ye apostles! Enjoy (all) things good and pure, and work righteousness: for I am well acquainted with (all) that ye do", (Quran, 23:51); and He said: "O ye who believe! Eat of the good things that we have provided for you, and be grateful to God, if it is him ye worship", (Quran, 2:172). He mentioned that a man goes into long trips, and becomes shaggy and dusty, extends his hands to the sky in supplications to Allah by saying: "O, Allah! O, Allah!", and he has got his food, his drink, his dress and all his life gains he has gotten from prohibited (haram) sources, then how it comes that Allah would answer his supplications.

Based on the opinion of Mufti Muhammad ibn Adam al-Kawthari (2010), the scholars of Hanafi have differed in this issue as to the permissibility of using non-*halal* medication which is divided into the group who prohibit the usage of non-*halal* materials and the group that allowed it. As far as the narrations indicating the impermissibility of using non-*halal* medication are concerned, they (according to the scholars who permit using non-*halal* medication) refer to the situation where an alternative is available. Hence, in such a case, it would indeed be prohibited to avail of non-*halal* medicine.

Similarly, it will be prohibited to use non-*halal* medication when there is uncertainty in the medication being a cure for one's illness; hence, the narrations refer to the situation where there is uncertainty. The majority of the Hanafi jurists (fuqaha) are of the view that it will be permitted to use unlawful substances as medication subject to certain conditions. This viewpoint is based on the position of Imam Abu Yusuf (Allah have mercy on him).

Thus, Imam Ibn Nujaym (Allah have mercy on him) states in his renowned al-Bahr al-Ra'iq:
"There is a difference of opinion amongst our scholars with regards to using unlawful medication. In al-Nihaya quoting from al-Zakhirah, it is stated that it is permissible to use unlawful medication if it is known that the cure lies in the medication and that no alternative is available" (al-Bahr al-Ra'iq, 1/116).

Imam al-Haskafi (Allah have Mercy on him) states:

"The Scholars differed regarding the usage of unlawful medication. The apparent opinion in the (Hanafi) school is that it is haram. However it is said that, it will be permissible when the medicine is known to be effective and that there is no other alternative, similar to the dispensation of drinking alcohol for a person dying of thirst, and the fatwa is given on this opinion" (Radd al-Muhtar ala al-Durr, 1/210).

However, many of the Hanafi Fuqaha have subjected this dispensation to the following conditions:

- 1) It is reasonably known that the medicine will be effective, and is needed;
- 2) There is no permissible alternative reasonably available;
- 3) This has been established by an expert Muslim doctor who is at least outwardly upright and god-fearing.

Therefore based on the narrations of Hanafi scholars, Mufti Muhammad ibn Adam al-Kawthari (2010) opined if the medicine (which is made from non-*halal* materials) is known to be effective and no other available alternative is available, it will be permitted to avail of it. This, however, needed to be established by an expert Muslim doctor. Thus, explain the Shariah perspective to an expert Muslim Doctor and seek his advice.

The 87th Muzakarah Fatwa Committee of the National Council For Islamic Religious Affairs Malaysia of, which convened from 23 - 25 June 2009 has been decided that Islam prohibits the use of non-*halal* materials to cure a disease, except in circumstances where no materials from *halal* sources found and to avoid harm to up to extend until the materials from dietary sources are found.

Islam prohibits the use of non-*halal* materials to cure a disease based on the hadith of the Prophet which means:

"From Abi Darda' r.a, the Prophet said: Verily Allah has sent down the disease and the cure, and He has made for every disease cures, then you all go and do not all impregnated with (things) are illegal".

In the absence of other drugs that can be used to treat a disease, but a disease must be treated to maintain health and body, drugs derived from non-*halal* materials such as enzymes from pig are required at only medically optimum dose are allowed.

There are criteria of conditions that can be considered as emergencies. Among those care as follows:

- (i) Emergency is really happens, not something that is uncertain. In other words, it has occurred, or existed a situation where damage or harm or destruction of five basic things will happen or pursuant to a strong inference based on experiences or knowledge;
- (ii) A person who is in a state of emergency was contrary to a prohibition order or legislation, or there is something that is required by legislation to eliminate the harm except the things which are prohibited;
- (iii) It must be ensured that the existence of other lawful goods cannot prevent harm befalling patients;
- (vi) The taking non-*halal* goods is merely for the needs only; and
- (v) At the time of treatment, the non-*halal* recruitment must be confirmed and certified by a fair physician Muslim.

While, regarding the issue of whether it is prohibited to supply medicine that contains haram ingredients, Mufti Faizal Riza (2013) said that it is permissible to supply medicines that contain haram ingredients (even if other halal alternatives are available). This means that it is possible to use a medicine that contains non-*halal* material in a permissible manner in certain cases; and the rule is that if something can be used in a permissible manner as well as in a prohibited manner, it is permissible to sell it.

If it is used in a prohibited manner, the sin will rest on the perpetrator; the seller will not be responsible. Hence, even from this perspective, it is permissible to supply medicines that contain non-*halal* ingredients. It is not a supplier's responsibility to ascertain that a *halal* alternative exists for the customer's particular illness. However, if a customer asks a supplier to recommend a medicine for him, then the supplier should name a *halal* medicine if available.

Thus, the above explanation should have an enlightenment that enamel matrix derivative (EMD), bone replacement grafts and pure collagen membrane products are known to be effective and if no other alternative is available; it will be permitted. This, however, need to be established by an expert Muslim dentist.

Conclusion

In conclusion, each case involving the determination of Islamic legislation should be based on the main sources, which are Quran and Hadith. Quran and Hadith are the best basis for solving all problems, regardless of the place, circumstances and time range. Texts of the Quran and Hadith mostly of a general nature to be legislated as general principles and laws will be put under the branches of these principles. The legal use of drugs and non-*halal* source of dental treatment is prohibited except in certain circumstances. Some scholars argue that the use of drugs and non-*halal* materials have become a must in an emergency but with conditions and certain limitation. Among the conditions and limitations are the use of a dietary sources, particularly the treatment of BioGide®, Emdogain® and Bio-Oss® are in the absence of halal alternative medicine, cure disease is secured, must be referred to a Muslim doctor, a believe that *halal* materials are not appropriate to the circumstances of disease and several other conditions as discussed. But there are still some scholars' opinions which are contrary to the previous views who insisted that the use of non-halal drugs is still prohibited even for medical purposes. Researchers believe that every opinion comes with arguments but researchers agree and hold the first opinion which is the usage of non-*halal* materials is prohibited with certain circumstances and conditions. Dental specialists and experts of jurisprudence should enhance collaboration in understanding the principles of *fiqh* which can be consulted in each particular legal problems of modern dental treatment. Among the proposals that can be put forward is to do more studies involving issues of *fiqh* as well as dental treatment and expose the principles of *fiqh* to dental specialists through seminars, lectures, discussions and others.

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