

Attitude and Management Preferences of Deep Carious Lesion in Vital Permanent Teeth : Observational Cross-Sectional Study among Dentists in Tunisia

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Abstract :-

Introduction: to find out a dentist's preferences and attitudes face to a deep carious lesion without symptomatology in young healthy patients.

Materials and Methods: an electronic questionnaire was performed with google forms. Composed with 20 questions and sent by mail to 750 randomly sampled dentists and only 269 (35.8%) dentists participate in this study.

Results: 43.5% choose completely removed of soft tissue despite the deepness of the cavity and the high risk of pulp exposure, 34.2% decide to practice stepwise technique and only 22.3% choose the selective removal technique. Most dentists whom attended post graduate training about actualities in cardiology and conservative dentistry choose selective removal therapy

Conclusion: thanks to their unachievable properties, new bioactive products are making the practice of minimally invasive dentistry an alternative to maintain pulp vitality as long as possible and dentists are invited to follow new recommendations and adopt better practices.

Keywords:- Selective Lesion Removal, Complete Lesion Removal, Stepwise, Deep Carious Lesion, Bioactive Product,

I. INTRODUCTION

In the early 2000's, dentistry minimally invasive was a new concept introduced to maintain the vitality of the pulp and function of the teeth as long as possible(1).

Nowadays, the management of deep carious lesions is considered as a veritable challenge dentists face, traditionally, practitioners removed all carious tissues before definitive restoration. This leads frequently to accidental pulp exposure and needs pulp capping or root canal treatment which is probably expensive and burdensome(2,3). Thus, in some low income countries the insurance coverage of dental practices is limited and patient choose tooth extraction instead.

In 2016 An evidence based guideline was installed by a group of international experts about removing carious lesions with variable depth and suggest selective removal therapy (soft tissue was left over the pulp corners) and definitive obturation in the same day. Stepwise technique is

recommended also and the soft tissue is eliminated in another visit. Complete excavation (non selective removal) is no longer recommended. (2)

Recent studies showed that dentists choose frequently total removal despite its high cost effective compared with other approaches. There is restricted information on the behaviour and attitudes of Tunisian dentists. (2,3)

The aim of this study was to find out a dentist's preferences and attitudes face to a deep carious lesion without symptomatology in young healthy patients.

II. MATERIALS AND METHODS

This cross sectional study was performed. Using an electronic questionnaire made with google forms available at <https://docs.google.com/forms/d/e/1FAIpQLSca1QAWtdCqV8ULtc6JF9qB71YJkX8KVNjvPTxXns89tJg/viewform>

The questionnaire was mailed to 750 randomly sampled dentists. All dentists specialized in conservative Odontology and endodontic treatment were excluded from this study. The participants were informed about the aim, benefits required, and their rights, thus ethical approval was considered unnecessary by the Ethical Committee. Data were entered into Excel 2016 and analyzed by IBM SPSS STATISTIC 20 (Statistical Package for Social Science) software.

Twenty questions were created based on the previous studies divided into 4 parts. The instrument was firstly tested by ten dentists in order to rectify and to increase the success rate of the study. First part consists of gathering demographic information, including place of work, age, gender and if they attended a post graduate training about actualities in dentistry minimally invasive. The second section was about clinical examination. The third part included questions about dentists's attitude face to a deep carious lesions (criteria for satisfactory removal of soft tissue, excavation technique, disinfection approach, Their attitude face to asymptomatic deep carious lesion and the product they use in pulp capping under different definitive restorative products). Finally, the fourth part is about Criteria dentists relay on to decide about excavation technique.

III. RESULTS

Of 750 dentists, 269 (35.8%) took part in our questionnaire with 124 (46.1%) male and 145 (53.9%) female practitioner (No significant difference between male and female responses $P=0.877$). Only 60 (22.3%) of the respondents have attended post graduate training. (Table 1)

	N (%)	P value
Gender	124 male (46.1) 145 female (53.9)	0.877
Post graduate training	No 209 (77.7) Yes 60 (22.3%)	0,000

Table 1 : practitioner characteristics

Most participants choose the complete removal procedure 117 (43.5%) (figure1). Chi square test in 2*3 Cross table was used to identify the relation between postgraduate training and the practitioner’s decision and proves that the majority of non trained doctors practice the total removal management because they don’t believe in the selective caries removal They think that is unethical to leave soft tissue under final restoration. The attitude of trained practitioner was split between stepwise in two times and selective removal procedure. This association was statistically significant.

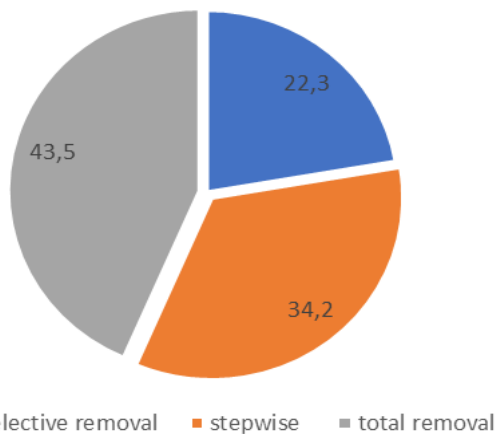


Fig 1 : Dentist's Attitude Face To A Deep Carious Lesion Without Spontaneous Symptomatology

To keep final obturation as long as possible total excavation was preferred by 216 (80%) participants and to avoid post operative pain, stepwise and selective excavation were their main choices. (119 ;93 respectively) (figure2)

Regarding satisfactory removal of carious lesion (table 2), only 30 (11.2%) use rubber dam, hard tissue was preferred by 207 (77%) in case of no pulp exposure risk, the color have no influence for (198) 73.6%, 90% use metallic burs and 237 (88%) disinfect the cavity after excavation.

Asking about criteria dentists rely on to decide the ideal procedure, several responses were collected; global treatment plan, oral health and age of the patient were the main choices (figure 3)

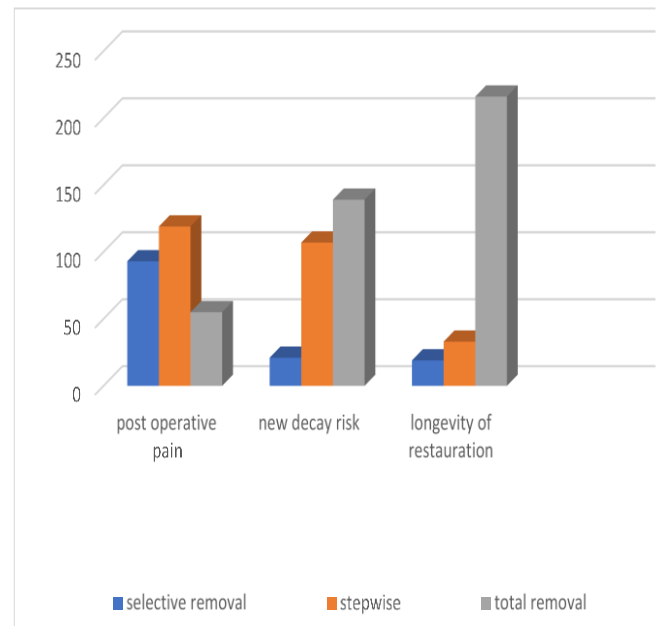


Fig 2 : therapy approach

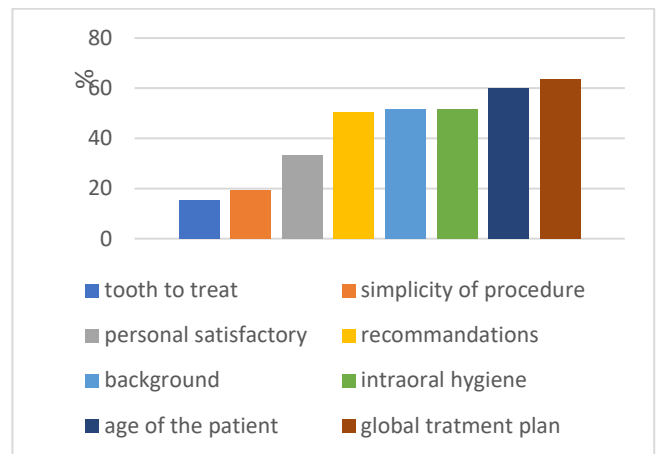


Fig 3 : Criteria dentists rely on to decide excavation technique

	N (%)
Use of rubber dam	No 239 (88.8) Yes 30 (11.2)
Dentin hardness	Soft 0 (0) Hard 207 (77) SR 31 (11.5) Hardness has no influence 31 (11.5)
Dentin Color	Dark 3 (1.1) Yellowish 68 (25.3) Color has no influence 198 (73.6)
Instrumentation	Metallic bur 244 (90.7) Ceramic bur 4 (1.5) Manual excavation 152 (56.5) Chemical removal 32 (11.9) Laser 4 (1.5)
Disinfection	Before 68 (25.3) During 57 (21.2) After 237 (88.1) Whitout disinfection 17 (6.3)

Table 2 : satisfactory removal of soft tissue in deep lesion

IV. DISCUSSION

This study was about dentists's preference for deep caries in vital asymptomatic teeth. The response rate is relatively low 35%, although, it is similar to some recent studies on the same topic(3). In cases of reversible pulpitis total excavation was the preferred option, 43.5%, these results are in accordance with other new studies; in fact, in Sothern Brazilian population, Weber et al proved that 71,1% of dentists practice the total removal technique and only 17.6% were in favor of the step wise procedure(4) also similar study was made in Saudi Arabian population in 2018 and had similar results with 57.8% preferred total excavation when there is no pain and a risk of exposure existed(3). Nevertheless, in Norweg same study showed an equal preference for stepwise and total removal technique for similar clinical situations (5). Another survey made in 2017 reported that the dental professional in Norweg frequently practice the stepwise procedure(6). In the current study, dentist's attitude can be related either to a lack of knowledge about new recommendations and concepts of dentistry(7) or they don't believe in the effectiveness of the conservative approach (8).

Recently, new evidence bases were instaured and confirm that selective removal of soft tissue is the best therapy for teeth with deep carious lesions and high risk of pulp exposure (2,9). Peripheral infected enamel and dentin are removed until feel hard tissue in order to ensure a perfect seal and long lasting coronal restauration. (2,9,11). Residual soft tissue is remained over the pulp minimizing the risk of pulp exposure. (2,9). International Caries Consensus Collaboration announces "carious tissue is removed purely to create conditions for long-lasting restorations... bacterially contaminated or demineralized tissues close to the pulp do not need to be removed"(2). The objective of this consensus was to solve the debate concerning strategies for excavation soft tissue, the growing number of systematic reviews and studies, and the confusion referring to theses techniques.

Recommendations relate to the carious lesion extension ; For each lesion activity and stages different approaches might be instaured and all have to inactivate or contrôle carious process, preserve hard tissue and the tooth as long as possible(2).

Microorganisms still present in the soft tissue and prived for nutriments and seem to be unable to maintain cryogenic processes. Thus, rehardening and remineralization of the soft dentin can be observed in radiographic follow up (12).

Definitely, deep carious lesions are managed by total excavation of peripheral tissues and soft dentin should be left over pulp areas. Bjørndal demonstrated through Randomized clinical trials that after one year of follow up, stepwise therapy has significantly more success rate (74%) than complete excavation (62.4%) (13). However, high cost, compliance of the patient and the failure of the provisional restoration are the drawbacks of this approach.

Maltz et al proved that after 18 months of follow up, selective removal technique had a high success rate (99%) comparing to stepwise (86%) (14)

Lack of reliable and valid diagnostic criteria is a veritable challenge for dentists to decide the extend of excavation(15). Most dentists referred to the hardness of the dentin as a general criterion to decide the extend of the carious cavity (6,10).

Regarding factors underlying dentists's decision-making process, the patient's age, oral health and global treatment plan were their principle choices. These findings are in perfect concordance with the results of Stangvaltaite et al(5). These responses are justified by studies showing less efficacy of vital pulp therapy in adult patients(16). However the use of bioactive products such as biodentine shows a good clinical and radiographic outcomes in vital pulp therapy regardless of the patient age(17). This new evidence success

rate makes age no more a key factor to decide the appropriate approach for deep caries. Recently, a Finish study showed a conservative attitude of majority of dentists in adult patients(18). Similar attitude has been observed in a Spanish population(19).

V. CONCLUSION

There are various treatment methods to manage deep caries with reversible pulpitis. Total excavation is yet the main choice and the majority of practitioners think that cariogenic tissue must be removed. Only few dentists practice selective removal therapy. The present study allows to conclude that new recommendations and concepts of dentistry minimally invasive have not yet incorporated into daily clinical practice. Dentistry curriculum And education courses should insist on teaching conservative approaches to dental students and clinical practitioners.

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