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REVIEW ARTICLE

The role of dentistry in treatment of obesity – Review



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Abstract *Introduction/objective:* Jaw Wiring (JW) is one of the controversial treatment modalities for obese individuals. It aims at limiting the food intake of the patient resulting in weight loss. The authors conducted a literature review to explore the historical development, effectiveness, indications, advantages and disadvantages of Jaw Wiring (JW) as treatment modality for obese individuals.

Data sources: PubMed, Scopus, Medline and Google Scholar have been searched for papers that addressed the effectiveness of JW in the treatment of obesity since 1979 till present. No restriction regarding the type of the articles has been considered.

Results: JW as a method of obesity management is a highly controversial issue. Almost all papers are retrospective, uncontrolled trials with a small sample size or anecdotal opinions. However, current data indicate that although JW is efficient in weight loss relatively faster than other treatment modalities, weight regaining is a constant finding in approximately all patients after JW discontinuation. Aspiration of vomit, gingival diseases, teeth decalcification and temporomandibular disorders are potential side effects. Such extreme treatment method should be approached carefully in a properly selected category of obese patients.

Conclusion: JW is an efficient way in terms of weight control in properly selected obese patients and usually no serious complications could be encountered through the treatment course.

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1. Introduction

Obesity has been one of the most difficult medical challenges in the past 3 decades that entails medical, physiological, psychological and economic problems. A prevalence rate up to 14% among adults worldwide was reported.¹ Body mass index (BMI) is calculated by dividing individual's body mass by the square of their height.² This indicator is commonly used to evaluate how much the individual's weight deviates from normal. Three grades of obesity were defined according to BMI,³ Grade one obesity (BMI from 30 to 35), Grade two obesity (BMI from 35 to 40) and Grade three obesity (BMI over 40). Several types of pathological disorders were linked to obesity especially Grade three (morbid obesity) such as risk of developing cardiovascular diseases, diabetes, certain types of malignant tumors, hypertension, breathing complications, dyslipidemia, male infertility and depression.⁴⁻⁶

Obesity has been successfully treated by many modalities that include but are not limited to surgical interventions (bariatric surgery and liposuction),^{7,8} anti-obesity drugs,⁹ low energy diet,¹⁰ physical activity,¹¹ psychological and behavioral modification of life style,¹² and genetic make-up.¹³ However, unusual and uncommon treatment approaches were documented in the literature such as obesity vaccine and Jaw Wiring (JW).¹⁴⁻¹⁷

Scarce data exists in the literature regarding JW as a treatment modality for obesity, therefore we aimed in this article at reviewing the history, indications, techniques, advantages and disadvantages of JW. Jaw Wiring is defined in Segen's Medical Dictionary as "An extreme treatment for morbid obesity that utilizes the same methods and devices as those used for jaw fractures, allowing only the intake of liquids".

First attempt to treat obese individuals by JW was conducted by Rodgers and coworkers in 1977. They evaluated very obese individuals after a period of JW and reported that all patients have lost a significant weight (average of 25 kg in 6 months) which was comparable to bariatric surgery.¹⁷ However, more than 70% of patients regained weight after discontinuing JW and only one patient maintained ideal weight.¹⁵ Identical findings were reported in another study which involved 14 female obese patients that underwent JW for six months.¹⁶ Weight regaining after abandoning of JW seems to be a potential limitation, however in short term follow up (4-14 months) for 7 patients who lost 31.5 kg during JW, a mean of only 5.6 kg was regained. It should be mentioned here that a nylon cord wrapped around the waist of the patients

after weight loss in order to act as a psychological barrier to weight gain was applied to all patients.¹⁷

2. Indications

No obvious and clear-cut indications of JW were found in the literature for the treatment of obesity, however some relative indications from previous studies could be mentioned:

1. Obese patients with a BMI more than 35, and under 50 years of age.¹⁷ Jaw Wiring is an extreme procedure, so it is probably limited to very obese individuals who initially rejected the surgical approach as first line of treatment; The age factor could be of concern as older patients have more periodontal problems that may be exaggerated by JW and they are less tolerant to impaired jaw function.
2. Obese patients that could not have surgical intervention because of associated medical problems. It is well documented in the literature that very obese patients show a wide spectrum of health problems that may compromise the surgical option.⁴
3. Overweight individuals who are under diet programs and willing to lose weight in a faster way.

All patients selected for this approach should meet the following criteria before commencing JW.

- a. Healthy dental and periodontal structures¹⁷ to avoid further damage of the dentition either directly by the wiring procedure itself or indirectly by accumulating of plaque and debris in wired areas.
- b. Well motivated patient. Psychological adaptation is a crucial factor in the acceptance of prolonged jaw immobilization and severe limitation of masticatory function. Moreover, motivation is mandatory in obtaining a high standard of oral hygiene throughout the treatment period.
- c. Physician consultation.
- d. Dietician consultation.
- e. Informed consent.

3. Techniques

The main principle of JW is to prevent normal jaw movement which limits the masticatory function leading to a severe reduction of food intake and calories. The ultimate goal is to lose

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