Annals of Dentistry and Oral Disorders

Global Scientific Library

Mini Review

Aesthetic Dentistry in the 18th Century: When Beauty Counted More than Health

Roger Seiler[1], Francesco M Galassi[1], Frank Rühli[1] and Patrick Eppenberger[1]*

[1]Institute of Evolutionary Medicine, University of Zurich, Winterthurerstrasse 190, 8057 Zurich, Switzerland

Abstract

Teeth have always been considered a factor of beauty and are, to this day, perceived as an indicator of age, health and even social status. During the 18th century oral beauty was particularly threatened by the spread of caries due to increasing consumption of sugar, heavy metal poisoning induced by the use of cosmetics, or by syphilis therapy with mercury, still common at the time. Consequently, over the course of the century, the demand for aesthetic improvement grew among the social elite before spreading to all strata of the population. Emerging modern dentistry tried to meet these requirements by inventing various new treatment methods. However, with missing means for long-term aesthetic and functional rehabilitation, efforts primarily focused on improving cosmetic aspects.

Keywords: Esthetics; History; 18th Century; Oral Health; Prosthodontics

Introduction

From a behavioural point of view the teeth may act as a human as a human ornament display [1]; culturally they are seen as a factor of beauty and in anthropological terms, they can serve as an indicator of age, health or even social status. During the 18th century oral beauty was particularly threatened by the spread of caries due to increasing consumption of sugar, by heavy metal poisoning induced trough use of cosmetics, or by syphilis therapy with mercury, still common at the time. In addition to the treatment of oral diseases,emerging modern dentistry and popular advice manuals, therefore, focused in particular on cosmetic aspects attempting to preserve oral beauty. Emerging modern dentistry already included treatment of caries and periodontal diseases, manufacturing of fixed and removable prostheses, and even implantology. However, due to its limitations at the time, it was primarily focused on cosmetic and not necessarily on functional aspects. In the 18th century reciprocal effects between the development of modern dentistry on one hand and the development of disease patterns, such as caries or syphilis, on the other hand can, thus, be exemplified in a socio-historical context. The aim of this article is to examine the development of oral pathologies and the measures taken against them during the 18th century. To achieve this goal, the literature from this period was reassessed and studied through the lens of evolutionary medicine and medical history.

Praise of oral beauty

"*Along the gums [...] there is a row of small white hard bones* [...] *whichserve as an ornament to the mouth. They are called the teeth*" [2]- writes Nicolas Andry de Boisregard (1658-1742) in his book "Orthopaedia", a classical work of pediatrics and orthopedics. This stress on the aesthetic function of teeth is also found in contemporary dental literature.It begins with Pierre Fauchard (1678-1761), credited the father of modern dentistry [3,4]. The aims of his work "*Le chirurgien dentiste, ou Traité des dents*"[5] are stated on the title page: first he mentions ways to keep teeth clean and healthy, and then immediately emphasizes means to embellish them, even prior to restoration of lost teeth and cures for dental diseases. In his advice manual "*Easy care for cleanliness of the mouth and for preservation of the teeth*" [6], translated into several languages, Etienne Bourdet(1722 -1789) speaks to alay audience about the teeth as "*a natural ornament inseparable from beauty*"; yet not only the white of the teeth, but - so Bartholomew Ruspini (c. 1728-1813) - also "*the gums contribute a lot to the decoration of the mouth*" [7]. In modern dentistry this is called white and pink aesthetics, in the 18th century it was allegorically termed "*the lily and the rose united* " [8]. In addition, beautiful teeth also signalled that the whole body was in good health. Nicolas Dubois de Chémant (1753-1824) notes in his "*Dissertation on artificial teeth*" (Paris, 1788 – English edition references here), that the eyes are the mirror of the soul, but the teeth can be called the mirror of health [9].

Growing sugar consumption and administration of heavy metals - threatstooral beauty

In his work "*Le Dentiste des dames"* a book dedicated to the beautiful sex, Joseph Jean François Lemaire (1782-1834) contrasts the elaborate embellishment of the ladies of his day with the esthetic impairments of their beauty caused by disease of the oral structures: Diamond versus teeth black as slate, a rich diadem versus two yellow circles of calculus adorning their mouths, the golden comb versus two rows of reddened gums, surrounding the teeth, which wiggle with each movement of the tongue [10]. Lemaire poetically enumerates different oral diseases. Deep carious lesions appear as a blackish shimmer through the enamel of the front teeth and the excessive calculus leads to their yellowish staining. In addition, the teeth are loose, most likely due to periodontal recession.

Dental caries has plagued mankind since its beginnings [11,12]. But it was in the 18th century that the disease became significantly more widespread. New, exclusive sweets such as liqueur, lemonade and ice cream, as well as the popularization of sweetened colonial hot drinks, such as coffee, cocoa and tea, dramatically increased sugar consumption. In England, for example, the consumption of sugar boosted from 1.8 kg per capita per year at the beginning of the 18th century to 8.1 kg per capita per year by its end [13]. Expensive cane sugar imported from European transatlantic colonies was mainly consumed by nobility, the urban elite and rich bourgeoisie. Consisting of over 80% of saccharose, the main culprit or "*arch criminal*" [14] for

***Corresponding Author:** Patrick Eppenberger, MD, Dipl. Industrial Designer FH, Institute of Evolutionary Medicine, University of Zurich, Winterthurerstrasse 190, 8057 Zurich, Switzerland; Tel: 41 44 635 05 43, Fax: 41 44 635 05 19. E-mail: patrick.eppenberger@iem.uzh.ch

Received: Dec 04, 2018; **Accepted:** Dec 12, 2018; **Published:** Dec 14, 2018

Citation: Seiler R, Galassi FM, Rühli F, Eppenberger P. Aesthetic Dentistry in the 18th Century: When Beauty Counted More than Health. Ann Dentist Oral Disord. 2018; 1:109.

the development of caries, its growing consumption led to a significant rise of caries across Europe [15,16]. The destructive role of sugar was already recognized at the time, as "*those who make great use of this poison* [sugar], *are more subject to tooth-ache, and lose their teeth sooner than others*" [17]. The higher rate of tooth decay in the 18th century is well correlated with increased ante-mortem tooth loss [15].

As mentioned above, healthy gums were regarded as important for a beautiful appearance as well. However, their appearance could dramatically worsen with the accumulation of dental calculus. Fauchard already identified them to play a key role in the pathogenesis of periodontal disease [18]. He presented methods of local therapy and held patients responsible, arguing that dental calculus is a consequence of poor dental hygiene and that it can cause "*bad breath and ugly discoloration*"[5]. According to Müller [15], the prevalence of dental calculus was constant over time, as was the rate of periodontitis [19,20]. By the 18th century, however, some oft the risk factors that could compromise the health of periodontal structures were already identified.

The fashion to cover the face with all sorts of make-ups, tinctures or pomades – by which women seeked to obain a beautiful and charming face – spread in the course of the 18th century from nobility to all social strata, down to the levels of middle class and crafts people [21]. Many cosmetics, common at the time, contained lead, mercury (*sublimé corrosif* = mercury $HgCl_2$), tin or bismuth. The consequences of this chronic application of heavy metals – especially mercury – resulted in tooth loss, increased salivation, bad breath and swollen gums. Another reason for the administration of mercury was to treat syphilis, which was practiced for over 450 years [22]. Descriptions of the dramatic consequences of high-dose mercury therapy in the oral cavity are found up to the 19th century and are similar to those reported by Ulrich von Hutten (1488-1523) in the 16th century: "*besides the usual ulceration of the gums as well as loosening and eventual detachment of the teeth, the tongue and the soft palate swell and ulcerated to an alarming degree*" [23,24]. Such high-dose mercury therapy was still widespread during the 18th century. The alterations of the gums, with tooth loss as a side effect, were of particular importance. They were clearly visible and recognizable as a result of mercurial therapy and thus implied the moral stigma of syphilitic disease, perhaps comparable to today's "meth-mouth", the severely disfigured dentition sometimes seen in drug addicts [25].

During this period a rich body of literature [21,26] against cosmetics formed, arguing with aesthetic as well as moral considerations. More and more concerns also arose from physicians, who identified such cosmetics among charlatans' most profitable areas of business [27]. The statement that powders and pomades could clog the pores for transpiration was relatively harmless. The warnings against chronic poisoning by heavy metals were much more convincing. Consequently, it was recommended to ban these substances and to prescribe herbal cosmetics instead. Salivation and supposed purging effects of mercurial therapy, which were thought to evacuate avenereal poison, in accordance to the humoral concepts of the time, were the reason for the administration of high doses of mercury starting from the 16th century onwards. Fortunately, humoral concepts gradually lost importance during the 18th century in favour of other theoretical perspectives, such as the iatromechanical theory of Herman Boerhaave (1668-1738) [28]. In addition, syphilis seems to have developed into a milder, chronic disease, so that at the beginning of the 18th century it was no longer a virulent epidemic [29].

Physicians like Boerhaave and subsequently Gerard van Swieten (1700-1772) recognized the severe side effects overdosed mercury therapy [30]. The administration of mercury remained the method of choice, but was now administered more carefully in lower doses, such as in the *Liquor Swietenii*, a bichloride ($HgCl_2$) solution in alcohol. This resulted in fewer side effects, such as salivation and ulceration of the oral mucosa, and the therapy was, therefore, suitable for concealed self-medication purposes. Many more reasons – besides above discussed mercury intoxication and increasing incidence of caries – such as aggressive periodontitis, trauma, systemic diseases like scurvy or diabetes could lead to tooth loss. Throughout the 18th century, emerging modern dentistry sought new strategies against such cosmetic impairment of oral beauty.

Emerging parodontal therapy

In the 17th century dentists like Bernadin Martin (1629-1682 ?) [31] still ignored the cosmetic aspects of their art. Only Fauchard at the beginning ot the 18th century started to focus on esthetic issues. Ugly staining caused by dental calculus was common, but widespread self-treatment with acidic and abrasive tooth powders was harmful to the teeth. Fauchard describes in detail, what today we would call supragingival scaling, the removal of supragingival calculus. Yet, the treatment of even deep periodontal pockets in esthetically critical areas requires removal of supra- and subgingival biofilms, achieved by (non-)surgical debridement down to the bottom of the periodontal pocket [32]. Fauchard's approach could, thus, at best, be effective against superficial gingivitis and was essentially of cosmetic purpose. But with this, he drew the attention of dentists not only to the white but also to the pink aesthetics - to teeth and gums. White and red - a white, perfect skin and coral-red lips - were sought-after in beauty culture throughout the 18th century [21]. The relationship between the teeth and surrounding soft tissue is, as we know, still an essential element of treatment planning in modern dentistry.

Limitations of early caries therapy

Extended carious lesions were more difficult to treat. We limit ourselves here to the esthetically sensitive front teeth. According to Fauchard, a carious lesion has to be generously removed with a file, despite the dental pulp being opened. Then it was "*often helpful*" [5] to cauterize the pulp, allowing painless drainage of pus through the pulp canal. By separating the teeth, the carious process could be stopped on approximal surfaces, but with a considerable impairment of the patient's appearance. Alternatively, the tooth was shortened to gingiva height with a file and the pulp cavity was extended to hold an artificial or natural crown with a post - unquestionably the most comfortable artificial tooth and particularly suitable for upper anterior teeth in order to restore a youthful appearance [6]. The prognosis of these post crowns was greatly limited due to the inability of infection control by means of root canal treatment and due to unstable anchorage of the post, although in individual cases they lasted for several years [6]. If these measures failed, the tooth was finally extracted, however, in pre-anaesthesia times, as a very last option. Allogeneic transplantation could be considered for the replacement of front teeth as well, i.e. "*the transportation of a tooth into the mouth of another*" [5]. But failures were frequent and knowingly John Aitken (-1790) characterized this procedure "*a very ornamental piece of surgery*" [33]. In addition the risk of a transmission of infectious diseases, such as syphilis became known, and moral doubts arose about transplanting a tooth from a poor to a rich individual. This approach was finally abandoned by the end of the century.

Early atempts for prosthetic restoration

The 18th century also played a key role in the field of prosthetic restoration. Again, Fauchard stood at the beginning of the development. In his work, he first described complete dentures whose wearability was improved by steel springs. Partial dentures were ligated to the adjacent

residual dentition with gold wires. These prostheses were initially carved from bone or ivory. Due to the porosity of *"animal substances, they were corruptible and constantly caused a stinking odor"* and could not reproduce the *"natural color of teeth"* [9]. Functionally insufficient, they were primarily aimed at restoring aesthetic appearance, but with limited success due to the use of unsuitable materials. Major improvements were, however, made in the course of the century when new materials and production methods for improving esthetics and function of dentures were introduced. Dubois eventually underlines the advantages of using porcelain for dentures by *"imitating nature so closely that it is indistinguishable from the original natural teeth and gums, and also for being extremely durable and hard"* [9].

Summary

We have briefly highlighted 100 years of a decisive phase in the multifaceted development of modern dentistry. Emerging scientific dentistry of the 18th century had not yet met many medical and (material) technical requirements for functional and aesthetically satisfying long-term care. Dentists had to develop and refine a number of new methods, not only due to the increased prevalence of caries, but also due to increased aesthetic awareness of their patients. Therefore, the success of dental interventions was mainly rated by other criteria, such as temporary improvement of appearance. Nevertheless, cosmetically acceptable results could be achieved, with some compromises, and the patient was helped in his main concern. Increasing availability of such cosmetic dental rehabilitation eventually increased the demand for dentistry in general.

Acknowledgement

We want to thank the Mäxi Foundation for ongoing financial support.

Conflict of Interest: There was no financial support from the industry for this study. No institutional review board approval was required for this study.

References

1. Hendrie CA, Brewer G (2012) Evidence to suggest that teeth act as human ornament displays signaling mate quality. *PLoS One* 7: e42178.
2. Andry de Bois RN (1743) Orthopaedia, or the art of correcting and preventing deformities in children. London: Millar.
3. Lynch CD, O'Sullivan VR, McGillycuddy CT (2006) Pierre Fauchard: the 'Father of Modern Dentistry'. *Br Dent J* 201: 779-781.
4. Spielman AI (2007) The Birth of the Most Important 18th Century Dental Text: Pierre Fauchard's Le Chirurgien Dentist. *J Dent Res* 86: 922-926.
5. Fauchard P (1728) Le chirurgien dentiste ou traité des dents. Paris: J. Mariette.
6. Bourdet E (1759) Soins faciles pour la propreté de la bouche et pour la conservation des dents. Paris: Jean-Thomas Hérissant.
7. Ruspini B (1797) A treatise on the teeth: Wherein an accurate idea of their structure is given, the cause of their decay pointed out… London: By Barth.
8. Duval JR (1805) Le dentiste de la jeunesse ou moyens d'avoir les dents belles et bonnes. Paris Koenig; Croullebois.
9. Dubois de Chémant N (1979) A dissertation on artificial teeth in general exposing the defects and injurious consequences of all teeth made of animal substances […]. London: Printed by J. Barker.
10. Lemaire J (1812) Le dentiste des dames, ouvrage dédié au beau sexe. Paris: author's edition.
11. Rühli FJ, Galassi FM, Haeusler M (2016) Palaeopathology: Current challenges and medical impact. *Clin Anat* 29: 816-22.
12. Humphrey LT, Groote I de, Morales J, Barton N, Collcutt S, Bronk Ramsey C, et al. (2014) Earliest evidence for caries and exploitation of starchy plant foods in Pleistocene hunter-gatherers from Morocco. *Proc Natl Acad Sci USA* 111: 954-959.
13. Mintz SW (1985) Sweetness and power. New York: Viking Penguin Inc.
14. Zero DT (2004) Sugars - the arch criminal? *Caries Res* 38: 277-285.
15. Muller A, Hussein K (2017) Meta-analysis of teeth from European populations before and after the 18th century reveals a shift towards increased prevalence of caries and tooth loss. *Arch oral biol* 73: 7-15.
16. Blackwell M (2004) "Extraneous Bodies":The Contagion of Live-Tooth Transplantation in Late-Eighteenth-Century England. *Eighteeth-Cent Life* 28: 21-68.
17. Hoffmann F (1756) A treatise on the teeth; their nature, structure, formation, beauty, connection and use. In which the disorders … are enumerated. London: Davis and Reymers.
18. Seiler R, Galassi FM, Rühli FJ, Fauchard (2017) Boerhaave, and the pathogenesis of periodontitis in the 17th and 18th centuries. *Eur J Oral sci* 125: 227-228.
19. Kerr NW (1998) Prevalence and natural history of periodontal disease in prehistoric Scots (pre-900 AD). *J Periodont Res* 33: 131-137.
20. Raitapuro-Murray T, Molleson TI, Hughes FJ (2014) The prevalence of periodontal disease in a Romano-British population c. 200-400 AD. *Br Dent J* 217: 459-466.
21. Martin M (2005) Doctoring beauty: the medical control of women's toilettes in France, 1750-1820. *Med Hist* 49: 351-368.
22. O'Shea JG (1990) 'Two minutes with venus, two years with mercury' - mercury as an antisyphilitic chemotherapeutic agent. *J Roy Soc Med* 83: 392-395.
23. Proksch JK (1985) Die Geschichte der venerischen Krankheiten. Bonn: Peter Hanstein.
24. Hamilton J (1819) Observations on the use and abuse of Mercurial Medicines in various diseases. Edinburgh: A.Constable in Edinburgh and Hurst, Robinson, London.
25. Wang P, Chen X, Zheng L, Guo L, Li X, et al. (2014) Comprehensive dental treatment for "meth mouth": a case report and literature review. *J Formos Med Assoc* 113: 867-871.
26. Sander S (2003) Gesundheit statt Galanterie, 2003 Der Paradigmenwechsel in arztlichen Schonheitsratgebern im Jahrhundert der Aufklarung. *Gesnerus* 60: 25-61.
27. Roussel M (1775) Système physique et moral de la femme. Paris: chez Vincent.
28. La Mettrie JO (1748) L'homme-machine . Leiden: de l'impr. Elie Luzac, fils.
29. Frith J (2012) Syphilis – Its early history and Treatment until Penicillin and the Debate on its Origins. JMVH 20: 49-58.
30. Waugh M (2002) The progress of venereology in Europe since the sixteenth century. *Clin Dermtol* 20: 119-121.
31. Martin B (1679) Dissertation sur les dents. Paris: D.Thierry.
32. Zucchelli G, Sharma P (2018) Mounssif I. Esthetics in periodontics and implantology. *Periodont 2000* 77: 7-18.
33. Aitken J (1786) Principles of anatomy and physiology… by John Aitken. London: Printed for John Murray.

Citation: Seiler R, Galassi FM, Rühli F, Eppenberger P. Aesthetic Dentistry in the 18th Century: When Beauty Counted More than Health. Ann Dentist Oral Disord. 2018; 1:109.