IN BRIEF

- The term 'malocclusion' could suggest that an occlusion is intrinsically wrong; this is mistaken.
- In restorative dentistry an occlusion should only be judged by the tissue reaction to it.
- Modern definitions of 'ideal occlusion' support a physiological not a mechanistic assessment of 'occlusion'.
- In orthodontics, an occlusion is mainly judged by the patient's and society's visual appreciation of it.

Malocclusion – a term in need of dropping or redefinition?

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I believe the time is coming when we should consider dropping the term 'malocclusion'. In its present meaning it is too mechanical and misrepresents the fundamental fact that an occlusion can only be judged against the tissue reactions to it or the patient's assessment of it.

Malocclusion is defined by the Dental Practice Board as meaning 'an abnormal occlusion in which teeth are not in a normal position in relation to adjacent teeth in the same jaw and/or the opposing teeth when the jaws are closed'. It is defined by orthodontists as 'an appreciable deviation from ideal occlusion'.¹ The US National Library of Medicine/ National Institute of Health (Medline) state that malocclusion 'means the teeth are not aligned correctly'. Most dentists would agree with these definitions, and we could interpret the term 'malocclusion' to mean something was wrong. They are all objective definitions. The purpose of this article is to examine the concept of 'malocclusion' and suggest that this interpretation is not in tune with modern thinking.

I would argue that an occlusion cannot be considered to be intrinsically bad or wrong. Rather it is the case that there

may be an intolerable number of times for a patient to function or parafunction on an occlusion at that particular stage in their life. This is to say that an occlusion can only be judged by the response of the patient. That response may be on a tooth level, for instance a tooth that becomes hypersensitive in relation to trauma from occlusion, on a system level – for instance the development of a temporomandibular disorder which is related to a parafunctional habit – or finally on a patient level, that is the patient who develops a degree of hypersensitivity about their occlusion from either a functional or an aesthetic perspective.

There is an analogy in the field of toxicology. It has been stated that: '*there is no such thing as a dangerous chemical only a dangerous concentration*'. This is patently the case when we consider that a concentration of 78% of nitrogen in inhaled air is perfectly safe whereas if that should go up to 100% this inert substance is fatal. Similarly a dose of Warfarin can have a beneficial effect on a human being, causing their blood to be thinned, and a devastating effect on a rat; it all depends on the concentration. In the same way, an occlusal contact in itself cannot be deemed to be bad, it can

only be judged as being harmful if there is an adverse tissue reaction to it. In occlusal terms, the parallel of *concentration* is (occlusal) load, which is a product of force and frequency. The reaction is also determined by the robustness of the tissues/subject. This explains why all of us regularly see patients with '*really bad occlusions*' who show no signs of any adverse effect either on the tooth or system level.

This philosophy does not sit easily with those dentists who would like to blame occlusion for a whole host of effects and pathologies. In their belief an occlusion can be intrinsically wrong or bad. This point of view appears to me to be mechanistic; it makes no allowance for the adaptive capability of the subject. As an eminent neuro-physiologist describes a machine as '*a system which is not the result of a fertilised egg*',² this is just about the most damning condemnation that can be levelled at a clinician.

Ideal occlusion could be considered to be the opposite of malocclusion. But it is not really: maybe the opposite of malocclusion would be *ortho-occlusion* or even the horrible sounding *benocclusion*! It is interesting how the definition of *ideal occlusion* has changed through the editions of Ramfjord and Ash's

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textbook *Occlusion*. In 1983 Ramfjord and Ash defined ideal occlusion essentially in mechanical terms stating that ‘centric occlusion should occur in centric relation, there would be freedom in centric (occlusion) and there would be no posterior interferences’.³ Twelve years later they defined ideal occlusion as ‘a state in which no neuro muscular adaptation is needed because no disturbing relationships are present’.⁴ This shifts the definition of ideal occlusion away from a didactic prescription of what an occlusion should be in purely mechanical terms to judging an occlusion by a subject’s individual reactive capability to it. Many of us, however, are restorative dentists and so we naturally look to occlusal definitions for guidance on how we should provide the occlusal prescription of our restorations. In the next sentence of Ramfjord and Ash’s 1995 definition we are given some help in this respect by a reference back to the ‘mechanical rules’. They say ‘although ideal occlusion is judged more by functional characteristics than by anatomical features; good anatomical relationships provide the best background for functional harmony’. I think the point that they wish to make is that if you provide an occlusion which accords the ‘Good Occlusal Practice’, which is a distillation of years of conventional wisdom, it is less likely to be poorly tolerated by the patient.

The other discipline of dentistry in which the term malocclusion is commonly used is orthodontics. The main aim of orthodontics is to improve aesthetics, although function is considered. Some orthodontists might be a little prickly

about the idea that they are mainly in the business of improving appearance rather than correcting function. If they do feel defensive about it, maybe it is because of our present understanding of ‘malocclusion’. The father of the orthodontic classification was Edward Angle. His definition of a Class I occlusion, the perfect occlusion, was based upon a dry skull that he kept on a shelf in his study. It was affectionately known as ‘Old Glory’. Angle interpreted the relationships between the teeth in ‘Old Glory’ to be the ‘perfect occlusion’, and this was the starting point of his classification system. Clearly he had not carried out a functional analysis, because ‘Old Glory’, being a dried skull, was dead; being dead is an insurmountable obstacle to function. It was, therefore, Angle’s *aesthetic* appreciation of ‘Old Glory’s’ occlusion that led him to believe that this was the ideal occlusion.

Patients will vary enormously in their acceptance of an occlusion and so the argument that a particular relationship between the teeth is inevitably a malocclusion completely ignores the patient’s perception. It is probably only an orthodontic malocclusion if the patient does not like the look of it. In saying that, I am not suggesting that orthodontists, given the young age of their patients, have an easy time in trying to decide what the patient likes or will like in the future. But in order to prescribe treatment *appropriately* I suggest that the term malocclusion should purely be subjective. This would mean that there is little or no justification for an objective ‘scoring’ of a patient’s orthodontic

‘malocclusion’. Given that this type of scoring system can be used to justify an intervention by a third party of the proper dentist/patient relationship provides an even greater unease. If the idea that ‘malocclusion’ should be purely subjective seems too radical, maybe an Axis I and Axis II classification could be used, where Axis I attempts to classify the occlusion objectively and Axis II is an evaluation of the patient’s perception and maybe other evidence based risk factors (ie risk of trauma).

This principle of judging an occlusion only by the patient’s reaction works both ways. Whereas most of us would probably have accepted the relationship between Tom Cruise’s teeth before his recent and well publicised course of orthodontics, he clearly did not. In his pursuit of being ‘small but perfectly formed’, he felt that there was room for improvement. It is, therefore, arrogant for anyone to state, as I have read, that he did not need treatment because he did not have a malocclusion.

In summary, I believe an occlusion cannot be ‘wrong’; it can be qualified by the patient’s reaction to it. Dentists should, therefore, avoid the term ‘malocclusion’, or use it only when there is a demonstrated intolerance to it. In my view, this is especially important in restorative dentistry.

1. Houston et al. *A textbook of orthodontics*. 2nd edn. Wright, 1993.
2. Greenfield S A. *The private life of the brain: emotions, consciousness, and the secret of the self*. p 31. John Wiley and Son, 2000.
3. Ramfjord S P, Ash M M. *Occlusion*. pp 105-107. Saunders, 1983.
4. Ash M M, Ramfjord S P. *Occlusion*. pp 84-85. Saunders, 1995.